

10.04 To apprise the Academic Council about the proceedings of 'Board of Studies'

The meetings of Board of Studies are conducted by following Schools of the University. The minutes of the same are presented here for kind perusal and approval of the Council

- | | |
|---|--------------|
| • School of Engineering | Annexure I |
| • School of Management | Annexure II |
| • School of Law, Justice and Governance | Annexure III |





School of Engineering Gautam Buddha University

Proceedings of the 4th Meeting of Board of Studies

Third meeting of the Board of Studies was held on 22-12-2011 at 11:00 AM in the Committee Room of the School of Engineering. Following members and special invitees were present in the meeting.

1. Dr. Mahesh Kumar Jat, Dean (I/C)
2. Ms. Vandana Sehgal, Associate Professor, SOE, Member
3. Dr. Vivek Srivastava, Assistant Professor, SOE, Member
4. Dr. Shilpa Pal, Assistant Professor, SOE, Member
5. Dr. Athar Hussain, Assistant Professor, SOE, Special Invitee
6. Dr. Satpal Sharma, Assistant Professor, SOE, Special Invitee
7. Dr. Ashu Verma, Assistant Professor, SOE, Special Invitee
8. Dr. H. S. Mali, Assistant Professor, SOE, Special Invitee
9. Dr. R. K. Mishra, Assistant Professor, SOE, Special Invitee
10. Dr. Vanita Ahuja, Assistant Professor, SOE, Special Invitee
11. Prof. Sudhir Kumar, Professor, MNIT Jaipur : External Expert
12. Prof. Deepak Khare, Professor, IIT Roorkee : External Expert
13. Prof. N. K. Mehta, Professor, IIT Roorkee : External Expert
14. Prof. Sukumar Mishra, , I.I.T Delhi : External Expert
15. Prof. N. Sridharan, Professor, SPA Delhi, External Expert
16. Prof. R. K. Pandey, Associate Professor, I.I. T., Delhi, External Expert
17. Prof. A. N. Jha, I.I. T., Former Professor, I.I.T Delhi, External Expert

Following agenda items were discussed in the meeting.

4.1 Approval of the course syllabus for courses of various programmes -

4.1.1 Approval of syllabus of various courses for 4th Semester of 05 Years Integrated Dual Degree Programme (B.Tech. + M. Tech./MBA) in Civil, Electrical and Mechanical Engineering.

4.1.2 Approval of syllabus of various courses for 2nd Semester of 02 Years M. Tech. Programme in Environmental Engineering, Industrial Engineering & Management, Power Systems Engineering and Masters in Urban & Regional Planning.

4.1.3 Approval of syllabus of various courses for 2nd Semester of 03 Years Extended M. Tech. Programme in Environmental Science & Engineering.



22/12/2011



4.2 Minor revision in the Course Curriculum of 05 Years Integrated Dual Degree Programme in Civil, Mechanical & Electrical Engineering.

4.3 Minor revision in the Course Curriculum of 02/03 Years M. Tech. Programmes.

Following decisions have been taken in the meeting-

Item No. 4.11: Approval of syllabus of various courses for 4th Semester of 05 Years Integrated Dual Degree Programme (B.Tech. + M. Tech./MBA) in Civil, Electrical and Mechanical Engineering.

Syllabus of courses for 4th Semester of following 05 years Integrated Dual Degree Programmes in Engineering were discussed in detail.

1. 4th Semester of 05 Years Integrated Dual Degree Programmes in Civil Engineering.
2. 4th Semester of 05 Years Integrated Dual Degree Programmes in Mechanical Engineering.
3. 4th Semester of 05 Years Integrated Dual Degree Programmes in Electrical Engineering.

Syllabus of all the courses as mentioned above was approved. Approved syllabus of courses are enclosed as Annexure – I.

Item No. 4.12: Approval of syllabus of various courses for 2nd Semester of 02 Years M. Tech. Programme in Environmental Engineering, Industrial Engineering & Management, Power Systems & Engineering and Masters in Urban & Regional Planning.

Syllabus of courses for 2nd Semester of following 02 Years M. Tech. Programmes in following specialisations was discussed in detail.

1. For 02 years M. Tech. in Environmental Engineering.
2. For 02 years M. Tech. in Power Systems Engineering.
3. For 02 years M. Tech. in Industrial Engineering & Management.
4. For 02 years Masters in Urban & Regional Planning

Syllabus of all the courses as mentioned above was approved. Approved syllabus of courses is enclosed as Annexure – II.

Item No. 4.13: Approval of syllabus of various courses for 2nd Semester of 03 Years Extended M. Tech. Programme in Environmental Science & Engineering.

1. Syllabus of different courses of 2nd Semester of 03 Years Extended M. Tech. (for science graduates) in Environmental Science and Engineering

Syllabus of all the courses as mentioned above was approved. Approved syllabus of courses are enclosed as Annexure – III.





Item No. 4.2: Minor revision in the Course Curriculum of 05 Years Integrated Dual Degree Programme in Civil, Mechanical & Electrical Engineering.

Course structures of three 05 Years Integrated M. Tech. Programmes in Civil Engineering, Mechanical Engineering and Electrical Engineering were discussed in detail and approved the same. Approved course structure is enclosed as Annexure – IV.

Item No. 4.3: Minor revision in the Course Curriculum of 02/03 Years M. Tech. Programmes.

Minor revisions proposed in the course structure of five, 02/03 Years M. Tech. Programmes in Environmental Engineering, Industrial Engineering & Management, Power Systems Engineering and Master in Urban & Regional Planning were discussed in detail and approved. Approved course structure is enclosed as Annexure – V.

Meeting was ended with a vote of thanks to Chair.

(H. S. Mali)

(Vivek Srivastava)

(Shilpa Pal)

(Satpal Sharma)

(Ashu Verma)

(Vanita Ahuja)

(R. K. Mishra)

(Athar Hussain)

(Brijesh Tripathi)

(Vandana Sehgal)

(R. K. Pandey)

(Sukumar Mishra)

(Sudhir Kumar)

(Deepak Khare)

(N. K. Mehta)

(N. Sridharan)

(A. N. Jha)

(Mahesh K. Jat)





School of Engineering
Gautam Buddha University

Proceedings of the 5th Meeting of Board of Studies

Fifth Meeting of the Board of Studies was held on June 01, 2012 at 11:00 a.m. in Committee Room of the School of Engineering. Following members attended the meeting:

- | | |
|---|---------------|
| 1. Prof. B. B. Gupta, Dean, SoE | |
| 2. Prof. Deepak Khare, WRDM, IIT Roorkee | Member |
| 3. Prof. Sudhir Kumar, Civil Engineering, MNIT Jaipur | Member |
| 4. Prof. N. K. Mehta, Mechanical Engineering, IIT Roorkee | Member |
| 5. Dr. Sukumar Mishra, Electrical Engineering, IIT Delhi | Member |
| 6. Ms. Vandana Sehgal, Architecture & Regional Plannig, SoE | Member |
| 7. Dr. Vivek Shrivastava, Electrical Engineering, SoE, GBU | Member |
| 8. Dr. Shilpa Pal, Civil Engineering SoE, GBU | Member |
| 9. Prof. Rajendra Prasad, Electrical Engineering, IIT Roorkee | Expert |
| 10. Prof. R. K. Garg, Mechanical Engineering, DCR University | Expert |
| 11. Dr. Suptendu Biswas, Architecture, GGSIP University | Expert |
| 12. Dr. Satpal Sharma, Mechanical Engineering, SoE | Invited |
| 13. Dr. H. S. Mali, Mechanical Engineering, SoE | Invited |
| 14. Dr. Ashu Verma, Electrical Engineering, SoE | Invited |
| 15. Dr. Athar Hussain, Civil Engineering, SoE | Invited |

Following agenda items were discussed in the meeting:

Item No. 5.1 Approval of the syllabus for courses of various programmes:

5.11 Approval of syllabus of various courses of 5th semester of 05 years Integrated Dual Degree Programme (B. Tech+ M.Tech./MBA) in Civil, Electrical and Mechanical Engineering.

5.12 Approval of syllabus of various courses of 3rd semester of 02 years M. Tech. Programme in Environmental Engineering, Industrial Engineering & Management, Power Systems and Masters in Urban and Regional Planning.

5.13 Approval of syllabus of various courses of 3rd semester of 03 years Extended M. Tech. Programme in Environmental Science and Engineering.

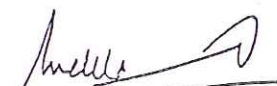


- No. 5.2 Approval of course structure of 06 years "B. Arch+ M.Arch/MURP" programme and syllabus of 1st semester.
- Item No. 5.3 Approval of course structure of 02 years M. Tech programme in Renewable Energy and Management and syllabus of 1st semester.
- Item No. 5.4 Minor revision in course structure of various ongoing courses in the various programmes.
- Item No. 5.5 Minor revision in course curriculum 05 years Integrated Dual Degree Programme (B. Tech+ M.Tech./MBA) in Civil, Electrical and Mechanical Engineering.
- Item No. 5.6 Minor revision in course curriculum of 02/03 Years M. Tech. Programmes.
- Item No. 5.7 Approval of laboratory equipment specification of Control System and Network(Circuit) Theory Laboratories.

Meeting was ended with a vote of thanks to chair.


(Prof. Deepak Khare)


(Prof. Sudhir Kumar)


(Prof. N. K. Mehta)

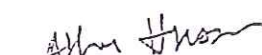

(Dr. Sukumar Mishra)


(Prof. Rajendra Prasad)

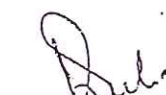

(Prof. R. K. Garg)

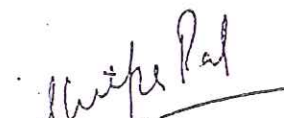

(Dr. Suptendu Biswas)


(Dr. Ashu Verma)



(Dr. Athar Hussain)


(Dr. Satpal Sharma)


(Dr. H.S. Mali)


(Dr. Shripa Pal)

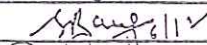

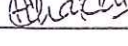

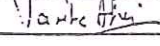

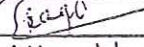
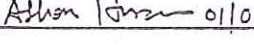
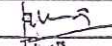

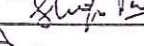


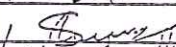

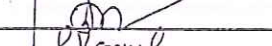

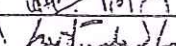
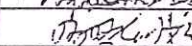



(Dr. Vivek K. Shrivastava)


(Ms. Vandana Seghal)


(Prof. Bharat B. Gupta)



5th Board of Studies Meeting held on June 01, 2012

S.No.	Name of the Faculty	Signature
1	Dr. Shobha Ram	
2	Dr. Anupam Das	
3	Dr. Harish C. Thakur	
4	Dr. Brijesh Tripathi	
5	Dr. Shabana Urooj	
6	Dr. M.A. Ansari	
7	Dr. Vanita Ahuja	
8	Dr. Y.K. Chauhan	
9	Dr. Ashu Verma	
10	Dr. R.K. Mishra	
11	Dr. Athar Hussain	 01/06
12	Dr. Nirmitra Mehrotra	
13	Dr. Satpal Sharma	
14	Dr. H.S. Mali	
15	Dr. Shilpa Pal	
16	Dr. Vivek K. Shrivastava	
17	Ms. Vandana Seghal	
18	Prof. Deepak Khare	 10/12
19	Prof. Sudheer Kumar	
20	Prof. N. K. Mehta	
21	Dr. Sukumar Mishra	
22	Prof. Rajendra Prasad	
23	Prof. R. K. Garg	 11/6/12
24	Dr. Suptendu Biswas	 01/06/12
25	Prof. Bharat B. Gupta	 01/06/12

26 Dr. Nidhi Singh Pal







Gautam Buddha University

School of Management

Proceedings of the IX meeting of the Board of Studies

The ninth meeting of Board of Studies of School of Management was held on 03 Jan 2012 at 11:00 AM under the chairmanship of Dean (I/C) in her conference room.

The following members were present:

1. Dr. Neeti Rana, Dean (I/C)
2. Prof. N K Jain, Professor
3. Dr. Shweta Anand, Associate Professor
4. Dr. Raj K. Kovid, Assistant Professor

Experts

5. Dr. Ajay Pandit, FMS, University of Delhi

Special Invitee

6. Dr. Dinesh K Sharma, MBA Programme Coordinator
7. Dr. Lovey Sarikwal, Asst. Professor

Due to some urgency, one expert, Dr. C P Shrimali, MDI Gurgaon could not attend the meeting.

The following decisions were taken in the meeting:

1. The Course Structure of MBA programme (2010-12):
 - a. The name of electives in Strategy Area in IV Sem were revised as:
 - i. MB 650: Management of Innovation
 - ii. MB 652: Family Business Management
 - iii. MB 654: Strategy Implementation and Business Transformation
 - b. The Course Outlines of IV Sem were discussed and approved
2. The Course Structure of MBA programme (2011-13):
 - a. The title of course 'International Marketing/IB' was finalized as 'International Marketing'
 - b. Some course codes in II semester were synchronized. The changes are as:

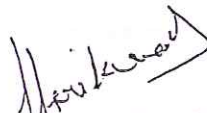
	<u>New Code</u>	<u>Old Code</u>	<u>Course name</u>
i.	MB 502	MB 526	Managerial Accounting
ii.	MB 510	MB 520	Business Environment
iii.	MB 512	MB 530	Research Methodology
iv.	MB 514	MB 528	International Marketing

- c. The Course Outlines of II Sem were discussed and approved



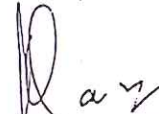


3. The Course structure of Integrated MBA (2010-15):
- The name of Course 'Mercantile Law+Cyber Law' has been reframed as 'Mercantile and Cyber Law'.
 - Mercantile and Cyber Law: topics on 'Companies Act' and 'Negotiable Instrument Act' should be added
 - The course outlines of IV Sem were discussed and approved with following observations:
4. The Course Structure of Integrated MBA (2011-16):
- a. The name of Course 'Mercantile Law+Cyber Law' has been reframed as 'Mercantile and Cyber Law'.
 - b. The Course Outlines of II Semester discussed and approved..
5. Ph D Course structure (Jan 2012 batch) was discussed and approved.
6. In view of IV semester winding up by 31 March 2012, Open Elective (IV Sem) may be offered from electives of IV semester of MBA.
7. Any Other matter: there is no Practical session, but only 3 lectures in course Business and Society (III Sem of Integrated MBA)


(Dr Lovy Sarikwal)



(Dr Dinesh K Sharma)


(Dr Raj K Kovid)


(Dr Ajay Pandit)


(Dr Shweta Anand)


(Dr N K Jain)


(Dr Neeti Rana)







Gautam Buddha University
SCHOOL OF LAW, JUSTICE & GOVERNANCE

Minutes of the Meeting of the Board of Studies, dated 27 March 2012

Present:

Prof. Mahavir Singh, Dean and convener
Prof. M. P. Singh, Member
Prof. Manjula Batra, Member
Dr K. P. Singh, Member
Dr Ravindra Pratap, Member
Dr Akshay Kumar Singh, Member
Dr Ashok Verma, Member
Dr Vivek Kumar Mishra, Special Invitee
Dr Brahm Dev Pandey, Special Invitee
Dr Chandrabhanu Bharas, Special Invitee
Dr Pankaj Deep, Special Invitee
Dr Mamta Sharma, Special Invitee

The meeting was convened to approve the enclosed BA LLB Course Structure and Curriculum (Pages 1 to 163). The Board considered the said BA LLB Course Structure and Curriculum. The Board approved the said BA LLB Course Structure and Curriculum by consensus. Leave of absence was granted to Prof. M. Shabbir, Member.

Mamta
27/03/12
(Mamta Sharma)

Pankaj
27/3/12
(Pankaj Deep)

Chandrabhanu
27/3/12
(Chandrabhanu Bharas)

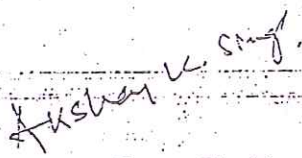
Brahm Dev
27/3/12
(Brahm Dev Pandey)

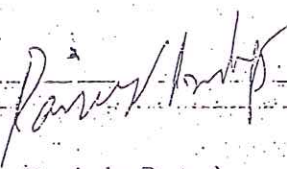
Vivek
(Vivek Kumar Mishra)

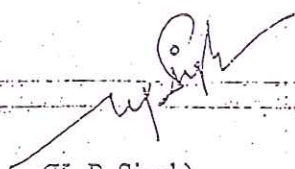
Ashok Verma
27/3/12
(Ashok Verma)

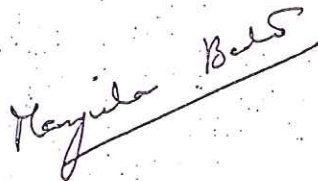





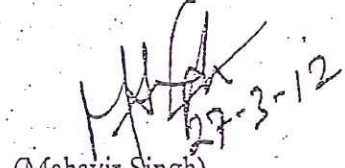

(Akshay Kumar Singh)


(Ravindra Pratap)


(K. P. Singh)


(Manjula Batra)


(M. P. Singh)


(Mahavir Singh)





11th BOS

11.04

PROCEEDINGS OF 'BOARD OF
STUDIES' OF THE SCHOOLS OF THE
UNIVERSITY







11.04

To apprise the Academic Council about the proceedings of
"Board of Studies" of the Schools of the University

The meetings of Board of Studies have been conducted by the following Schools of the University. The minutes of the same are presented here for kind perusal and approval of the Council

- | | |
|--|---------------|
| • School of Buddhist Studies and Civilization | Annexure II |
| • School of Information & Communication Technology | Annexure III |
| • School of Management | Annexure IV |
| • School of Engineering | Annexure V |
| • School of Biotechnology | Annexure VI |
| • School of Humanities & Social Sciences | Annexure VII |
| • School of Vocational Studies & Applied Sciences | Annexure VIII |
| • School of Law, Justice & Governance | Annexure IX |





Gautam Buddha University

School of Buddhist Studies & Civilization

The Board of Studies proposes (18.07.2013) to begin 5years integrated programme (B. A. Hons. (3 Years) + M. A. (2 Years) in Buddhist Studies & Civilization. The two years M. A. programme is successfully running in the School with number of International Students. The three years Undergraduate curriculum will inculcate new horizon in academic of the aforesaid school and University. Three years B. A. programme has been evolved to fulfill the need of modern academic environment in India and abroad. Some interdisciplinary papers viz. English, Economics, Heritage Management, etc. have been introduced to cater the need of employment opportunities for the students. The students will have an option to exit after completing three years Bachelor Degree (B. A. Hons. in Buddhist Studies & Civilization).

Proposal for B. A. (Hons.) in Buddhist Studies & Civilization

Programme Structure for B. A. (Hons.) in Buddhist Studies & Civilization 3 Year Program (Total Six Semester)

Total Credits: 17 x 6 = 102

Semester I

17 Credits

- | | |
|---|-----------|
| 1. Early History of India (2500 BCE to 184 BCE) | 4 Credits |
| 2. Origin & Development of Buddhism (2500 BCE to 184 BCE) | 4 Credits |
| 3. History of Pali Buddhist Literature & Language (Grammar) | 4 Credits |
| 4. English Grammar & Language | 4 Credits |
| 5. General Proficiency | 1 Credit |

Semester II

17 Credits

- | | |
|--|-----------|
| 1. Early History of India (3rd Century BCE to 1200 CE) | 4 Credits |
| 2. Development of Buddhism (Post Mauryan period) | 4 Credits |
| 3. History of Sanskrit Buddhist Literature | 4 Credits |
| 4. General Economics | 4 Credits |
| 5. General Proficiency | 1 Credit |

Semester III

17 Credits

- | | |
|---|-----------|
| 1. History of India (11 th Century to 1600 CE) | 4 Credits |
| 2. Buddhist Archaeology, Art & Architecture | 4 Credits |
| 3. Buddhist Philosophy (Theravada Conceptual Terms) | 4 Credits |
| 4. Buddhist Texts (Theravada) | 4 Credits |
| 5. General Proficiency | 1 Credit |

18/07/13

18.7.2013

18/07



Gautam Buddha University

School of Buddhist Studies & Civilization

Semester IV

17 Credits

- | | |
|---|-----------|
| 1. History of India (1600 CE to 1857 CE) | 4 Credits |
| 2. Buddhist Philosophy (Mahayana Detailed Philosophy) | 4 Credits |
| 3. Buddhist Texts (Mahayana) | 4 Credits |
| 4. Buddhist Epigraphy (Inscriptions) | 4 Credits |
| 5. General Proficiency | 1 Credit |

Semester V

17 Credits

- | | |
|---|-----------|
| 1. Development of Buddhism outside India I | 4 Credits |
| 2. Philosophical Schools of Buddhism | 4 Credits |
| 3. Socially Engaged Buddhism | 4 Credits |
| 4. Decline of Buddhist and Role of Eminent Personalities in Revival of Buddhism | 4 Credits |
| 5. General Proficiency | 1 Credit |

Semester VI

17 Credits

- | | |
|---|-----------|
| 1. Development of Buddhism in Central Asia & Himalayan Regions | 4 Credits |
| 2. Buddhist Heritage Management | 4 Credits |
| 3. Buddhism and Other Religious System of India | 4 Credits |
| 4. Indian National Buddhism, Indian Foreign Policies & Buddhism (1858-1947) | 4 Credits |
| 5. General Proficiency | 1 Credit |

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School of Buddhist Studies and Civilization

Gautam Buddha University

M. PHIL. PROGRAMME IN BUDDHIST STUDIES & CIVILIZATION

The M. Phil. in Buddhist Studies & Civilization has been started in academic session 2012-13. It is two semester (one academic year) course however extension of one semester may be given for submission of Dissertation. The following changes have been recommended in structure of M.Phil. course in Buddhist Studies & Civilization. These changes will be implemented from academic session 2013-14.

SEMESTER I

Course Code	Courses	Credits
BSCM 101	An Overview of Buddhism	03
	<ul style="list-style-type: none"> • Origin of Buddhism, Samgha, Teachings & Various Schools of Buddhism • Spread of Buddhism in Central Asia, East Asia and South East Asia 	
BSCM 102	Research Methodology-I	03
	Methods of Research, Preparation of a Research Report and Styles for Citing and Referencing, Objective in Research and Related Issues & Hypothesis	
BSCM 103	Research Methodology II	03
	Collection, Classification, Tabulation, Interpretation and Presentation of Data Content Analysis & Ethical Issues in Research	
BSCM 104	Pali & Sanskrit Buddhist Literature	03
	<ul style="list-style-type: none"> • General Survey of Pali Literature • General Survey of Sanskrit Literature 	
BSCM 105	Engaged Buddhism	03
	Buddhist Environmentalism, Buddhist Bio-Ethics, Buddhism & Sustainable Economics, Buddhism & Human Rights, Globalization & Buddhism.	
BSCM 106	(a)-Seminar Paper/Article based on literary text (b)-Seminar Paper/Article based on Survey	03
BSCM 107	(a)-Book Review I	02
	(b)-Book Review II	
		20

SEMESTER II

Course Code	Courses	Credits
BSCM 201	Dissertation (15 Credits) + Viva Voce (5 Credits)	20

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M.A. in Buddhist Studies and Civilization

Name of the Program: Master of Arts (M.A.) in Buddhist Studies and Civilization

Duration: 2 year (4 Semesters)

Minimum Qualification for Admission: Graduate Degree with minimum 50% for Gen. / OBCs and 40% for SCs/STs is required to be eligible to secure the admission. However, the admission will be based on the merit and top 30 candidates will be selected. Reservations in the admission will be fulfilled as per the Governmental policy.

Total Required Credits: 86 Credits are required from mandatory as well as elective courses.

Students will be required to enroll in the program for 4 semesters. In each semester, the students will be required to take four mandatory courses and one elective course from the provided list.

S. No.	Semesters	Credit
1	1 st Semester	21
2	2 nd Semester	21
3	3 rd Semester	21
4	4 th Semester	23
	Total	86

SEMESTER I

S. No.	Courses	Credits
1	Introduction to Pali Language and Literature	4
2	Introduction to Buddhist Sanskrit language	4
3	History of Buddhism till Third council	4
4	Basic features of Buddhist Philosophy	4
5	General Proficiency	1
	Elective Course (One To be selected)	
6	Comparative Philosophy of early Prakrit Language	4
7	Pre-Buddhist Indian History and Archeology	4
8	Pre-Buddhist Indian Philosophies	4
		21



SEMESTER - II

S. No.	Courses	Credits
1	Introduction to Chinese Buddhism	4
2	Introduction to Tibetan Buddhism	4
3	Introduction to Applied Buddhism	4
4	Introduction to Buddhist Ethics	4
5	General Proficiency	1
	Elective Course (One To be selected)	
6	History of Indian Buddhism from the Maurys to Harsa	4
7	Introduction to Buddhist Art History and Archeology	4
8	Introduction to Early Buddha Philosophy	4
Total		21

SEMESTER - III

S. No.	Courses	Credits
1	Vinay Pitaka (Pali)	4
2	Sutta Pitaka (Pali)	4
3	Abhidhamma Pitaka (Pali)	4
4	Anupitka Attaakatha and Vansha Literature	4
5	General Proficiency	1
	Elective Course (One To be selected)	
6	Spread of Buddhism in Asia	4
7	Spread of Buddhism in West (Russia/Europe/America)	4
8	Origin and Development of Indian Buddhist Sects and Their Philosophies	4
Total		21

SEMESTER - IV

S. No.	Courses	Credits
1	Buddhism, Human Rights and Interfaith Harmony	4
2	Buddhist Psychology: Theories and Practice (Vipasāyana)	4
3	Dr. Ambedkar and Navayana Buddhism	4
4	Decline and Revival of Buddhism in India	4
5	General Proficiency	1
6	Dissertation	6
Total		23



School of Buddhist Studies and Civilization

Gautam Buddha University

Proceedings of the Board of Studies

18 July, 2013

The following members attended the meeting of Board of Studies.

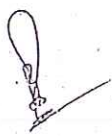
1. Dr. Anand Singh, Dean School of Buddhist Studies & Civilization	Chairman
2. Professor Mahavir Singh, GBU	Member
3. Professor Bhikshu Satyapala, University of Delhi	Member
4. Dr. Praveen Prakash, VBS University	Member
5. Dr. Indu Girish, GBU	Member
6. Dr. Arvind Kumar Singh, GBU	Member
7. Dr. Gurmet Dorje, GBU	Member

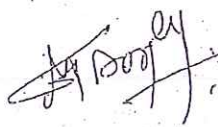
The Board of Studies of the School of Buddhist Studies and Civilization as approved by Hon'ble Vice Chancellor under clause 1.3 of the ordinance of Gautam Buddha University conducted its meeting on 18 July at 10.30 am in the office of the Dean, School of Buddhist Studies and Civilization to discuss and approve the following programmes.

- To Start Five Years Integrated (B.A. Hons + M.A. in Buddhist Studies and Civilization) with an option to exit after completing graduate with degree of B.A. Hons. Buddhist Studies & Civilization (3 years). [copy attached herewith]

- Change in the course structure of ongoing M. Phil Course in Buddhist Studies and Civilization (copy attached herewith)

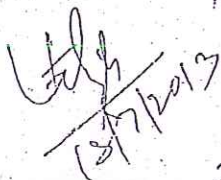
Indu Girish
18.7.2013





AG
18.7.13

W. Singh
18.7.13


18/7/2013





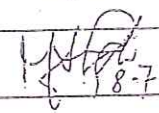
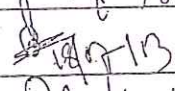
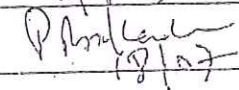
GAUTAM BUDDHA UNIVERSITY

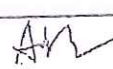
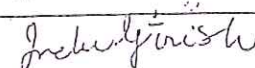
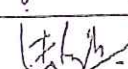
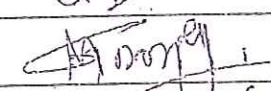
School of Buddhist Studies & Civilization

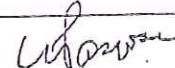

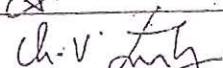
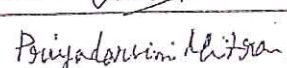
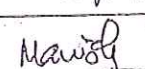
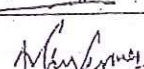
July 18, 2013

Board of Studies meetings of school of Buddhist Studies and Civilization held in room no.104, (Management Building) on 18 July 2013, at 10: 00 am onwards:

Name of the Faculty members and experts who have attended the above said meeting are:

S. No.	Name of Expert	Signature
1	Prof. Mahavir Singh	
2	Prof. Bhikshu Satyapala	
3	Dr. Praveen Prakash	

S. No.	Name of BOS Members	Signature
1	Dr. Anand Singh, Dean (I/C), SoBSC (Chairperson)	
2	Dr. Indu Girish, M.A. Programme Coordinator (Member)	
3	Dr. Arvind Kumar Singh, Ph. D. Programme Coordinator (Member)	
	Dr. Gurmet Dorje, M.Phil. Programme Coordinator (Member)	

S. No.	Name of Invitee Members of School	Signature
1	Dr. Chandershekhar Paswan	
2	Dr. Gyanaditya Shakya	
3	Dr. Chintala Venkat Sivasai	
4	Dr. Priyadarsini Mitra	
5	Dr. Manish T. Mesharam	
6	Dr. Mukesh Kumar Verma	





School of Information and Communication Technology
Gautam Buddha University, Greater Noida

Date: 28-09-2012

GSU/SICT-005/2012

Minutes of the 8th meeting of Board of Studies of the School of Information and Communication Technology held in the conference room of the school on 28.09.2012 at 11:00 AM.

Following members were present:

Internal Members:

1. Dr. Ela kumar
2. Dr. Rajesh Mishra
3. Dr. Gurjeet Kaur
4. Dr. Pradeep Tomar

Dean I/C, School of ICT and Chairperson
 Assistant Professor, School of ICT
 Assistant Professor, School of ICT
 Assistant Professor, School of ICT

External Members

1. Prof. V. K. Jain
2. Prof. A. K. Solanki
3. Prof. Divakar Singh Yadav
4. Prof. Sona Jahriya Minz

Indian Institute of Technology, New Delhi
 BIET, Jhansi
 South Asian University, New Delhi
 JNU, New Delhi

Mr. Navaid Zafar Rizvi, Research/Faculty Associate School of ICT was present in the meeting as a special invitee. However, Prof. Sonajharie Minz, because of some unavoidable reason could not attend the meeting.

The following decisions were taken in the meeting.

- 08.01 Inclusion of IT Law LB505 with 3 credits for the current semester as Elective -1 for M.Tech. (ICT). Science Graduate 3rd Semester.

After the discussions held in the meeting the committee gave its recommendation for inclusion of the subject. The approved course structure of IT Law is enclosed as "Annexure A".

- 08.02 Offer of the subject "Natural Language Processing" for M.Tech. (ICT) ISR specialization students in Second Semester.

Earlier the subject was present in the list of electives of first semester, but keeping in mind the importance of the subject for ISR students, it was proposed to teach it as core subject in second semester in place of AI Programming languages. The committee gave its consent for this replacement. The course curriculum of this subject is already approved in earlier BOS.

- 08.03 Offer of the subject "Pattern matching" as elective to the M. Tech ISR students in Second semester.
 The committee gave its kind recommendation for inclusion of the subject. The course curriculum of this subject is already approved in earlier BOS.

- 08.04 Introduction of Control Theory EC307 to Integrated B. Tech-M.Tech/MBA (ECE) 5th semester students.



Navaid Rizvi

Ela Kumar

Gurjeet Kaur

Pradeep Tomar

Sona Jahriya Minz

The course "Control System" was started in the curriculum and was offered by School of Engineering (E.E. Code). However, to make it more towards Electronics oriented, it was proposed to design it with EE code and it will be taught by faculty of SICT. The committee gave its recommendation to offer the course by School of ICT. The detailed syllabus of the proposed course is enclosed as "Annexure B".

08.05 Proposal to change the name of subject "Engineering Electromagnetic" EC208 to "Electromagnetic Theory" EC208.
Board gave its consent for the same.

08.06 Proposal to modify the course content of "Microwave Engineering EC302".

The board after going through the modified course content gave its consent for the change. The modified syllabus attached as "Annexure C".

08.07 Offer of "Robotics" subject as elective for ISR specialization.

The board gave its recommendation to run the subject. The syllabus for M.Tech. (ICT), ISR specialization is already approved.

08.08 Removal of "Engineering Graphics lab" CE103 from 1st year dual degree student's syllabus. Start of "Cyber Law lab" in place of it. The Dual degree program of SICT was initially having a lab course of Engineering Graphics, and it was taught by faculty of Civil Engineering, however as it was primarily based on software package "AutoCAD", it was felt that, it can be learned by the students on a self learning mode and a more IT relevant lab course namely "Cyber Law Lab" can be introduced in place of it.
After the discussion board gave its approval to replace the course.

08.09 Start of "E-Commerce" CS311 course for the students B. Tech. 3rd semester. (ECE & CSE)

Initially, a course "Principles of Technology Management" was present in the curriculum of Dual degree. It was supposed to be taught by faculty of School of Management. The orientation of the course was becoming more management oriented and it was felt that subject "E-Commerce" would be more relevant to teach to SICT students. It is proposed to be taught by faculty of SICT. The board gave its recommendation to replace the course from "Principles of Technology Management". The detailed syllabus of the said course is enclosed as "Annexure D".

08.10 Introduction of subject "Advanced Computer Architecture" "CS523" to all specializations of M.Tech. (ICT) in 1st semester.

It was felt by the School faculty that "Advanced Computer Architecture" is important subject related with ICT field and it is proposed to teach it to all specialization. After the discussion board gives its approval to introduce the course. The syllabus of the course is already approved in earlier BOS meeting.

08.11 Introduction of "Artificial Intelligence" CS571 in place "Principle of Compiler Design" to M.Tech. (ICT) Science Graduates 3rd Semester students.



Signature

Navid Raza
27

Signature

Signature

Board gave its consent for the same.

- 08.12 Modification of syllabus of "Object-Oriented Software Engineering CS543", "Advanced Database Management System CS525" and "Internet Technology CS201". The faculty proposed to introduce few latest topics in the syllabus and modified the course. Board gave its consent for the same. The modified syllabuses of both courses are attached as "Annexure E, Annexure F and Annexure F1".

- 08.13 Permission to carry dissertation – II work in industry/research organization.

The M.Tech. (ICT) course structure has 6 months dissertation - II component. To bridge the gap between industry and academia it was proposed to permit the students to take some live research oriented actual problem and carry out the dissertation – II in the industry / research organization. The students need to opt one faculty supervisor from SICT and one mentor from the other organization. The student would be required to fulfill all the academic formalities of the SICT, GBU. The Committee gave its recommendation to permit the students to carry out dissertation work in Industry / Research organization to M.Tech. Final Year Students to enhance the possibilities of placements and to bridge the gap between industry and academics.

- 08.14 Inclusion of course work for faculty members registered as research candidates in SICT.

The Ph.D. Program of SICT for "off campus" students has one component as course work. But it was not there for the faculty members of SICT already registered for Ph.D. It is proposed to introduce the course ^{work} ~~was~~ for all irrespective of the fact whether they are internal or external. The minimum CGPA to be maintained is 6.5. It is also proposed that for "off campus" students also minimum required CGPA should be 6.5. Rest of the modalities of coursework is as passed for off campus students. The Committee gave its recommendation for this proposal. Hence now it would be applicable to the research candidates or faculty of SICT and they would be required to do it now. The UGC notification in this regards is attached as "Annexure G".

- 08.15 Increase of seats to 70 (from 60, as decided) and 80 (20 in each specialization) from 60 at M. Tech. level.

The Board took a cognizance of it.

- 08.16 To start two new programme, M.Tech. (Embedded Systems) and M. Tech (CS) M. Tech. with 20 Intake from academic session 2013-14.

The board gave its approval for start of M.Tech. (Embedded Systems) and M.Tech. (CS) from academic session 2013-14. The details of the proposed course structure is enclosed as "Annexure H" and "Annexure I". The admission would be through the same entrance test conducted by the GBU for other M.Tech. (ICT) courses.

- 08.17 Closing further admissions in M. Tech. Science Graduate Program.

The board was informed about the decision of closing M. Tech. Science Graduate Programme w.e.f. academic year 2012-13. The Board took a cognizance of it.

- 08.18

Modification in the course structure of four specialization of M.Tech. (ICT) program. The initial course structure of M.Tech. (ICT) was offered since academic session 2009, and to reflect the various feedback and practical problems, some changes in all specializations were proposed.



Signature

Navaraj R. Joshi

Signature

The revised course structure of all specialisation is attached for the reference. Board discussed the proposed changes and approved the revised course structure attached as 'Annexure II'.

08.12

Proposal to change the name of subject M.Tech. (IT) for Engineering Graduates Programme to M.Tech. ICT.

Board gave its consent for the same.

Meeting ended with the thanks to the chair.

External Members

Prof. V. K. Jain

Prof. A. K. Solanki

Prof. Divaker Singh Yadav

Internal Members

Mr. Navaid Zafar Rizvi

Dr. Pradeep Tomar

Dr. Gurjit Kaur

Dr. Rajesh Mishra

Dr. Ela kumar





Gautam Buddha University

School of Management

July 14, 2012

Proceedings of the X meeting of the Board of Studies

The Tenth meeting of Board of Studies of School of Management was held on 14 July 2012 at 10:30 AM under the chairmanship of Dean (I/C) in her conference room.

The following members were present:

1. Dr. Neeti Rana, Dean (I/C)
2. Dr. Indu Upreti, Associate Professor
3. Dr. Sharadindu Pandey, Assistant Professor

Expert (s)

4. Dr. C. P. Shrimali, MDI Gurgaon

Special Invitee

5. Dr. Dinesh K Sharma, MBA Programme Coordinator
6. Dr. Lovy Sarikwal, Asst. Professor
7. Dr. Ritu Srivastava, Asst. Professor
8. Dr. Rakesh Srivastava, Asst. Professor

Due to some urgency, one expert, Dr. Ajay Pandit, FMS, University of Delhi, Delhi could not attend the meeting.

The following decisions/observations were made in the meeting:

1. The Course Structure of MBA programme (2011-13):
 - a. The course Outlines of III Sem were discussed and approved.
 - b. Pedagogy should be more application based for teaching Management courses.
 - c. Job requirement information should be obtained and incorporated in course structure.
2. The Course Structure of MBA programme (2012-14):
 - a. The course Outlines of I Sem were discussed and approved.
 - b. Cases should be identified before commencement of course.
 - c. Integrated cases may be sorted out by faculty members for team teaching.
 - d. Applications of IT should be suitably incorporated in each discipline.
3. The Course structure of Integrated MBA (2010-15):





Gautam Buddha University

School of Management

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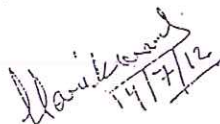
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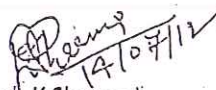
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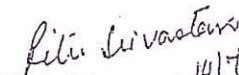
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 - a. The course Outlines of III Sem were discussed and approved.
 - b. Pedagogy should be more application based for teaching Management courses.
 - c. Job requirement information should be obtained and incorporated in course structure.
2. The Course Structure of MBA programme (2012-14):
 - a. The course Outlines of I Sem were discussed and approved.
 - b. Cases should be identified before commencement of course.
 - c. Integrated cases may be sorted out by faculty members for team teaching.
 - d. Applications of IT should be suitably incorporated in each discipline.
3. The Course structure of Integrated MBA (2010-15):

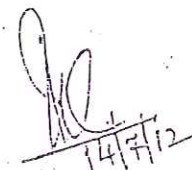


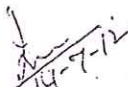
- The course outlines of V Sem were discussed and approved.
 - Cases may be subscribed from reputed agency like Harvard, IIM Ahmedabad
 - In course code MB305 (Managing Small and Medium Enterprises) course outline, expression 'relevant labour laws' should be specified.
 - In course code MB307 (Business Research Methods) course outline, 'report writing portions may be more emphasized.
 - In course code MB311 (E-Business) course outline, topics like 'email etiquette and e-procurement' part may be added.
 - In course code MB313's (Event Management) course outline, Pedagogy may incorporate experience based learning, sessional evaluation system. Other technical suggestions in detail were also given.
4. The Course Structure of Integrated MBA (2011-16):
- a. The Course Outlines of I Semester were discussed and approved.
5. The Course Structure of Integrated MBA (2012-17):
- a. The Course Outlines of I Semester were discussed and approved.
6. The PDL course for MBA I and II semester must be given letter grade in conformity with the university grading system. The grades must reflect on the students mark sheet as non-credit compulsory course. The CGPA of student will not be affected.
7. Ph D Course structure (Odd Semester, 2012) was discussed and approved.
- a. The work 'Advance course in' may be prefixed before title of 'Research Methodology' course.

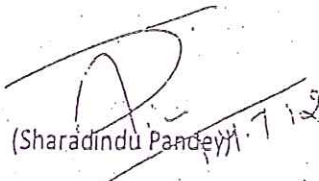

(Dr. Lovy Sarikwal)

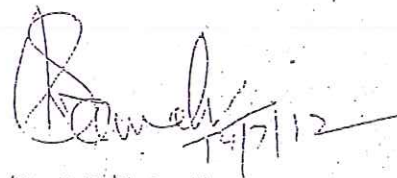

(Dr. Dinesh K Sharma)



(Dr. Ritu Srivastava)


(Dr. Rakesh Srivastava)


(Dr. Indu Upreti)


(Sharadindu Pandey)


(Dr. C. P. Shrimali)


(Dr. Neeti Rana)





Gautam Buddha University School of Management

Jan. 05, 2013

Proceedings of the XI meeting of the Board of Studies

The Eleventh meeting of Board of Studies of School of Management was held on Jan. 05, 2013 at 10:30 AM under the chairmanship of Dean (I/C) in her conference room.

The following members were present:

1. Dr. Neeti Rana, Dean (I/C)
2. Dr. Indu Upreti, Associate Professor
3. Dr. Sharadindu Pandey, Assistant Professor & Ph.D. coordinator

Expert (s)

4. Dr. Ajay Pandit, FMS, University of Delhi, Delhi

Special Invitee

5. Dr. Ritu Srivastava, MBA coordinator
6. Dr. Rakesh Srivastava, Integrated MBA coordinator
7. Dr. Varsha Dixit, Assistant Professor


Due to some urgency, one expert, Dr. C. P. Shirmali, MDI Gurgaon could not attend the meeting.

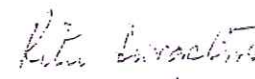
The following decisions/observations were made in the meeting:

1. The Course Structure of MBA programme (2011-13):
 - a. The course Outlines of IV Sem were discussed and approved.
 - b. Text book information should be complete in all course outlines. Some content related corrections may be made in 'Competitive Strategy' course.
2. The Course Structure of MBA programme (2012-14):
 - a. The course Outlines of II Sem were discussed and approved.
3. The Course structure of Integrated MBA (2010-15):
 - a. The course outlines of VI Sem were discussed and approved.
 - a. The title of the course code MB306 may be 'Services Management'. References should be recent. Indian adaptation of foreign books may be recommended.
 - a. Course code MB312 shall be 3 credit course. In session plan, Modifications are suggested for incorporation.



- The title of the course code MB310 may be 'Global Economic Environment and Geo-Politics'. Content may be modified accordingly.
 - In course code MB302, duplications from preceding semester may be excluded, and remaining content may be re-organized.
- 4. The Course Structure of Integrated MBA (2011-16):
 - a. The Course Outlines of IV Semester were discussed and approved.
- 5. The Course Structure of Integrated MBA (2012-17):
 - a. The Course Outlines of II Semester were discussed and approved.
- 6. Ph D Course structure (Even Semester, 2012-13) was discussed and approved.



(Dr. Varsha Dixit)


(Ritu Srivastava)


(Dr. Rakesh Srivastava)

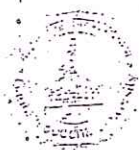

(Dr. Indu Upreti)


(Sharadindu Pandey)


(Dr. Ajay Pandit)


(Dr. Neeti Rana)





Gautam Buddha University
School of Management

July 26, 2013

Proceedings of the XII meeting of the Board of Studies

12th meeting of Board of Studies of School of Management was held on July 26th, 2013 at 10:00 AM under the chairmanship of Dean (I/C) in her conference room.

The following members were present:

1. Dr. Neeti Rana, Dean (I/C)
2. Dr. Indu Upreti, Associate Professor
3. Dr. Varsha Dixit, Assistant Professor

Expert (s)

4. Prof. Ajay Pandit, University of Delhi
5. Dr. S. P. Singh, IIT Delhi

Special Invitee

6. Dr. Rakesh Kumar Srivastava, Integrated MBA Programme Coordinator
7. Dr. Sharadindu Pandey, Ph.D. Programme Coordinator
8. Dr. Subhojit Banerjee, Assistant Professor
9. Dr. Ombir Singh, Assistant Professor

The following decisions/observations were made in the meeting:

1. The Course Structure of MBA programme (2012-14):
 - a. The course Outlines of III Sem. were discussed and approved.
 - b. In strategy elective, the course 'Competitive Strategy' may replace 'Change Management'. Some content related suggestions communicated for competitive strategy course e.g. supplier selection aspects, capacity expansion and strategic facility layout etc.
 - c. In the core paper of Strategic Management, more global/ geocentric content may be added
 - d. Module related to 'Global issues' may be incorporated in all courses.
 - e. The above suggestions may be adopted for coming batches also.
2. The Course Structure of MBA programme (2013-15):
 - a. The course Outlines of I Sem. were discussed and approved.



3. The Course structure of Integrated MBA (2010-15):
- The course outlines of VII Sem were discussed and approved.
 - Open electives should be 2 credit course.
 - There should be six specialization papers. Hence total credit for the semester would be 22.
 - The title of the 'Development Studies' may be replaced with 'Development Initiative: Policy, Plans and Programmes'. Content may be amended accordingly.
 - For 'Six Sigma' course, Minitab software may be purchased.
 - The course of 'Spread Sheet Modelling for Business Applications' may be modified as 'Spread Sheet Modelling for Business Decisions'.
 - In 'Foreign languages' course, Spanish and French may be offered.
 - Summer Project-I should be 2 credit course for 2-4 weeks and Summer Project-II should be 3 credit course for 6-8 weeks.
 - All the elective and open elective of VII sem. are 2 credit course
 - Two new courses 'Six Sigma' and 'Spread sheet Modeling for Business Decisions' Introduced in operation's area.
 - The above suggestions may be adopted for coming batches also:
4. The Course Structure of Integrated MBA (2011-16):
- The Course Outlines of IV Semester were discussed and approved.
5. The Course Structure of Integrated MBA (2012-17):
- The Course Outlines of II Semester were discussed and approved.
6. The Course Structure of Integrated MBA (2013-18):
- The Course Outlines of II Semester were discussed and approved.
7. Ph D Course structure (Odd Semester, 2012-13) was discussed and approved.
- A course related to 'Computer's Applications in Research' (1 credit) may be offered.
 - A course related to 'Writing Dissertation & Research papers' (1 credit) may be offered.
 - Special sessions from Publishing houses like Springer, Elsevier etc may be conducted
 - Anti-Plagiarism software may be purchased/arranged.
8. Subscription from Harvard Business Publishing for Management student was discussed and approved. While purchasing, the best package should be purchased.



9. All the reading material should be latest as possible and full reference should be provided

(Dr. Varsha Dixit)

(Dr. Subhojit Banerjee)

(Dr. Rakesh Srivastava)

(Dr. Indu Upreti)

(Sharadindu Pandey)

(Dr. Ombir Singh)

(Dr. S. P. Singh)

(Dr. Ajay Pandit)

(Dr. Neeti Rana)



School of Engineering
Gautam Buddha University

Proceedings of the 6th Meeting of Board of Studies

Fifth Meeting of the Board of Studies was held on December 08, 2012 at 10:00 a.m. in Committee Room of the School of Engineering. Following members are invited for the meeting:

- | | | |
|--|--------------|--|
| 1. Dr. Vandana Sehgal, Dean, SoE |Member | |
| 2. Dr. G.V.Ramana, Professor, Civil Engineering, IIT Delhi |Member | |
| 3. Prof. Vishal Verma, Electrical Engineering, DTU |Member | |
| 4. Dr. R.K.Pandey, Professor, Mechanical Engineering, IIT Delhi |Member | |
| 5. Dr. Shilpa Pal, Civil Engineering SOE, GBU |Member | |
| 6. Dr. Satpal Sharma, Mechanical Engineering, SOE |Member | |
| 7. Dr. Yogesh Chauhan, Electrical Engineering, SOE, GBU |Member | |
| 8. Prof. R. K. Garg, Mechanical Engineering, DCR University |Expert | |
| 9. Prof. Sudheer Kumar, Civil Engineering, MNIT Jaipur |Expert | |
| 10. Dr. N.Sridharan, HOD, Regional Planning, SPA |Expert | |
| 11. Prof. H.O.Gupta, (Electrical Engg.) Director JP Institute of Tech. |Expert | |
| 12. Prof. Amjad Masood, Civil Engineering, AMU |Expert | |
| 13. Prof. Shakeb Ahmad Khan, Professor, JMI |Expert | |
| 14. Dr. Shobha Ram, Civil Engineering, SoE |Invited | |
| 15. Dr. Athar Hussain, Civil Engineering, SoE |Invited | |
| 16. Dr. H.C.Thakur, Mechanical Engineering, SoE |Invited | |
| 17. Dr. Anupam Das, Mechanical Engineering, SoE |Invited | |
| 18. Dr. M.A.Ansari, Electrical Engineering, SoE |Invited | |
| 19. Dr. Shabana Urooj, Civil Engineering, SoE |Invited | |

Electrical

Following agenda items were discussed in the meeting:

Item No. 6.1 Approval of the syllabus for courses of various programmes-

- 6.1.1 Approval of syllabus of various courses of 6th semester of 05 years Integrated Dual Degree Programme (B. Tech+ M.Tech. MBA) in Civil, Electrical and Mechanical Engineering.
- 6.1.2 Approval of syllabus of various courses of 4th semester of 02 years M. Tech. Programme in Environmental Engineering, Industrial Engineering & Management, Power Systems and Masters in Urban and Regional Planning.
- 6.1.3 Approval of syllabus of various courses of 4th semester of 03 years Extended M. Tech. Programme in Environmental Science and Engineering.



6.14 Approval of syllabus of various courses of 2nd semester of 02 years M. Tech. Programme in Structural Engineering.

6.15 Approval of syllabus of various courses of 2nd semester of 05 years Programme in B.Arch.

Item No. 6.2 Approval of course structure of 02 years M. Tech programme in Instrumentation and Control Engineering, Manufacturing Engineering, Thermal Engineering.

Item No. 6.3 Minor revision in course curriculum 05 years Integrated Dual Degree Programme (B. Tech+ M.Tech./MBA) in Civil, Electrical and Mechanical Engineering.

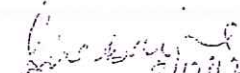
Item No. 6.4 Minor revision in course curriculum of 02:03 Years M. Tech. Programmes.

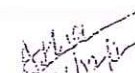
Item No. 6.6 The specifications of various equipments of Fluid Machine Lab (ME 313) of 5th semester Engg. Lab. were discussed and approved.

Item No. 6.7 Due to unforeseen circumstances, Dr. G.V.Ramana could not attend the BOS meeting, however he has sent his comments which have been included in the syllabus. (Attached herewith)

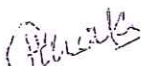
Meeting was ended with a vote of thanks to chair.


(Shobha Ram)


(Shabana Lirooj)


(Athar Hussain)

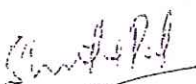

(Nirmitra Mehrotra)



(H.C.Thakur)



(Anupam Das)



(M.A.Ansari)

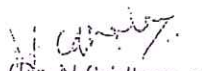

(Satpal Sharma)

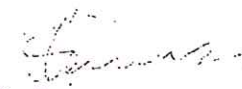

(Shilpa Pal)



(Y.K.Chauhan)



(Shakeb Ahmad Khan)

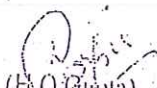

(Amjad Masood)



(Dr. N.Sridharan)



(Sudheer Kumar)


(R. K. Garg)


(Vishal Sharma)


(H.O. Gupta)


(Vardana Sehgal)


(R.K. Pandey)



Gautam Buddha University, Gr. Noida

School of Engineering

Electrical Engineering Department

Agenda Points for 7th Board of Studies (BOS) meeting (11th June 2013)

1. To discuss and approve the revision in course structure for five year dual degree integrated programme (B.Tech.+M.Tech./MBA) in electrical engineering.
2. To discuss and approve the finalization of syllabus for the 7th semester of integrated programme in electrical engineering for (2010-15) batch and onwards.
3. To discuss and approve the revision of course structure of 02 Years M.Tech Programme in Power Systems Engineering.
4. To discuss and approve the revision of list of electives and specialized electives of 02 Years M.Tech Programme in Power Systems Engineering.
5. To discuss and approve the syllabus of various subjects of 02 Years M.Tech Programme in Power System Engineering.
6. To discuss and approve the modification in nomenclature to differentiate between 05 years Integrated Dual Degree Programme (B.Tech.+M.Tech./MBA) in Electrical Engg. and 02 years M. Tech. Programme in Power Systems Engineering.
7. To discuss and approval of Dual Degree Programme (B.Tech.+M.Tech./MBA) with specialization in Instrumentation and Control course structure.
8. Any other agenda to be discussed with the permission of BOS chairperson.



Gautam Buddha University, Gr. Noida

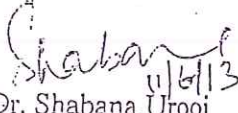
School of Engineering

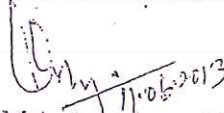
Electrical Engineering Department

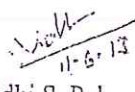
Minutes of 7th BOS meeting held on 11th June 2013

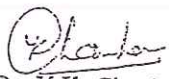
The 7th BOS has discussed and approved the following points of the agenda of the BOS meeting.


1. The BOS has approved the revision in course structure for five year dual degree integrated programme (B.Tech.+M.Tech./MBA) in Electrical Engineering.
2. The BOS has approved the finalization of syllabi for the 7th semester of integrated programme in Electrical Engineering for 2010-15 batch and onwards (EE401, EE403, EE405, Elective-I, Elective-II, EE411, EE433), detail syllabi attached.
3. The BOS has approved the revision of course structure of 02 Years M.Tech Programme in Power Systems Engineering. In place of 6 subjects, 5 subjects have to be taught in semester I, II and III and in place of 2 electives, only one elective has been offered in semester I and II.
4. The BOS has approved the revision of list of electives and specialized elective subjects of 02 Years M.Tech Programme in Power Systems Engineering.
5. The BOS has approved the syllabus of various courses of 02 Years M.Tech Programme in Power System Engineering. These subjects are- EEP513, EEP514, EEP516, EEP518, EEP613, EEP623, EEP627, EEP629, EEP504, EEP506, EEP508 and syllabus is attached.
6. The BOS has approved the modification in nomenclature to differentiate between 05 years Integrated Dual Degree Programme (B.Tech.+M.Tech./MBA) in Electrical Engg. and 02 years M. Tech. Programme in Power Systems Engineering. The nomenclature for M.Tech 02 year programme in Power System Engineering is changed from EE to EEP.
7. The BOS has approved the course structure of Dual Degree Programme (B.Tech.+M.Tech.) with specialization in Instrumentation and Control.
8. The BOS has agreed to propose to start two new 02 year M.Tech. Programmes in Instrumentation & Control and Power Electronics & Drives.



Dr. Shabana Urooj
(BOS Member)

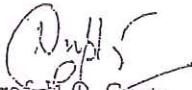

Dr. M.A. Ansari
(BOS Member)

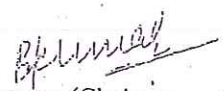

Dr. Nidhi S. Pal
(BOS Member)


Dr. Y.K. Chauhan
(BOS Member)


Prof. Vishal Verma
(BOS Member)


Prof. A.Q. Ansari
(BOS member)


Prof. H.O. Gupta
(BOS Member)


Dr. Ela Kumar, (Chairperson, BOS, SOE)



Minutes of Meeting of 7th BOS held on 11 June 2013

The 7th BOS meeting of School of Engineering (Civil, Mechanical & Electrical Engineering) was held on 11 June 2013 in Dean (I/c) office. The following external experts and faculty members of School of Engineering (Civil, Mechanical & Electrical Engineering) were present in the meeting.

1. Dean (I/c), SOE,
2. Prof. R. K. Garg, DCRUTS, Murthal (Sonapat), External Expert (Mechanical Engineering).
3. Prof. S. K. Garg, DTU, Delhi, External Expert (Mechanical Engineering).
4. Dr. R. K. Pandey, IIT, Delhi, External Expert (Mechanical Engineering).
5. Dr. Satpal Sharma, Asst. Prof. - Internal Member (Mechanical Engineering).
6. Dr. Anupam Das, Asst. Prof. - Internal Member (Mechanical Engineering).
7. Prof. Amjad Masood, AMU, External Expert (Civil Engineering).
8. Prof. Khalid Moin, JMI, External Expert (Civil Engineering).
9. Prof. A.K. Sahu, DTU, External Expert (Civil Engineering).
10. Dr. Shilpa Paul, Asst. Prof. - Internal Member (Civil Engineering).
11. Dr. Athar Hussain, Asst. Prof. - Internal Member (Civil Engineering).
12. Dr. Shobha Ram, Asst. Prof. - Internal Member (Civil Engineering).
13. Prof. Vishal Verma, Electrical Engineering, DTU.
14. Prof. Hari Om Gupta, Professor, JIIT.
15. Prof. A.Q. Ansari, Professor, Jamia.
16. Dr. Yogesh K. Chauhan, Asst. Prof. - Internal Member (Electrical Engineering).
17. Dr. Nidhi Singh Paul, Asst. Prof. - Internal Member (Electrical Engineering).



The following points were discussed and approved-

Agenda Item No.	Discussion and approval of points
7.01	Restructuring of scheme for Integrated B. Tech. + M. Tech. /MBA of Mechanical Engineering was discussed and approved.
7.02	The course restructure (divided in Unit - I to Unit - VI) of Engineering Workshop (ME 102) / Engineering Graphics (ME 103) - <u>Courses will be swapped with each other to make the load distribution uniform in even and odd semesters</u> was discussed and approved.
7.03	The course restructure (Unit - I to Unit - VI) of Material Science (ME 201) was discussed and approved.
7.04	The course restructure (divided in Unit - I to Unit - VI) of Manufacturing Technology -I (ME 203) was discussed and approved.
7.05	The course restructure (Unit - I to Unit - VI) of Kinematics of Machines (ME 205) was discussed and approved.
7.06	The course restructure (Unit - I to Unit - VI) of Engineering Thermodynamics (ME 207) was discussed and approved.
7.07	The course restructure (divided in Unit - I to Unit - VI) of Mechanics of Materials- I (ME 209) was discussed and approved.
7.08	To discuss and approve the course restructure of Manufacturing Technology Lab -I (ME 211) was discussed and approved.
7.09	The course restructure of Mechanics of Materials Lab - I (ME 213) was discussed and approved.
7.10	The course restructure (divided in Unit - I to Unit - VI) of Machine Drawing (ME 215) was discussed and approved.
7.11	The course restructure (divided in Unit - I to Unit - VI) of Manufacturing Technology -II (ME 202) was discuss and

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	Engines and Gas Turbines (ME 309) was discussed and approved.
7.24	The course restructures of Heat and Mass Transfer Lab (ME 311) was discuss and approved.
7.25	The course restructures of Fluid Machines Lab (ME 313) - <u>Addition of 3 experiments</u> was discussed and approved.
7.26	The course restructure of Applied Thermodynamics Lab (ME 315) was discussed and approved.
7.27	The course restructure (divided in Unit - I to Unit - VI) of Mechanical Vibrations (ME 302) was discussed and approved.
7.28	The course restructure (divided in Unit - I to Unit - VI) of Machine Design -II (ME 304) was discussed and approved.
7.29	The course restructure (divided in Unit - I to Unit - VI) of Refrigeration and Air Conditioning (ME 306) was discussed and approved.
7.30	The course restructure (divided in Unit - I to Unit - VI) of Automobile Engineering (ME 308) was discussed and approved.
7.31	The course restructure (divided in Unit - I to Unit - VI) of Industrial Engineering (ME 310) - <u>Increasing credits of the course from 3 to 4</u> was discussed and approved.
7.32	The course restructure of Mechanical Vibrations Lab (ME 312) - <u>Course code was changed from ME 314 to 312 to make continuity.</u> - <u>Addition of 2 experiments</u> was discussed and approved.
7.33	To discuss and approve the course restructure of Refrigeration and Air Conditioning Lab (ME 314) - <u>Course code was changed from ME 316 to 314 to make continuity</u> was discussed and approved.
7.34	The course restructure of Automobile Engineering Lab (ME 316) - <u>Course code was changed from ME 318 to 316 to make continuity</u> was discussed and approved.
7.35	The course structure of Power Plant Engineering (ME 401) (New Approval) was discussed and approved.
7.36	The course structure of Computer Aided Design (ME 403) (New



	approved.
7.12	The course restructure of Dynamics of Machines (ME 204) was discussed and approved.
7.13	The course restructure (divided in Unit - I to Unit - VI) of Applied Thermodynamics (ME 206) was discussed and approved.
7.14	The course restructure (divided in Unit - I to Unit - VI) of Fluid Mechanics (ME 208) was discussed and approved.
7.15	The course restructure (divided in Unit - I to Unit - VI) of Engineering Measurements & Instrumentation (ME 210) - As this subject was common to Civil, Electrical and Mech. But the content was not relevant to Mechanical Engg. students. Hence syllabus was redesigned and Coded according to Mech. Engg. students (Addition of course and New Approval) was discussed and approved.
7.16	The course restructure of Fluid Mechanics Lab (ME 212) was discussed and approved.
7.17	The course restructure of Dynamics of Machines Lab (ME 214) - <u>Code was changed from ME 210 to ME 214 to make continuity</u> was discussed and approved.
7.18	The course restructure of Engineering Measurements & Instrumentation Lab (ME 216) (Addition of lab and New Approval) was discussed and approved.
7.19	The course restructure of Heat and Mass Transfer (ME 301) was discussed and approved.
7.20	The course restructure (divided in Unit - I to Unit - VI) of Machine Design - I (ME 303) was discussed and approved.
7.21	The course restructure (divided in Unit - I to Unit - VI) of Mechanics of Materials - II (ME 305) was discuss and approved.
7.22	The course restructure (divided in Unit - I to Unit - VI) of Fluid Machines (ME 307) was discussed and approved.
7.23	The course restructure (divided in Unit - I to Unit - VI) of IC



	Approval) was discussed and approved
7.37	The course restructure (divided in Unit - I to Unit - VI) of Operation Research (ME 505)/ Modeling and Simulation (ME 508) - <u>Courses will be swapped with each other to make the load distribution uniform in even and odd semesters (New Approval)</u> was discussed and approved.
7.38	The course structure of Industrial Automation and Robotics (ME 507) (New Approval) was discussed and approved
7.39	The course structure of Finite Element Methods (ME 501) (New Approval) was discussed and approved
7.40	The course structure of Industrial Automation and Robotics Lab (ME 511) (New Approval) was discussed and approved
7.41	The course structure of Computer Aided Design Lab (ME 413) (New Approval) was discussed and approved.
7.42	The course restructure of Seminar (ME 415/ ME 515) was discussed and approved.
7.43	The course structure of Industrial Training (MEE 613) was discussed and approved
2 Years M. Tech. in Industrial Engineering & Management	
7.44	The Scheme structure of 2 Years M. Tech. in Industrial Engineering & Management Course Structure, - I to IV Semesters was discussed and approved.
7.45	The course restructure (divided in Unit - I to Unit - VI) of Manufacturing & Enterprise Resource Planning (MEI 501) was discussed and approved.
7.46	The course restructure (divided in Unit - I to Unit - VI) of Production & Operations Management (MEI 503 / MEE 607) was discussed and approved.
7.47	The course restructure (divided in Unit - I to Unit - VI) of Operation Research (MEE 505) / Modeling and Simulation (MEE 508) - <u>Courses will be swapped with each other to make the load</u>



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	distribution uniform in even and odd semesters was discussed and approved.
7.48	The course restructure (divided in Unit - I to Unit - VI) of Total Quality Management (MEI 509) was discussed and approved.
7.49	The course structure of Flexible and Computer Integrated Manufacturing (MEI 502) (New Approval) was discussed and approved.
7.50	The course structure of Quality Engineering (MEI 505) (New Approval) was discussed and approved.
7.51	The course restructure (divided in Unit - I to Unit - VI) of Supply Chain Management (MEI 506) was discussed and approved.
7.52	The course structure of Industrial Ergonomics (MEI 510) (New Approval) was discussed and approved.
7.53	The course restructure of Project (MEI 512) was discussed and approved.
7.54	The course restructure of Flexible and Computer Integrated Manufacturing Lab (MEM 514) (New Approval) was discussed and approved.
7.55	The course restructure (divided in Unit - I to Unit - VI) of Project Management (MEI 601) was discussed and approved.
7.56	The course structure of Reliability Engineering (MEI 601) (New Approval) was discussed and approved.
7.57	The course restructure (divided in Unit - I to Unit - VI) of Procurement and Materials Management (MEI 605) was discussed and approved.
7.58	The course restructure (divided in Unit - I to Unit - VI) of Logistics Management (MEI 607) was discussed and approved.
7.59	The course structure of Product Design and Development (MEI 609) (New Approval) was discussed and approved.
7.60	The course restructure of Dissertation (Preliminary) (MEI 611) was discussed and approved.

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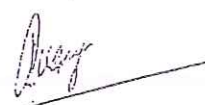


7.61	The course restructure of Dissertation (MEI 602) was discussed and approved.
7.62	The question paper format (no. of questions) for Mid Term and End Term examination and distribution of sessional marks for theory and lab courses was discussed and approved.
7.63	

Meeting was ended with a vote of thanks to chair.

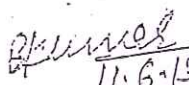

(Dr. R. K. Pandey)

(Prof. S. K. Garg)


(Prof. R. K. Garg)


(Dr. Anupam Das)


(Dr. Satpal Sharma)


(Dr. Ela Kumar)





School of Engineering
Gautam Buddha University

AGENDA FOR THE 7TH MEETING OF BOARD OF STUDIES

Seventh Meeting of the Board of Studies is scheduled to be held on June 11, 2013 at 10:00 a.m. in Committee Room of the School of Engineering.

Following agenda items will be discussed and finalized in the meeting:

Item No. 7.1 DEPARTMENT OF CIVIL ENGINEERING

- 7.1.1. Revision of the course structure of 05 years Integrated Dual Degree Programme (B.Tech+ M.Tech./MBA) in Civil Engineering 7th semester onwards.
- 7.1.2. Approval of syllabus of various courses of 7th semester of 05 years Integrated Dual Degree Programme (B.Tech+ M.Tech./MBA) in Civil Engineering.
- 7.1.3. Revision of the course structure of 02 years M. Tech. Programme in Structural Engineering
- 7.1.4. Approval of syllabus of various courses of 3rd semester of 02 years M. Tech. Programme in Structural Engineering and other minor revisions in the syllabus of the 1st and 2nd semester.
- 7.1.5. Change of Nomenclature for 05 years Integrated Dual Degree Programme and 02 years M. Tech. Programme in Civil Engineering.
- 7.1.6. Revision of the course structure of 02 years M. Tech. Programme in Environmental Engineering.



School of Engineering
Gautam Buddha University

Proceedings of the 7th Meeting of Board of Studies

Seventh Meeting of the Board of Studies was held on June 11, 2013 at 10:00 a.m. in Committee Room of the School of Engineering. Following members are invited for the meeting:

- | | |
|---|-----------------|
| 1. Dr. Ela Kumar, Dean, SOE | Member, BOS |
| 2. Dr. Shilpa Pal, Civil Engineering SOE, GBU | Member, BOS |
| 3. Prof. Amjad Masood, Civil Engineering, AMU | External Member |
| 4. Prof. Khalid Moin, Professor, JMI | External Member |
| 5. Dr. Shobha Ram, Civil Engineering, SOE | Internal Member |
| 6. Dr. Athar Hussain, Civil Engineering, SOE | Internal Member |

Following agenda items were discussed in the meeting:

Item No. 7.1 REVISIONS IN CIVIL ENGINEERING

- 7.1.1 Revision of the course structure of 05 years Integrated Dual Degree Programme (B. Tech+ M.Tech./MBA) in Civil Engineering 7th semester onwards. Changes have been done such that from 8th semester of 05 yr integrated course matches with 2nd semester of M.Tech specialization onwards in both specialization such as Structural Engineering and Environmental Engineering. (Annexure C1)
- 7.1.2 Approval of syllabus of various courses of 7th semester of 05 years Integrated Dual Degree Programme (B. Tech+ M.Tech./MBA) in Civil Engineering namely Foundation Engineering, Estimating and Costing lab. (Annexure C2)
- 7.1.3 Revision of the course structure of 02 years M. Tech. Programme in Structural Engineering. (Annexure C3)
- 7.1.4 Approval of syllabus of various courses of 3rd semester of 02 years M. Tech. Programme in Structural Engineering. (Annexure C4)
- 7.1.5 Approval of syllabus of some courses of 1st semester which have been added in electives such as CES 507: Advanced Construction Materials, CES 509: Solid Mechanics, CES 511: Advanced Soil Mechanics and Foundation (Annexure C5)
- 7.1.6 Course codes of 2nd semester of 02 years M. Tech. Programme in Structural Engineering have been revised according to the course structure as revised.
- 7.1.7 Nomenclature has been changed to differentiate between 05 years Integrated Dual Degree Programme and 02 years M. Tech. Programme in civil engineering. i.e. in Structural engineering specialization subjects have been given code as follows

Structural Engineering: CES

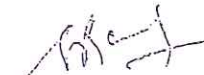



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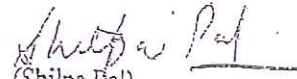
Environmental Engineering: CEE

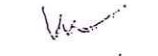
- 7.1.8 Revision of the course structure of 02 years M. Tech. Programme in Environmental Engineering. (Annexure C6)
- 7.1.9 Proposal to introduce a new specialization for civil engineering students at M.Tech Level i.e. Construction Planning and Management


Meeting was ended with a vote of thanks to chair.

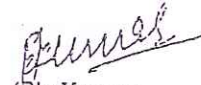

(Shobha Ram)


(Athar Hussain)


(Shilpa Pal)


(Khalid Moin)


(Amjad Masood)


(Ela Kumar)



Gautam Buddha University
School of Biotechnology
Greater Noida
Proceedings of 7th BOS meeting of SoBT

A meeting of BOS of school of biotechnology was held on 28th August, 2012 in the conference room of Dean, School of Biotechnology. The following members attended the meeting:

1. Prof. Mahavir Singh, Dean, School of Biotechnology
2. Prof. S.N. Mukhopadhyay, School of Biotechnology
3. Dr. J.P. Mural, HOD, School of Biotechnology
4. Dr. Shakti Sahi, Assistant Professor, School of Biotechnology
5. Dr. Sachin Teotia, Assistant Professor, School of Biotechnology
6. Prof. R.P. Singh, Department of Biotechnology, IIT-Roorkee (External Expert)
7. Prof. J.P. Khurana, Department of Plant Molecular Biology, University of Delhi, South Campus, New Delhi (External Expert)

The following agenda were placed in the meeting for discussion:

7.1 Approval of Course Curriculum of Ph.D Course Work

- 7.2 Modifications in the Course Structure of different M.Tech (Biotechnology) programs of School of Biotechnology from Academic session 2013 onwards.
- A. Modifications in the Course Structure of M.Tech (Biotechnology)-2 years
 - B. Modifications in the Course Structure of M.Tech (Biotechnology)-3 years
 - C. Modifications in the Course Structure of Integrated B.Tech+M.Tech/MBA (Biotechnology)-5 years

The following recommendations were made:

1. Agenda 7.1: The course curriculum of Ph.D Course work was thoroughly reviewed for academic session 2011 and 2012 and after requisite modifications approved by Board of Studies (Annexure-1).
 - i. The course in Biochemistry and Biophysics will be offered as two separate courses.
 - ii. The course in Microbial and Immunotechnology will be offered as two separate courses.
2. Agenda 7.2: The course structure of the following programs for the academic session 2013 were reviewed and approved:
 - A. M.Tech (Biotechnology) 2 years
 - B. M.Tech (Biotechnology) 3 years
 - C. Integrated B.Tech+M.Tech/MBA (Biotechnology)-5 years
 - i. In the 3rd semester, 5th semester and 9th semester in 2 year, 3 year and 5 year programs, respectively, the weightage of the Minor Project has been increased to 4 credits from 2 credits. The student will also have to do course work for 12 credits along with the minor project.
 - A. M.Tech (Biotechnology) 2 years
 - i. A 2 credit course on Principles of Management and Entrepreneurship has been added in I semester.
 - ii. Microbial Biotechnology has been shifted from I semester to III semester.



C.P.

J.P.

S.N.

J.P.

Shakti Sahi

28.8.12

- iii. Instead of Elective-1 and 2 in II semester, 2 credit course on 'Enzyme Technology' is being offered.
- iv. The course in Immunotechnology has been renamed as Immunology and Immunotechnology.
- v. The course in Bioinformatics has been renamed as Bioinformatics and Computational Biology and the credits increased to 3 from 2.


B. M.Tech (Biotechnology) 3 years


- i. Basic Mathematics which was being offered as a non-credit course will be of 2 credits in I semester.
- ii. The theory course on Information Technology for Biologists is being removed. However, the laboratory of this course will be offered to the students as it is of significance for them.
- iii. An open Elective of 2 credits is being offered in place of Developmental Biology.
- iv. A 3 credit course on Microbial Biotechnology is being offered in V Semester instead of III Semester.
- v. In semester IV in place of Elective-1 and 2 course on Molecular Virology is being offered.


C. Integrated B.Tech+M.Tech/MBA (Biotechnology)-5 years

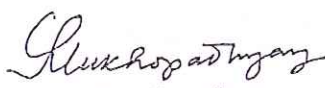
- i. In semester III courses in Microbiology and Genetics have been clubbed into Life Science-III.
- ii. A course on Biomolecules has been introduced in place of Fundamentals of Biochemistry in semester III.
- iii. Courses in Animal Physiology and Physical/Inorganic Chemistry have been introduced in III semester.
- iv. In semester V Open-Elective has been introduced in place of Environmental Engineering-II as there is a course in Environmental Biotechnology in VI semester.
- v. A course on Industrial & Food Biotechnology has been introduced in VII semester in place of Molecular carcinogenesis and therapy.
- vi. In semester VIII in place of Elective-1 and 2 course in Molecular Therapeutics has been added.

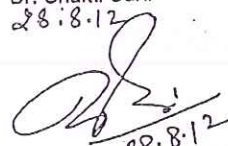
The meeting ended with thanks to the chair and external experts.

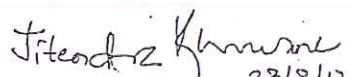

Dr. Sachin Teotia

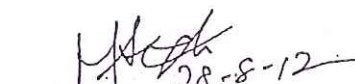

Dr. Shakti Sahi
28.8.12


Dr. Jai Prakash Mural


Prof. S.N. Mukhopadhyay


Prof. R.P. Singh
28.8.12


Prof. J.P. Khurana
28/8/12


Prof. Mahavir Singh
28-8-12

School of Humanities and Social Sciences Savitribi Phule Pune University

Minutes of the Meeting of the Board of Studies conducted on 23 August 2013

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/007/HSS/07/2013-06, was convened in the office of the Dean of the School to update and finalize the detailed contents of the following programme:

Master in Mass Communication (MMC).


The meeting was attended by the following members:

1. Prof. Mahavir Singh, Dean and Chairman
2. Dr. Sunetra Sen Narayan, Expert Member, IIMC- New Delhi
3. Dr. Om Prakash, Head, Department of Mass Communication and Media Studies
4. Dr. Sibha, Faculty Member from the School- Absence of Leave was granted by the Chair
5. Dr. Hari Om, Invited Member


The Board of Studies reviewed the existing programme structure and unanimously modified the same after deliberations. In addition to the review, the Board also discussed the detailed course content and approved the topic-wise syllabi of different courses offered in the programme. It was decided that the Head of the Department in consultation with the Dean, HSS, should make minor changes if required and get that approved in the subsequent meeting.

The programme is attached overleaf.

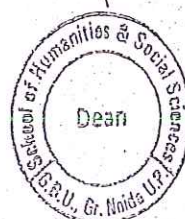
The meeting concluded with the vote of thanks to the Chair.


Dr. Hari Om Prakash


(Dr. Sunetra Sen Narayan)


(Prof. Mahavir Singh)

23rd Aug 2013



School of Humanities and Social Sciences

Gautam Buddha University

Minutes of the Meeting of the Board of Studies conducted on

24 August 2013

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/007/HSS/07/2013-08; was convened on 24 August 2013 in the office of the Dean of the School to update and finalize the detailed course contents of the following programme:

M.A. in Political Science and International Relations.

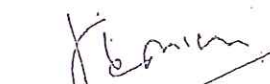
The meeting was attended by the following members:

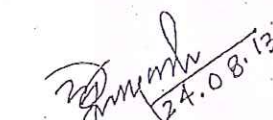
1. Prof. Mahavir Singh, Dean and Chairman
2. Prof. Tulsi Ram, Expert Member, JNU- New Delhi
3. Prof. Satyajit Singh, Expert Member, University of Delhi, Delhi
4. Dr. Om Prakash, Faculty form School
5. Dr. Vivek Mishra, Invited Member
6. Dr. Navras Jaat Aafreedi, Invited Member


The Board reviewed the existing programme structure and unanimously modified the same after deliberations on the issues. In addition to the review, the Board also discussed the detailed course contents and approved the topic-wise syllabi of different courses offered in the Programme. The revised Programme Structure is attached overleaf.

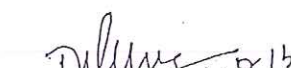
The meeting ended with the vote of thanks to the Chair.

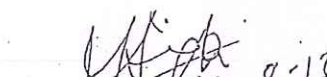

(Dr. Naras Jaat Aafreedi)


(Dr. Vivek Mishra)


(Dr. Om Prakash)


(Prof. Satyajit Singh)


(Prof. Tulsi Ram)


(Prof. Mahavir Singh)



School of Humanities and Social Sciences
Gautam Buddha University

**Minutes of the Meeting of the Board of Studies conducted on 23
August 2013**

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/-007/HSS/07/2013-08, was convened in the office of the Dean of the School to update and finalize the detailed course contents of the following programme:

Master in Social Work (MSW).

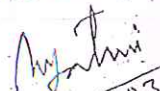
The meeting was attended by the following members:


1. Prof. Mahavir Singh, Dean and Chairman
2. Prof. A. Matin, Expert Member, AMU, Aligarh
3. Dr. Om Prakash, Faculty from the School
4. Dr. Subhasis Bhadra, Head, Department of Social Work- Absence of Leave was granted by the Chair
5. Dr. S. N. Fatmi, Invited Member

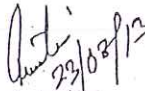
The BoS reviewed the existing programme structure and unanimously approved the same after deliberations on the issues. The Board also discussed the detailed course contents and approved the topic-wise syllabi of different courses offered in the Programme. The Programme Structure is attached overleaf. It was suggested by the external expert that Choice Based Credit System may be adopted in order to cope with the limited resources. Optional papers may be opted by students from various departments/schools within Gautam Buddha University in pursuit of fully fledged implementation of Choice Based Credit System.

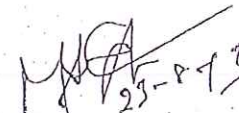
Head of the Department in consultation with the Dean, HSS are authorized to make minor changes if required.

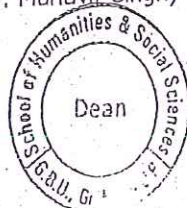
The meeting ended with the vote of thanks to the Chair.


(Dr. S. N. Fatmi) 23/8/2013


(Dr. Om Prakash) 23.08.13


(Prof. A. Matin) 23/08/13


(Prof. Mahavir Singh) 25-8-13



School of Humanities and Social Sciences
Gautam Buddha University

Minutes of the Meeting of the Board of Studies conducted on
23 August 2013

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/-007/HSS/07/2013-08, was convened in the office of the Dean of the School to update and finalize the detailed course contents of the following programme:

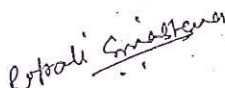
M.A. in Economics, Planning, and Development.

The meeting was attended by the following members:

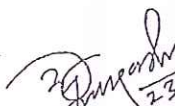
1. Prof. Mahavir Singh, Dean and Chairman
2. Prof. Halima Sadia Rizvi, Expert Member, Jamia Millia Islamia, New Delhi
3. Dr. Om Prakash, Faculty from the School
4. Dr. S. N. Fatmi, HoD, Department of Economics, Planning and Development
5. Dr. Ombir Singh, Invited Member
6. Dr. Roopali Srivastva, Invited Member

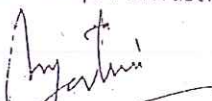
The BoS reviewed the existing programme structure and unanimously modified the same after deliberations on the issues. In addition to the review, the Board also discussed the detailed course contents and approved the topic-wise syllabi of different courses offered in the Programme. The revised Programme Structure is attached overleaf.

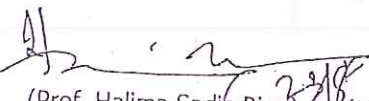
The meeting ended with the vote of thanks to the Chair.

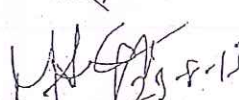

(Dr. Roopali Srivastva)


(Dr. Ombir Singh)


(Dr. Om Prakash)


(Dr. S. N. Fatmi)


(Prof. Halima Sadia Rizvi)


(Prof. Mahavir Singh)



School of Humanities and Social Sciences
Gautam Buddha University

**Minutes of the Meeting of the Board of Studies conducted on 23
August 2013**

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/-007/HSS/07/2013-08, was convened in the office of the Dean of the School to update and finalize the detailed course contents of the following programmes:

1. M. A. in Hindi
2. M.A. in Urdu

The meeting was attended by the following members:

1. Prof. Mahavir Singh, Dean and Chairman
2. Prof. Kumud Sharma, Expert Member- Hindi; University of Delhi, Delhi
3. Prof. Khwaja Ekramuddin, Expert Member- Urdu, Director, National Council of Urdu, HRD Min. Govt. of India
4. Dr. Om Prakash, HoD, Department of Indian Languages and Literature
5. Dr. V.K. Shanwal, Faculty Member from the School
6. Dr. Babita Devi, Invited Member
7. Dr. Obaidul Gaffar, Invited Member

The BoS reviewed the existing programme structure and unanimously modified the same after deliberations on the issues. In addition to the review, the Board also discussed the detailed course contents and approved the topic-wise syllabi of different courses offered in the Programme. It was also decided that the Head of the Department in consultation with the Dean, HSS are authorized to make minor changes if required and get that approved in the subsequent Board of Studies meeting.

The meeting ended with the vote of thanks to the Chair.

(Dr. Babita Devi)

(Dr. Obaidul Gaffar)

(Dr. Om Prakash)

(Dr. V. K. Shanwal)

(Prof. Kumud Sharma)

(Prof. Khwaja Ekramuddin)

(Prof. Mahavir Singh)



School of Humanities and Social Sciences

Gautam Buddha University

Minutes of the Meeting of the Board of Studies conducted on

23 August 2013

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/-007/HSS/07/2013-08, was convened in the office of the Dean of the School to update and finalize the detailed course contents of the following programmes:

Following members were present:

1. Prof. Mahavir Singh, Dean, School of Humanities & Social Sciences, GBU, Chairperson
2. Prof. V. Veeraraghavan, Emeritus Professor, IGNOU, New Delhi, Expert Member
3. Prof. Ashum Gupta, Professor, Delhi University, New Delhi, Expert Member
4. Dr. A. P. Singh, Head, Deptt. of Psychology & Wellbeing, GBU, Member
5. Dr. Om Prakash, Assistant Professor, Faculty from the School

Agenda:

1. To discuss and finalize the course outline and syllabi of M.A. (Applied Psychology) programme.
2. To discuss and finalize the course outline and syllabi of M.Phil. (Clinical Psychology) programme.
3. To discuss and finalize the course guidelines and requirement of field training and supervision issues of the students of M.A. (Applied Psychology) and M.Phil. (Clinical Psychology) programmes.
4. To discuss and finalize the allocation of course credits for different courses, dissertation work and examination pattern for M.A. (Applied Psychology) and M.Phil. (Clinical Psychology) programmes.
5. The other relevant issues related to the growth and development of the students of various programmes, faculty members and the Department.

The above mentioned agenda were discussed in the meeting and the Board consented upon the following points:

- The course outlines and syllabi of both the programmes were reviewed and approved to be executed.
- All the proposed guidelines and requirements of both the programmes regarding field training of the students, supervision of their training, allocation of credits to the



(Handwritten signatures of the members present at the meeting)

The Field Training and Clinical Exposure are an integral part of the course curriculum of M. Phil (Clinical Psychology) and M.A. (Applied Psychology) Programmes, therefore following requirement were consented to be ensured:

- a) For the M. Phil Programme, the students are required to be deputed for clinical training for 4 days in a week and 2 days for their theory and Psychodiagnostic classes.
- b) As per the RCI guidelines and requirement of course curriculum, the students will be provided clinical exposure of various kinds at their field posting and will be required to complete at least 400 hours of psychological intervention besides case history taking, mental status examination and interview of different patient groups in their two year training programme.
- c) However, for M.A. (Applied Psychology) programme, the students will be required to be deputed for their field training at various places of relevance for 2 days in a week and on rest of the days they will be required at the Department for their theory & practicum classes.
- d) All the students of both the programmes will be posted at different centres which shall provide them enriching experience in various clinical fields like psychiatry, clinical psychology, neurology, neuro-psychology, paediatrics and associated specialized clinics, general medicine, gynaecology, surgery & neuro surgery, oncology, NGOs working in the discipline, corporate sectors, forensic departments and renowned laboratories in the area etc.
- e) Provision of periodic close supervision by respective faculty members of the department, experts of related discipline and consultants of medical discipline will be ensured by the Department of Psychology & Wellbeing and that will be facilitated by the concerned School and the University. Faculty members of the Department, in particular, will be required to visit the respective centres as often as possible and all the logistics and support involved in supervising the training shall be taken care of by the University.
- f) As per the requirement of course curriculum and guidelines of RCI, the M. Phil (Clinical Psychology) training programme requires regular posting of students at various centres/hospitals for their field training therefore, the responsibility of selection of centres and hospitals of various nature, establishment of communication with them and agreement for the posting of the students at these centres/hospitals will be executed by the Head of the Department in coordination with the Dean of the School. The same will be applicable for M.A. (Applied Psychology) programme also to facilitate their field training.

For the ~~the~~ ~~points~~ conduction of examination of M. Phil Clinical Psychology programme, following points were discussed and consented upon:

- a) The M. Phil examination will be conducted annually. Out of 100, the 30% weightage will be given to internal evaluation in each paper. The internal



evaluation will be supplemented by the internal tests, class attendance and participation, participation in field training and exposure and students' disciplinary aspects. However, for the 70% weightage in each paper, an annual examination will be conducted and students' performance will be evaluated by the respective faculty members.

- b) For the M. Phil Clinical Psychology programme, in congruence with the examination policy of the University, the proposed credit system (annexure-2) will be adopted to facilitate the examination and declaration of the result of the students and this will be assumed to be applied from the beginning of the programme at the Department.
- c) For the conduction of Practicum & Viva-Voce examination, Psychodiagnostic & Psychotherapeutic submissions & Viva Voce examination, and Dissertation & Viva Voce examination, the experts from the relevant disciplines as External Examiner will be invited and the examination will be conducted in the presence of the committee comprising of the External Experts, Head of the Department and other Faculty Members. The logistics, honorarium and travel expenses incurred in the process of inviting the external experts shall be supported by the university.

Besides these, some other relevant issues related to the growth and development of the students, faculty members and the Department were also discussed and consented on following points.

- a) The provision for separate annual budget for the up gradation of Psychological Laboratory & Clinic will be made and ensured by the University. As per the specification of the RCI, the testing material which includes various psychological tests and batteries, rating scales, inventories, equipments etc., may be procured in the laboratory and will be ensured by the Department in coordination with the School and facilitation of the competent office the University.
- b) As per the approval granted by the competent authority, the clinical work will be done in the clinic everyday from Monday to Saturday. The faculty members of the department and students will be deputed on rotation basis for providing the services.

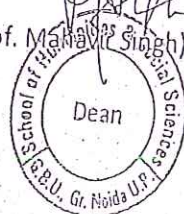
(Signature)
(Dr. A. P. Singh) 23/8/13

(Signature)
(Dr. Om Prakash) 23-08-13

(Signature)
(Prof. V. Veeraraghavan) 23/8/13

(Signature)
(Prof. Ashum Gupta) 23/8/13

(Signature)
(Prof. Mahavir Singh) 23-8-13



School of Humanities and Social Sciences

Gautam Buddha University

Minutes of the Meeting of the Board of Studies conducted on 23 August 2013

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/-007/HSS/07/2013-08, was convened in the office of the Dean of the School to update and finalize the detailed course contents of the following programme:

PhD Programme in Humanities and Social Sciences

The meeting was attended by the following members:

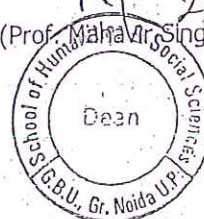
1. Prof. Mahavir Singh, Dean and Chairman
2. Prof. Kumud Sharma, Expert Member, University of Delhi, Delhi
3. Prof. Khwaja Ekramuddin, Expert Member, Director, National Council of Urdu, HRD Min. Govt. of India
4. Prof. Halima Sadia Rizvi, Expert Member, Jamia Millia Islamia, New Delhi
5. Prof. Vimla V. Raghavan, Expert Member, IGNOU, New Delhi
6. Prof. Ashum Gupta, Expert Member, University of Delhi, Delhi
7. Dr. Om Prakash, HoD, Department of Mass Communication and Media Studies, Department of English and Modern European Languages, and Department of Indian Languages and Literature
8. Dr. V.K. Shanwal, HoD, Department of Education and Training; Department of History and Civilization
9. Dr. S. N. Fatmi, HoD, Department of Sociology and Department of Economics, Planning, and Development
10. Dr. A. P. Singh, HoD, Department of Psychology and Wellbeing
11. Dr. Babita Devi, Invited Member

The Board discussed the format, Programme Structure, Credit System, and Course Work Modules. After deliberations the Board unanimously approved the same. The approved Programme Structure is attached overleaf. The meeting ended with the vote of thanks to the Chair.

(Dr. Babita Devi) (Dr. A. P. Singh) (Dr. S. N. Fatmi) (Dr. V. K. Shanwal)

(Dr. Om Prakash) (Prof. Vimla V. Raghavan) (Prof. Khwaja Ekramuddin)

(Prof. Halima Sadia Rizvi) (Prof. Kumud Sharma) (Prof. Ashum Gupta) (Prof. Mahavir Singh)



Guatam Buddha University

School of Humanities and Social Sciences

Proposed Course Structures for Ph.D course work (Full Time and Working Professional)

For Research Scholars (Working Professionals) - Total Credits - 08

For Research Scholars (Full Time) - Total Credits - 12

Code	Course	Credit	Department	Classes/Requirement
PHSS - 1	Research Methods in Social Sciences	3	All Departments	
PHSS - 2	Statistical Application and Use of Computer	2	Sociology; Psychology and Wellbeing; Political Science and International Relations; Public Administration and Policy Research; Social Work; Economics, Planning and Development; Education and Training	Class Lectures
PHSS - 3	Basic Concepts in Social Sciences	3	Sociology; Psychology and Wellbeing; Political Science and International Relations; Public Administration and Policy Research; Social Work; Economics, Planning and Development; Education and Training	Assignments - 03 Book/Article Reviews - 03 Presentations - 02
PHSS - 4	Historiography, Concepts and Research Techniques	2	History and Civilization	
PHSS - 11	Literary Critical Theories	3	English and Modern European Languages; Indian Languages	
PHSS - 12	Writings from the Margins	2	English and Modern European Languages; Indian Languages	
PHSS - 13	Theories in Mass Communication	3	Mass Communication and Media Studies	
PHSS - 14	Review of published research in the relevant field	2	Mass Communication and Media Studies	
PHSS - 15	Studies in Historical Enquiry	4	History and Civilization	
PHSS - 4	Studies in Sociological Enquiry	4	Sociology	
PHSS - 5	Social Work Practice	4	Social Work	
PHSS - 6	Approaches to Education	4	Education and Training	
PHSS - 7	Studies in Psychological Enquiry	4	Psychology and Wellbeing	
PHSS - 8	Emerging Trends and Practices	4	Political Science and International Relations; Public Administration and Policy Research	
PHSS - 9	Emerging Trends and Practices	4	Mass Communication and Media Studies	
PHSS - 10	Emerging Trends and Practices	4	English and Modern European Languages; Indian Languages	



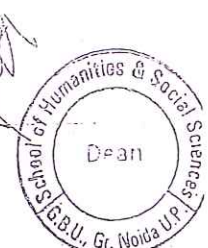
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Gautam Buddha University

School of Vocational Studies & Applied Sciences

Date: 05/03/2013

Ref. No. GBU-014/SoVSAS/BOS/26/2013-33

Proceeding of the first phase of fifth meeting of Board of Studies:

The first phase of the fifth meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 05/03/2013 at 01:30 noon onwards in the office of Dean SoVSAS.

Following members attended the meeting of the Board:

S. No.	Name	Affiliation
1	Prof. Anuradha Mishra	Dean, SoVSAS
2	Prof. H.K. Sharma	Professor, Department of Food Engg. & Tech, SLIET, Longowal, Sangrur, Punjab
3	Prof. Ashutosh Upadhyay	NIFTEM, New Delhi
4	Dr. Sushil Kumar	Assistant Professor, SoVSAS
5	Dr. Upma Singh	Assistant Professor, SoVSAS
6	Dr. Manmohan Singh Shishodia	Assistant Professor, SoVSAS
7	Mr. Kshitiz Kumar	Special Invitee, FPT, SoVSAS
8	Mr. Ashish M. Mohite	Special Invitee, FPT, SoVSAS
9	Mr. Ashish Dixit	Special Invitee, FPT, SoVSAS
10	Ms. Sweta Nagal	Special Invitee, FPT, SoVSAS

Agenda of the Fifth meeting (1st Phase) of the Board of Studies

1. Approval of course structure & syllabi of Masters, and Integrated B.Tech + M.Tech programmes in Food Processing & Technology started from academic year 2012-13.
2. Approval of changes made in the structure & syllabi for the above mentioned courses starting from the new academic session (2013-14)
3. Any other matter, if required.

Details of the Decisions taken

The Syllabi of the following programmes in Food Processing & Technology have been discussed by the Board of Studies:

1. M.Sc. in Food Science
2. M.Tech in Food Processing & Technology (2 years)
3. Integrated Dual Degree Programme (B.Tech + M.Tech/MBA) (5 years)

5.1 The course structure for all the programmes as mentioned in the agenda was approved (Annexure 1 - 6).

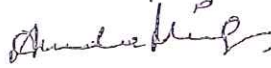
5.2 The contents of detailed syllabus of each course were discussed and the modifications suggested by the experts were made. Further, the Dean was also

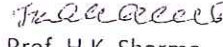



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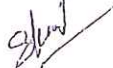
authorized to carry out the changes if need be at any time during the semester after consultation with faculty/ external experts through email.

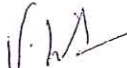
The meeting was concluded with thanking note to Prof. H.K. Sharma and Prof. Ashutosh Upadhyay.

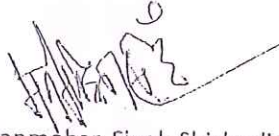

Prof. Anuradha Mishra
(Professor, Dean)


Prof. H.K. Sharma
(Professor)

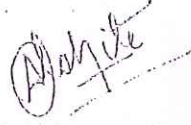

Prof. Ashutosh Upadhyay
(Professor)

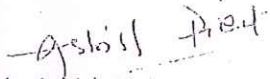

Dr. Sushil Kumar
(Assistant Professor)

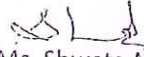

Dr. Upma Singh
(Assistant Professor)


Dr. Manmohan Singh Shishodia
(Assistant Professor)


Mr. Kshitiz Kumar
(Special Invitee)


Mr. Ashish M. Mohite
(Special Invitee)


Mr. Ashish Dixit
(Special Invitee)


Ms. Shweta Nagal
(Special Invitee)



Gautam Buddha University

School of Vocational Studies & Applied Sciences

Ref. No.GBU-014/SoVSAS/BOS/26/2013- 39

Date: 06/07/2013

Proceeding of the second phase of fifth meeting of Board of Studies:

The second phase of the fifth meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 06/07/2013 at 11:00 am onwards in the office of Dean SoVSAS.

Following members attended the meeting of the Board:

S. No.	Name	Affiliations
1	Prof. Anuradha Mishra	Dean, SOVSAS
2	Dr. Upma Singh	Assistant Professor, Applied Chemistry
3	Prof. R.K. Sharma	Dept. of Chemistry, Delhi University
4	Prof. A.K.Narula	Dept. of Chemistry, GGSIP University, Dwarka, New Delhi

Agenda of the Fourth meeting of the Board of Studies

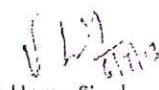
1. Approval of modified course structure and syllabi of courses being offered in Ph.D. Programme in Applied Chemistry.
2. Approval of modified course structure & syllabi of Masters programme in Applied Chemistry.
3. Any other Matter, If Required.

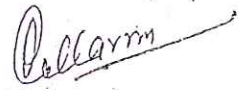
Details of the Recommendations Made:

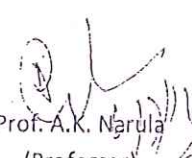
The following recommendations were made:

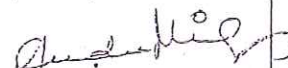
1. The BOS recommended the minor modification in the course structure of all the proposed programmes.
2. The contents were thoroughly discussed and as per the scope of the programme necessary changes were made. The Dean was authorized to carry out the changes as suggested.

The meeting was concluded with thanking note to Prof. R.K. Sharma and Prof. A.K. Narula and to the chair.


Dr. Upma Singh
(Assistant Professor)


Prof. R.K.Sharma
(Professor)


Prof. A.K. Narula
(Professor)


Prof. Anuradha Mishra
(Dean)



Gautam Buddha University

School of Vocational Studies & Applied Sciences

Ref. No.GBU-014/SoVSAS/BOS/26/2013-41

Date: 17/07/2013

Proceeding of the Third phase of fifth meeting of Board of Studies:

The Third phase of the fifth meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 17/07/2013 at 11:00 am onwards in the office of Dean SoVSAS.

Following members attended the meeting of the Board:

S. No.	Name	Affiliations
1	Prof. Anuradha Mishra	Dean, SOVSAS
2	Dr. Mausumi Pohit	Assistant Professor, Applied Physics
3	Dr. Manmohan Singh	Assistant Professor, Applied Physics
4	Prof. Ratnamala Chatterjee	Dept. of Physics, IIT Delhi

Agenda of the Fifth meeting of the Board of Studies

1. Approval of modified course structure and syllabi of courses being offered in two years M.Sc Programme in Applied Physics.
2. Approval of modified course structure & syllabi of Doctoral programme in Applied Physics.
3. Any other Matter, If Required.

Details of the Recommendations Made:

The following recommendations were made:

1. The BOS recommended the minor modifications in the course structure of M.Sc Applied Physics and Ph.D Applied Physics programme.
2. The contents were thoroughly discussed and as per the scope of the programme necessary changes were made. The Dean was authorized to carry out the changes as suggested, after consultation with the internal members of BoS.

The meeting was concluded with thanking note to Prof. Ratnamala Chatterjee.

Mausumi Pohit
17/07/13.
Dr. Mausumi Pohit
(Assistant Professor)

Manmohan Singh
17/7/13
Dr. Manmohan Singh
(Assistant Professor)

Ratnamala Chatterjee
17/07/2013
Prof. Ratnamala Chatterjee
(Professor)

Anuradha Mishra
17/7/13
Prof. Anuradha Mishra
(Dean, SOVSAS)





Gautam Buddha University

School of Vocational Studies & Applied Sciences

Ref. No.GBU-014/SoVSAS/BOS/26/2013- 50

Date: 16/08/2013

Proceeding of the Fifth phase of fifth meeting of Board of Studies:

The fifth phase of the fifth meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 16/08/2013 at 11:30 am onwards in the office of Dean SoVSAS. Following members attended the meeting of the Board:

S. No.	Name	Affiliations
1	Prof. Anuradha Mishra	Dean, SOVSAS
2	Prof. A.K. Attri	School of Environmental Sciences, JNU
3	Prof. K.K.Singh	Head Agromet (LACD), IMD, New Delhi
4	Dr. Alpa Yadav	Faculty Associate
5	Dr. Namrata Pathak	Guest Faculty

Agenda of the fifth meeting of the Board of Studies

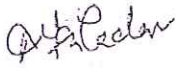
1. Approval of modified course structure & syllabi of Masters programme in Environmental Science.
2. Any other Matter, If Required


Details of the Recommendations Made:

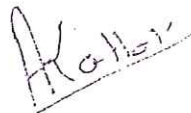
The following recommendations were made:

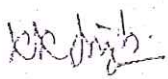
1. The BOS recommended the course structure of the proposed programme.
2. The contents were thoroughly discussed and as per the scope of the programme necessary changes were made. The Dean was authorized to carry out the changes as suggested.

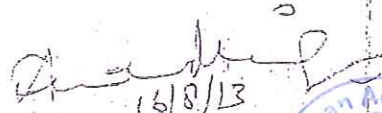
The meeting was concluded with thanking note to Prof. A.K. Attri and Dr. K.K.Singh.


Dr. Alpa Yadav
(Faculty Associate)


Dr. Namrata Pathak
(Guest Faculty)


Prof. A.K. Attri
(Professor)


Dr. K.K. Singh
(Head Agromet(LACD))


16/8/13
Prof. Anuradha Mishra
(Dean)





Gautam Buddha University

School of Vocational Studies & Applied Sciences

Ref. No. GBU-014/SoVSAS/BOS/26/2013-43

Date: 24/07/2013

Proceeding of the fourth meeting of Board of Studies:

The fourth meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 24/07/2013 at 10:30 am onwards in the office of Dean SoVSAS.

All the members of BoS attended the meeting except Dr. Anjana Solanki, Associate Professor in Applied mathematics as per the following details:

S. No.	Name	Affiliations
1	Prof. Anuradha Mishra	Dean, SOVSAS
2	Dr. Sushil Kumar	Assistant Professor, Applied Mathematics
3	Prof. D. Bahuguna (External Expert)	Dept. of Mathematics and Statistics, IIT Kanpur
4	Prof. Sharfuddin Ahmad (External Expert)	Department of Mathematics, Jamia Milia Islamia, New Delhi
5	Dr. Anjana Solanki	Absent
Special Invitee		
1	Dr. Amit Awasthi	Assistant Professor, Applied Mathematics
2	Dr. Pratiksha Saxena	Assistant Professor, Applied Mathematics
3	Dr. Amit Ujlayan	Assistant Professor, Applied Mathematics
4	Dr. Dipti Singh	Assistant Professor, Applied Mathematics
5	Dr. Fahed Zulfeqarr	Assistant Professor, Applied Mathematics

Agenda of the fourth meeting of the Board of Studies

1. Approval of modified course structure & syllabi of Doctoral programme in Applied Mathematics.
2. Approval of modified course structure and syllabi of courses being offered in two years M.Sc Programme in Applied Mathematics.
3. Approval of modified syllabi of Mathematics courses offered for Integrated B. Tech+M. Tech/MBA and M. Tech programs.
4. Any other Matter, If Required.

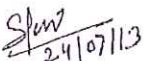
Details of the Recommendations Made:

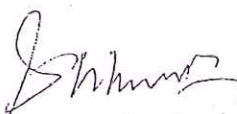
The following recommendations were made:


1. The BOS recommended the minor modifications in the course structure of M.Sc Applied Mathematics and Ph.D Applied Mathematics programme.
2. The contents were thoroughly discussed and as per the scope of the programme necessary changes were made. The Dean was authorized to carry out the changes as suggested, after consultation with the internal members of BoS.

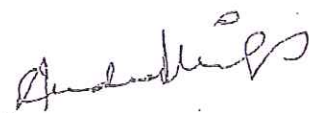


The meeting was concluded with thanking note to Prof. D. Bahuguna and Prof. Sharfuddin Ahmad.


24/07/13
Dr. Sushil Kumar
(Assistant Professor)


Prof. Sharfuddin Ahmad
(Professor)


Prof. D. Bahuguna
(Professor)


Prof. Anuradha Mishra
(Dean, SOVSAS)









Gautam Buddha University
SCHOOL OF LAW, JUSTICE & GOVERNANCE


Minutes of the Meeting of the Board of Studies, dated 27 August 2013

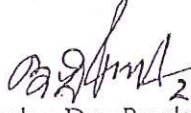
Present:

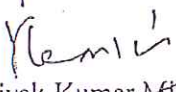
Dr Mamta Sharma, HoD and Convener
Prof. M.P. Singh, Member
Prof. Manjula Batra, Member
Prof. Anuradha Mishra, Special Invitee
Dr Sumitra Huidrom, Member (Proposed)
Dr Akshay Kumar Singh, Special Invitee
Dr Vivek Kumar Mishra, Special Invitee
Dr Brahm Dev Pandey, Special Invitee
Dr Chandra Bhanu Bharas, Special Invitee
Dr Pankaj Deep, Special Invitee

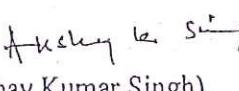
The meeting was convened to approve the Ph.D. Course Structure and Curriculum and Curriculum of Optional Papers (LO001, LO002, LO003, LO004, LO005 and LBC23). The Board considered the aforesaid Ph.D. Course Structure and Curriculum and Curriculums of Optional Papers. The Board approved the aforesaid Curriculum of Optional Papers; however, the aforesaid Ph.D. Course Structure and Curriculum was not approved.

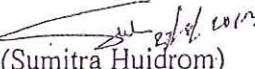

(Pankaj Deep)

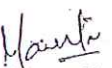

(Chandra Bhanu Bharas)

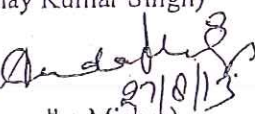
 27/8/2013
(Brahm Dev Pandey)

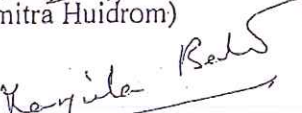

(Vivek Kumar Mishra)

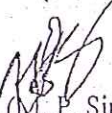

(Akshay Kumar Singh)

 27/8/2013
(Sumitra Huidrom)


(Mamta Sharma)

 27/8/13
(Anuradha Mishra)


(Manjula Batra)


(M. P. Singh)





SCHOOL OF LAW JUSTICE & GOVERNANCE

Course Information

Course Title: Right to Information and Good Governance

Course Code: LO-001

Course Instructor: Dr Vivek Kumar Mishra

Course Duration: 30 sessions

Credit Unit: 02

Medium of Instruction: English

Course Aim(s): The objective of the course is to convince the students that how the right to information infuses transparency and accountability in governance, preventing abuse of power. It also aims at empowerment of the common citizen with ideas and information to seek entitlements and to participate in the process of democratic governance.

Course Syllabus:

Session 1-3: Evolution of the RTI Act 2005 in India, The Official Secrets Act 1923, Movement for right to freedom of information, role of Mazdoor Kisan Shakti Sanghata (MKSS) and other civil society organizations

Session 4-6: Freedom of Information- International perspective and the Indian context, the Freedom of Information Act- 2002, Constitutional basis of RTI, the Right to Information as a Fundamental Right

Session 7-8: Right to Information: Preamble, scope and limitations of the Act, definition of Public Authority, obligations of Public Authorities

Session 9-10: Role of Public Information Officers: PIOs and APIOs

Session 11-12: Request for obtaining information, disposal of requests, the time limits for disposal of information requests, the fees and costs to be charged for providing information

Session 13-14: Exemptions from disclosure of Information, partial disclosure and third party information, denial of third party information, Severability, channels of appeal, action in "Good Faith"

Session 15-16: Information Commissions:

Session 17: Right to Information conflict with Right to Privacy, RTI and protection of individual privacy

[Handwritten signature]
Vivek Kumar Mishra



Session 18-19: RTI and Civil society: Concept of civil society, role of civil society organisations

Session 20-22: RTI and Good Governance: Concept of Good Governance, principles of good governance,

Session 23-24: RTI and strengthening participatory democracy: Accountability and good governance, Transparency and Good Governance, Social justice and good governance

Session 25-26: Right to Information: Media, Records Management for Effective Information Management and Implementation of the Act

Session 27-28: RTI as a tool for Social Audit of Public Service Delivery: Social Audit in India; RTI and Public Service Delivery

Session 29: RTI and Panchayati Raj Institutions in Uttar Pradesh, disclosure of information at the Gram Panchayat, Kshettra Panchayat and Jila Panchayat level

Session 30: RTI and Judiciary

Method of Assessment

The evaluation will be based on student performance in examinations and other notified methods of assessment upon fulfillment of the attendance requirement. Accordingly, there will be a 25 marks' continuous class assessment through written test, assignment and project work, 25 marks' mid-semester examination, and a 50 marks' end-semester examination.

Suggested Readings

- C.P Bharthwal, *Good Governance in India* (New Delhi: Sundeep Pub, 2003).
- J. N. Barowalia, *Commentary on the Right to Information Act* (New Delhi: Jain Book Depot, 2010).
- K. K. Jain, *Right to Information* (New Delhi: Regal Publication, 2010).
- K.M Srivastava, *Right to Information: A Global Perspective* (New Delhi: Lancer Publisher 2009).
- P. K. Das, *Handbook on Right to Information Act, 2005* (New Delhi: Universal Publication, 2005).
- P.K. Saini & R.K Gupta, *Right to Information Act, 2005* (New Delhi: Deep and Deep Publication, New Delhi).
- Rajveer S. Dhaka, *Right to Information and Good Governance* (New Delhi: South Asia Book, 2010).
- S. K Kataria, *Right to Information lessons and Implications* (New Delhi: National Publication, 2010).
- S. L. Goel, *Right to information and Good Governance* (New Delhi: Deep and Deep publication 2007).
- S. P. Sathe, *Right to Information* (New Delhi: LexisNexis: Butterworth, 2006).
- Sudhir Naib, *The Right to Information Act-2005* (New Delhi: OUP, 2011).





Gautam Buddha University
SCHOOL OF LAW, JUSTICE & GOVERNANCE
Course Information

Course Title: Human Rights*
Course Code: LO002
Credit Unit: 03
Course Duration: 45 Sessions
Medium of Instruction: English

Course Aim (s):

The course aims to foster an understanding how certain rights are inalienable yet fundamental to which each member of human community is inherently entitled because of being human. These rights, known as human rights, are universal. Human rights constitute foundation of all good values in the society such as freedom, equality, justice and peace. Besides, with this course it is also intended to familiarise students with the role of human rights in securing the objectives of inclusive development, good governance and vibrant democratic practices.

Course Syllabus:

- 1: An Introduction to Human Rights
- 2: Genealogy and Historical Development of Human Rights Movements
- 3: Difference between Human Rights and Other Rights
- 4: Western Perspective on Human Rights
- 5: Socialist and Developing World's Perspective on Human Rights
- 6: International Society's Efforts towards Human Rights Protection: Conventions and Treaties
- 7: The Universal Declaration of Human Rights (UDHR)
- 8: Regional and National Conventions

* The Course has been taught in the M.Tech. programme of the School of Engineering (SoE) with Course Code LB524 during 2011-12 Odd Semester, 2012-13 Odd Semester

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- 9: The United Nations Human Rights Council: Objectives, Principles and Roles
- 10: Human Rights in India: Socio-political and Legal Frameworks
- 11: The National Human Rights Commission (NHRC) and Future Challenges
- 12: Human Rights in the Globalising World: Development Discourses and New Challenges

Recommended Readings:

- Addicott, Jeffrey F., MD. Jahid Hossain Bhuiyan, Tareq M. R. Chowdhury, *Globalization, International Law, and Human Rights* (Oxford University Press: 2001)
- Bailey, S., *The UN Security Council and Human Rights* (St. Martin's Press: 1994)
- Brems, Eva, "Human Rights: Minimum and Maximum Perspectives," *Human Rights Law Review*, 9, 2009: 343-372
- Buchanan, A., *Human Rights, Legitimacy, and the Use of Force*, (Oxford University Press: 2010)
- Donnelly, J., *Universal Human Rights in Theory and Practice*, 2nd edn. (Cornell University Press: 2003)
- Freeman, Michael, *Human Rights* (Polity Press: 2002)
- Griffin, J., *On Human Rights* (Oxford University Press: 2008)
- Griffin, J., "First Steps in an Account of Human Rights" *European Journal of Philosophy*, 9, 2001: 306-327
- Iyer, V. R. Krishna, *Dialectics & Dynamics Of Human Rights in India : Yesterday, Today And Tomorrow* (Eastern Law House: 2000)
- Katayanagi, M., *Human Rights Functions of United Nations Peacekeeping Operations*, (Kluwer: 2002)
- Kymlicka, W. (ed.), *The Rights of Minority Cultures* (Oxford University Press: 1995)
- Morsink, J., *Universal Declaration of Human Rights: Origins, Drafting, and Intent* (University of Pennsylvania Press: 1999)
- Nirmal, C. J., *Human Rights in India: Historical, Social, and Political Perspectives* (Oxford University Press: 2002)
- O'byrne, Darren, *Human Rights: An Introduction* (Pearson: 2003)
- Orend, B., *Human Rights: Concept and Context* (Broadview Press: 2002)



Pogge, T., "The International Significance of Human Rights," *Journal of Ethics*, 4, 2002: 45-69

Ray, Arun, *National Human Rights Commission Of India : Formation, Functioning And Future Prospects* (Atlantic: 2004)

Sharma, Mukul, *Human Rights In A Globalised World: An Indian Diary* (Sage Publication: 2010)


Tyagi, Yogesh, *The UN Human Rights Committee: Practice and Procedure* (Cambridge University Press; 2011)

United Nations Office of The High Commissioner For Human Rights, *Good Governance Practices For The Protection Of Human Rights* (United Nations: 2008)

Uvin, Peter, *Human Rights and Development* (Kumarian Press: 2004)

Woodiwiss, Anthony, *Human Rights* (Routledge: 2005)

Course Requirement: The course will enable students to recognise and respect the inherent dignity and equal and inalienable human rights of all members of the society. The development would be of least use unless its benefits are enjoyed by each member of the society in an equal and just manner. The full idea of human rights will equip students with such outlook and understanding.


Signature





SCHOOL OF LAW, JUSTICE & GOVERNANCE
Course Information

Course Title: Globalisation and Governance

Course Code: LO 003

Course Instructor: Dr Vivek Kumar Mishra

Course Duration: 30 Sessions

Credit Unit: 02

Medium of Instruction: English

Course Aim(s)

The aim of the course is to stimulate advanced thinking and discourse on globalisation and governance. The course addresses the question of global governance through an examination of the roles played by the state and international organisations in policy-making across a range of issue areas.

Course Syllabus

- Session (1-3) Globalisation: Meaning, concept and approaches, world systems approach, Americanisation and Multilateralism
- Session (4-6) Economic Globalisation: The Bretton Woods system, global markets and global financial flows
- Session (7-8) Global Governance: Meaning, historical evolution, issues of transparency, accountability and participation
- Session (9-11) Approaches to global governance: Realist, Marxist, Institutional, Functionalism and Cosmopolitanism
- Session (12-14) Institutional dimensions of global governance: Complex Multilateralism, WTO, World Bank, IMF, the UN system and environment treaties
- Session (15-17) Global civil society and global governance: The concept of global civil society, global social movements and global environmental governance
- Session (18-19) Globalisation and Politics: Nation-states in a globalising world, debates of state sovereignty and autonomy, state transformation and return of the state
- Session (20-22) Democracy: Models of transnational democracies, global citizenship, cosmopolitan democracy, democratic accountability and democratic deficit



Session (23-26) Social and cultural dimensions of globalisation: Globalisation and modernity, multiculturalism and cultural identity, globalisation and the clash of civilization

Session (27-29) Contemporary narratives on globalisation: Hyper globalist, Skeptics, Transformationalist and Reformist

Session (30) Conclusion(s) of the instruction

Method of Assessment

The evaluation will be based on student performance in examinations and other notified methods of assessment upon fulfillment of the attendance requirement. Accordingly, there will be a 25 marks' continuous class assessment through written test, assignment and project work, 25 marks' mid-semester examination, and a 50 marks' end-semester examination.

Recommended Readings

- Arjun Appadurai, *Modernity at Large: Cultural Dimension of Globalisation* (The University of Minnesota Press, 2003).
- D. Held and A. McGrew (eds.), *Globalisation Theory: Approaches and controversies* (Cambridge: Polity Press, 2007).
- D. Held and Anthony McGrew, *Global Transformations Reader* (Oxford: Blackwell Publishing House, 2004).
- D. Held and A. McGrew (eds.), *Governing Globalisation* (Cambridge: Polity Press, 2002).
- D. Held and M. Koenig-Archibugi (eds.), *Taming Globalization: Frontiers of Governance* (Polity Press, 2003).
- D.W. Dreznér, *Regime Proliferation and World Politics: is there Viscosity in Global Governance?* (The Fletcher School: Tufts University, 2007).
- Alic D. Ba and Matthew J. Hoffman, *Contending Perspectives on Global Governance: Coherence, Contestation and World Order* (London: Routledge, 2005).
- George Ritzer, *Globalization: A Basic Text* (London: Wiley & Sons Publication, 2010).
- Jagdish Bhagwati, *In Defense of Globalization* (New York: OUP, 2004).
- James N. Rosenau, *The Study of World Politics: Globalization and Governance* (Vol. 2) (Routledge: Taylor & Francis, 2006).
- Joseph Stiglitz, *Globalisation and Its Discontents* (New Delhi: Penguin, 2002).
- Joseph Stiglitz, *Making Globalization Work* (New York: W.W. Norton, 2006).
- M. Kaldor, H. Anheier and M. Glasius (eds.), *Global Civil Society* (Oxford: Oxford University Press, 2003).
- R. Lipschutz, *Globalization, Governmentality and Global Politics* (London: Routledge, 2005).

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Gautam Buddha University
SCHOOL OF LAW, JUSTICE & GOVERNANCE
Course Information

Optional Course Title: Development-Induced Conflicts and Local Governance*

Course Code: LO004

Credit Unit: 03

Course Duration: 45 Sessions

Medium of Instruction: English

Course Aim (s):

To understand how developmental projects in different geographical areas have induced conflicts and how these conflicts can be resolved by using local democratic apparatus which fall in the realm of local governance. Such conflicts are not mono-causal, they are intricately associated with the socio-political and economic dynamics of the society. The questions of land acquisition, resource possession, displacement and environmental adaptation have recently become vital issues for developmental projects. Thus, the course seeks to draw understanding on how a certain developmental project in particular region would take benefit of local governance system for its successful operation and its rewards to the people of the region.

Course Syllabus:

- 1: Development: An Introduction
- 2: Models of Development: From Economic Growth to Holistic Development
- 3: Human Development: From Theory to Practice
- 4: Understanding Conditions to be Secured: From Human Development to Human Rights
- 5: An Idea of Conflict: Structures, Characteristics and Dynamics
- 6: Exploring Causes of Conflicts: Social, Political, Economic and Environmental
- 7: Imbalances of Development and Causes of Conflict: A Special Focus on Developmental Projects
- 8: Determinants of Successful Development Policies: Linkages with forms of Governance

The Course has been taught in the M.Tech. programme of the School of Engineering (SoE) with Course Code LB526 during 2011-12 Odd Semester



9: Local Implementation of Regional and National Policy and Legislation

10: Local Governance and Resolution of Conflicts

Readings:

Alkire, S., "Needs and capabilities" In S. Reader (Ed.), *The Philosophy of Need* (Cambridge University Press, 2006)

Anand, S., Peter, F., & Sen, A. K., *Public Health, Ethics, and Equity* (Oxford University Press, 2004)

Anand, S., & Sen, A. *Sustainable Human Development: Concepts and Priorities* (UNDP, 1996)

Areeparampil, M., *Tribals of Jharkhand: Victims of Development* (Indian Social Institute, 1996)

Brighouse, H., & Robeyns, I., *Measuring Justice : Primary Goods and Capabilities* (Cambridge University Press, 2010)

Beck, U., *Risk Society: Towards a New Modernity* (Sage Publications, 1996)

Cernea, M., *Putting People First: Sociological variables in rural development* (2nd ed.) (Oxford University Press, 1985)

Cernea, M. M. and Christopher McDowell, *Risks and Reconstructions: Experiences of Resettlers and Refugees* (The World Bank, 2000)

Cernea, M. M., "Public Policy Responses to Development-Induced Population Displacements" *Economic and Political Weekly*, 1996, 31, pp. 1515-1523

Cohen, R. and Deng, F., *Masses in Plight: The Global Crisis of Internal Displacement* (Brookings Institute Press, 1998)

Collier, Paul, V. I. Elliott, Harvard Hegre, Anke Hoeffler, Marta Reynold-Querol, Nicholas Sambanis, *Breaking the Conflict Trap: Civil War and Development Policy* (Oxford University Press, 2003)

Corbridge, Stuart, Rene Veron and Manoj Srivastava, *Governance and Governmentality in India* (Cambridge University Press, 2005)

Crocker, D., *Ethics of Global Development: Agency, Capability, and Deliberative Democracy* (Cambridge University Press, 2008)

Fernandes, W. and Ganguly Thukral, E., eds. *Development, Displacement and Rehabilitation* (Indian Social Institute, 1989)

Galtung, J., *Early Warnings: An Early Warning to the Early Warners* (Swiss Institute for Development, 1994)



Ganguly Thukral, E. and Singh, M., "Dams and the Displaced in India" In H. Mohan Mathur, ed., *Development, Displacement and Resettlement: Focus on Asian Experience* (Vikas Publishing House, 1995)

Giddens, A., *The Consequences of Modernity* (Stanford University Press, 1990)

H. M. Mathur and D. Marsden, eds., *Development Projects and Impoverishment Risks: Resettling Project-Affected People in India* (Delhi: Oxford University Press)

Hansen, A. and A. Oliver-Smith, eds., *Involuntary Migration and Resettlement: The Problems and Responses of Dislocated People* (Westview Press, 1982)

Haq, Mahbub ul, *Reflections on Human Development* (Oxford University: 1998)

Merton, R. K., *The Sociology of Science: Theoretical and Empirical Investigation* (University of Chicago Press, 1979)

Nussbaum, M., & Sen, A. (Eds.) *The Quality of Life* (Clarendon Press, 1993)

Pandey, B. and Associates, *Depriving the Underprivileged by Development* (Institute for Socio-Economic Development, Bhubaneswar, 1998)

Reddy, I. U. B., *Marginalisation of Project-Affected People: a Comparative Analysis of Singrauli and Rihand Power Projects*, 1998

Sam, Agere, *Promoting Good Governance* (Commonwealth Secretariat, 2000)

Sen, A., *Poverty and Famines: An Essay on Entitlement and Deprivation* (Clarendon Press, 1981)

Sen, Amartya, *Development as Freedom*, (Oxford University Press, 1999)

UNDP, *Human development report 1990: Concept and Measurement of human development* (Oxford University Press, 1990)

UNDP, *Human development report 1994: New dimensions of Human Security* (Oxford University Press, 1994)

UNDP, *Human Development Report 1997: Human development to Eradicate Poverty* (Oxford University Press, 1997)

UNDP, *Human Development Report 2002: Deepening Democracy in a Fragmented World* (Oxford University Press, 2002)

UNDP, *Human Development Report 2003: Millennium Development Goals: A Compact among Nations to End Human Poverty* (Oxford University Press, 2003)




United Nations Trust Fund for Human Security, *Human Security: An Integrated Approach to Freedom from Fear and Freedom from Want* (Brussels, Belgium: United Nations Trust Fund for Human Security, 2003)

Uvin, Peter, *Aiding Violence: The Development Enterprise in Rwanda* (CT: Kumarian Press, 1998)

The World Bank, *World Development Report 2011: Conflict, Security and Development* (The World Bank, 2011)

Course Requirement: The course will enable students to understand the requirement of effective developmental policies, keeping in view the indispensability of development and socio-political dynamics of the region. Besides, students will be able to enhance their understanding on the practices and institutions of deepening democracy through local governance.


Hemjula Kals





SCHOOL OF LAW JUSTICE AND GOVERNANCE

Course Information

Course Title: Indian Political System

Course Code: ~~LO005~~ LO005

Course Instructor: Dr. Pankaj Deep

Course Duration: 18 weeks

Course Credit: 03

Medium of Instruction: English

Course Aim(s): The course seeks to provide a comprehensive understanding of the constitutional design and institutional framework of the government and the emergent political process in India. It focuses on the discourse on Indian politics and deals in detail about the constitutional provisions, the functioning of the political system and social structure. Therefore, the course helps the students to know the ideological bases of the Indian state and its structure and functions in the changing perspectives.

Course Syllabus

Unit 1: Introduction: Historical Background and Philosophy of the Constitution, Constitutional Assembly Debate, and Doctrine of Basic Structure

Unit 2: Fundamental Rights and Directive Principles of State Policy-dynamics and debate

Unit 3: Structure of the Political System: The Executive- President, Prime Minister and his Council of Ministers

Unit 4: The Legislature-Lok Sabha and Rajya Sabha, Issues of representation and diversity; Parliamentary Committees and Privileges

Unit 5: Judicial system- Supreme Court and High courts, Judicial Independence, Judicial Review, Judicial Activism and Judicial Accountability; Changing role of Indian Judiciary

Unit 6: State Politics in India: Structure and function - The Governor, Chief Minister and the Council of Ministers, State Legislative Assembly and Legislative Council

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Unit 7: Nature of Indian Federalism: Centre-State relations- Administrative, Legislative and Financial; Symmetric and Asymmetric relationship, Federal structure and its dynamics

Unit 8: Political Parties and Party System: National political parties, Trends in the party system from the Congress system to the era of multi-party coalition, Politics of defection, Coalition politics in India

Unit 9: Electoral System: Election Commission of India, Electoral politics, Electoral Reforms and Voting Behavior

Unit 10: Secularism and Indian Constitution

Unit 11: Communalism and Indian Politics

Unit 12: Caste in Indian Politics: Politicization of Castes and Castecization of politics

Unit 13: Administration of Fifth and Six Scheduled areas

Unit 14: Democratic Decentralization and Local Self Government: 73rd Constitutional Amendment and Panchayati Raj Institutions (PRIs) - dynamics and Functions, Prospects and Challenges of PRIs; 74th Constitutional Amendments and Municipalities.

Recommended Readings:

- D.D Basu, *Introduction to the Constitution* (New Delhi: Prentice Hall, 2002).
- Bidyut Chakrabarty and Rajendra Kumar Pandey, *Indian Government and Politics* (New Delhi: Sage Publications, 2009).
- Nirja Gopal Joyal and Pratap Bhanu Mehta (eds.), *The Oxford Companion to Politics in India*, (OUP, New Delhi, 2010).
- Rajeev Bhargava, *Politics and Ethics of the Indian Constitution* (New Delhi: OUP, 2008).
- T.B. Robert and Stanley Kochanek, *India: Government and Politics in a Developing Nation* (Boston: Thomson and Wadsworth, 2008).
- B.N. Kirpal et al. *Supreme but not Infallible: Essays in Honour of the Supreme Court of India*, (Delhi: OUP, 2000).
- Ramesh Chandra Thakur, *The Government and Politics of India* (New Delhi: Palgrave, 1995).
- Rajni Kothari, *Politics in India* (New Delhi, Orient Longman, 1986).
- S. Kashyap, *Our Constitution* (New Delhi: National Book Trust, 1992).

Further Readings:

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- Atul Kohli (ed.), *Success of India's Democracy* (Cambridge: Cambridge University Press, 2001).
- Granville Austin, *Indian Constitution: A Cornerstone to A Nation* (New Delhi: OUP, 1966).
- Myron Weiner (ed.), *State Politics in India* (Princeton University Press, 1968).
- P Brass, *Politics of India since Independence* (Hyderabad: Orient Longman, 1990).
- Partha Chatterjee (ed.), *State and Politics in India* (Delhi: OUP, 1997).
- Frankel, Bhargava, Hasan, Arora (eds.), *Transforming India, Social and Political Dynamics of Democracy* (Delhi: OUP, 2002).
- B.D Dua, M.P Singh and Rekha Saxena (eds.) *Indian Judiciary and Politics: The Changing Landscape*, (Delhi, Manohar, 2006).
- Zoya Hasan (ed.), *Politics and State in India* (Delhi: Sage, 2000).
- K. M. Pannikar, *In Defence of Democracy* (Bombay: Asia Publishing House, 1962).
- Rajni Kothari, *Rights and Identities, Aspects of Liberal Democracy in India* (Delhi, OUP, 1998).
- Rajni Kothari, *Caste in Indian Politics* (New Delhi: Orient Blackswan, 1995).
- Sudha Pai, *State Politics New Dimensions: Party System, Liberalization and Politics of Identity* (New Delhi: Shipra Publications, 1999).
- Morris Jones, *The Government and Politics in India* (New Delhi: B. I. Publication 1971).
- G. Austin, *Working of a Democratic Constitution: The Indian Experience* (Delhi: Oxford University Press, 2000).
- N. G. Jayal (ed.), *Democracy in India* (Delhi: Oxford University Press, 2001).
- Jayal N. G., *Democracy and the State: Welfare, Secularism and Development in Contemporary India* (Delhi: Oxford University Press, 1999).
- S. Kashyap, *Our Parliament* (New Delhi: National Book Trust, 1992).
- Rajni Kothari, *State Against Democracy: In Search of Humane Governance* (Delhi: Ajantha Press, 1988).

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- (16)
- B.D. Dua and M.P. Singh (eds.), *Indian Federalism in the New Millennium* (New Delhi: Manohar, 2008).

Course Requirement

Students are encouraged to read the recommended readings and participate in the class discussion. Evaluation is based on student's performance in examinations and other notified methods of assessment upon fulfillment of the attendance requirement.





Gautam Buddha University
School of Law, Justice and Governance

Course Information

Course Title: International Relations

Course Code: LBC 23

Course Duration: 30 Sessions

Credit Unit: 2 Credits

Medium of Instruction: English

Course Aim(s)

International Relations as an indispensable area of discipline of political science studies the interactions of nation-states with other nation-states. It is a subject which basically deals with the study of nation-states and their relations with other nation-states of the world. The nation, the national interests, foreign policies, diplomatic policies and national security policies are important areas of study in international relations. Thus, the primary aim of the course is to help the students to learn and understand the subject of international relations. It is intended to familiarize the students with various terms and terminologies; meaning, definition, the scope of the studies and its nature and important features. It is also intended to explain the social utilities and necessities of the subject in the present day globalization and world politics.

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Course Syllabus

Unit 1: Introduction to International Relations: Meaning and Scope of Studies, its Nature and Important Features.

Unit 2: Modern State and its Evolution: Evolution of Nation-State, State as main Player in International Relations.

Unit 3: National Power and National Interests: National Power: Meaning, Foundations and Limitations, Concept of National Power, Elements of national power, Limitations on national power, Role of National power in International Relations.

Unit 4: Balance of Power in International Relations: Patterns of Balance of Power - Methods of Balance of Power, Divide and rule, compensations, Armament, Alliances, Importance and relevance of Balance of Power. Balance of Power and International morality, Balance of Power and World Public opinion, Balance of Power and International Law.

Unit 5: National Security and Collective Security: National Security, Meaning, Nature and Scope, Important Features, Balancing Security with Liberties and Purpose.

Unit 6: Theories of International Relations: The Realist Theory, the Neo-realism, the Idealist Theory, Liberal Theory, Neo-liberalism, Merits and Demerits, Evaluations.

Unit 7: Indian Foreign Policy: Meaning of Foreign Policy, Principles and Objectives of Foreign Policy, Determinants of India's Foreign Policy, Internal Factors, External Factors, Development of Indian Foreign Policy.

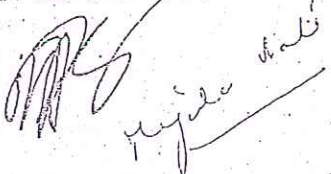
Unit 8: Cold War: Origin and Relevance: Meaning of Cold War, Main Features, Ideological differences, Multi-polar, Bipolar and uni-polar World, Detente and end of Cold War.

Unit 9: Non-alignment Movement: Meaning, the role played by India and relevance of Non-alignment Movement today; Disarmaments, Treaties, Conventions and the development of International Law through international relations.

Unit 10: The SAARC: Conflict and Cooperation in South Asia, India and Afghanistan, India and Pakistan, India and China, India and Sri Lanka, India and Bangladesh, India and Nepal, Progress of the SAARC, Achievements and Failures.

Recommended Readings:

1. John Baylis and S. Smith, (2008), *The Globalization of World Politics: An Introduction to International Relations*, (4th Ed), Oxford University Press.
2. M. Nicholson, (2002), *International Relations: A Concise Introduction*, New York, Palgrave.
3. P. Calvocoressi, (2001), *World Politics: 1945-2000*, Essex, Pearson.



4. E.H. Carr, (2004), *International Relations between Two World Wars: 1919-1939*, New York, Palgrave.
5. Norman Palmer and Howard Parkins, (2010), *International Relations*, (3rd Ed), AITBS Publishers, India.
6. Joseph Frankel, (1979), *International Relations to a Changing World*, Oxford University Press.
7. Kenneth Waltz, (1979), *The Theory of International Relations and Politics*,
8. V.P Dutta, (2007), *India's Foreign Policy: Since Independence*, NBT Publications, India.
9. A.C. Roy, (1994), *International Relations since 1919*, Calcutta, The World Press, Pvt. Ltd.
10. Henry Kissinger, (1994), *Henry Kissinger: Diplomacy*, New York, Simon and Schuster Inc.
11. Kanti Bajpai and Siddharth Mallavarapu, (2009), *International Relations in India: Bringing Theory Back Home*, New Delhi, Orient BlackSwan.

Further Readings:

1. Paul R. Viotti and Mark V. Kauppi, (2007), *International Relations and World Politics: Security, Economy, Identity*, Dorling Kindersley, (India), Pvt. Ltd.
2. R.C. Varmani, (2011), *Contemporary International Relations*, New Delhi, Gitanjali Publishing House.
3. B.S. Chimni, (1993), *International Law and World Order: A Critique of Contemporary Approaches*, New Delhi, Sage Publications.
4. Partha S. Ghose, (1995), *Cooperation and Conflict in South Asia*, New Delhi, Manmohan Publishers.
5. JFR Jacob, *Surrender at Dacca: Birth of a Nation*, Lancer Publishers and Distributors.
6. Rajesh M. Basrur, (2001), *Security in the New Millennium: View from South Asia*, India Research Press, N. Delhi.
7. Frederick Lewis Schuman, (1967), *The Cold War: Retrospective and Prospect*, Louisiana State University Press.
8. A. Appadorai and M.S. Rajan (1985), *India's Foreign Policy and Relations*, New Delhi South Asia Publishers.

Assessment Method:

Students are required to go through the recommended readings and participate actively in the class activities. Evaluation is based on student's performance in Mid-Semester Examination for 25 marks, End Semester Examination for 50 marks and 25 marks for Internal Assessment which will be based on Class Participations, Presentations, Discussions and Regularity.





SCHOOL OF MANAGEMENT
ANNEXURE-III





School of Humanities and Social Sciences
Gautam Buddha University

GBU/007/HSS/4.1/2014-2015-262

08.09.14

The Dean (I/C)
School of Humanities and Social sciences

Subject: Review of status of admissions in PG Programmes and Proposal regarding starting of the Under Graduate Programmes in the School for Academic Session 2015-16

Madam,

Consequent upon our discussions and responsibility reposed in the undersigned, a meeting of all the Heads of the Departments of the School was convened on 05 September 2014 to evaluate the status of Post Graduate Programmes and to discuss and finalize the Proposal for starting 03 Years B.A. Honours Programmes from Academic Year 2015-16. The meeting was attended by the following members:

- | | |
|------------------------------|--|
| 1. Dr. Om Prakash, HoD, | Department of English and Modern European Languages
Department of Indian Languages and Literature
Department of Mass Communication and Media Studies |
| 2. Dr. V. K. Shanwal, HoD, | Department of Education and Training
Department of History and Civilization |
| 3. Dr. Aanad P. Singh, HoD, | Department of Psychology and Mental Health |
| 4. Dr. S. N. Fatmi, HoD, | Department of Sociology
Department of Economics, Planning and Development |
| 5. Dr. Subhasis Bhadra, HoD, | Department of Social Works |

After long discussions and objective assessment of status of the admissions in the Post Graduate Programmes in the third consecutive academic year, the members unanimously agreed upon the recommendations and the proposal of which the detailed minutes are attached overleaf. The members unanimously agreed for sending an appeal to the competent authority for these recommendations to be placed in the forthcoming meeting of the Academic Council to be held on 20 September 2014.

The recommendations and the attached proposal are submitted for kind consideration and approval at the competent level.

(Signature)
(Dr. Om Prakash)
08.09.14

Encl: Original copy of Minutes of the Meeting. *PUSHAPATRA*
Registrar, G.B.U.

Forwarded for kind consideration. *(Signature)*
08.09.14
Dean

School of Humanities & Social Sciences
Gautam Buddha University



(Signature)
Registrar Sir

School of Humanities and Social Sciences
Gautam Buddha University

Minutes of the meeting of all Head of the Departments of the School to discuss
Status of the Post Graduate Programmes and to discuss and finalize the Proposal for
starting 03 Years B.A. Honours Programmes from Academic Year 2015-16
on 05 September 2014

In the line of the consent received from the Dean of the School, a meeting of all the Heads of the Departments was convened in the School on 05 September 2014 to evaluate the status of Post Graduate Programmes and to discuss and finalize the Proposal for starting 03 Years B.A. Honours Programmes from Academic Year 2015-16. The meeting was attended by the following members:

- | | |
|------------------------------|--|
| 1. Dr. Om Prakash, HoD, | Department of English and Modern European Languages
Department of Indian Languages and Literature
Department of Mass Communication and Media Studies |
| 2. Dr. V. K. Shanwal, HoD, | Department of Education and Training
Department of History and Civilization |
| 3. Dr. Aanad P. Singh, HoD, | Department of Psychology and Mental Health |
| 4. Dr. S. N. Fatmi, HoD, | Department of Sociology
Department of Economics, Planning and Development |
| 5. Dr. Subhasis Bhadra, HoD, | Department of Social Works |

After long discussions and objective assessment of status of the admissions in the Post Graduate Programmes in the third consecutive academic year, the members unanimously agreed upon the following.

Recommendations Regarding Post Graduate Programmes: The meeting started with the deliberations on the status of admissions in the School at Post Graduate level for the academic session 2014-15. It was unanimously agreed upon that the current approach has not been effective enough in getting sufficient number of students to run programmes at Post Graduate level in various Departments. The allocated seats in various PG programmes have not been filled yet in the third consecutive academic year. The overall assessment and on-the-ground input suggest that the Fee Structure and cost of the application fee are playing impediments in getting sufficient number of applications. In order to attract admissions in the post graduate programmes in the School and in the light of the above, it was agreed upon unanimously that there is a need to review the policy. After looking at different central and state level Universities and their programmes in the Humanities and Social Sciences, the members put forward the following recommendations:

- a. As there is no entrance test for any of the PG Programmes and the admission is done on the basis of interview and academic weightage, the cost of application forms in all programmes at all the levels in the School may be revised to INR 200 (Rupees two hundred) for GEN/OBC and INR 100 (Rupees one hundred) SC/ST applicants.
- b. The existing Registration Fee in Post Graduate Programmes should be brought down to INR 2500 (Rupees two thousand five hundred).

Sulendra Kumar

AP Singh

Dr. Subhasis Bhadra

Dr. V. K. Shanwal

Dr. Om Prakash



- c. The existing refundable security deposit (caution money) should be brought down to INR 2500 (Rupees two thousand five hundred).
- d. The academic fee in all the Post Graduate Programmes should remain unchanged.
- e. Hostel facilities to the students in all programmes of the School should be extended only on demand and in the line with the approval given by the competent authority, students should be exempted from mandatory stay on campus.

Recommendations Regarding Under Graduate Programmes: In addition to the PG Programmes already offered in various departments, we firmly believe that there is a need to start Undergraduate Studies/Bachelor's Programme in the School. These programmes will feed into the need of the Post Graduate Programmes and also orient the existing students towards pursuing degree at higher levels (Doctoral level) in the School.

The Proposal: This proposal is an effort to nurture the young minds at an age when they are vulnerable and it will be easier to tap that energy, mould them as committed and sincere individuals and harness the talent to help them build a better life and future. Also, immediately after the senior secondary school education, the students are introduced to the world concerning their social lives which help them acknowledge the standards of rigorous scholastic endeavours required when they are promoted to the Masters programme.

The following courses are being proposed in various Departments of the School.

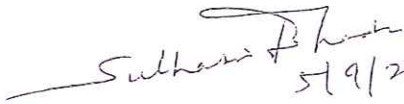
S.No.	Name of the UG Honours Programme	Department of...	No. of Seats
Humanities			
1	B.A. (Honours) in English	English and Modern European Languages	40
2	B.A. (Honours) in Hindi	Indian Languages and Literature	40
3	B.A. (Honours) in Urdu	Indian Languages and Literature	40
4	Bachelor in Journalism and Mass Communication (BJMC)	Mass Communication and Media Studies	40
Social Sciences			
1	B.A. (Honours) in Psychology	Psychology and Mental Health	40
2	B.A. (Honours) in Sociology	Sociology	40
3	B.A. (Honours) in Economics	Economics, Planning and Development	40
4	Bachelor of Social Work (BSW)	Social Works	40
5	B.A. (Honours) in History	History and Civilization	40
6	B.A. (Honours) in Political Science	Political Science & International Relations	40
7	B.A. (Honours) in Education	Education and Training	40

Mode of Admission	Academic Weightage (cut off based on the qualifying examination i.e. 12 th (Senior Secondary))
Duration of the Programme	03 Years
Cost of the Application Form	INR 200 for Gen/OBC and INR 100 for SC/ST candidates
Academic Fee	INR 10,000 (Ten Thousand)
One time Registration Fee in the Course At the time of Admission in the Programme	INR 2,500 (Two Thousand Five Hundred)
Refundable Security Deposit (Caution Money) After completion of the Course	INR 2500 (Two Thousand Five Hundred)
Hostel and Mess Charges	Should be made available only on demand and the charges applicable as per the University Rules.

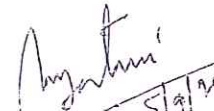


The proposed Bachelor Programmes have been designed for three years, which are divided into six semesters across all the years, with two semesters in each academic year. After the successful completion of the respective courses, the students will be awarded with the Bachelor of Arts Degree with Honours in the Concerned Field by the University or as the prescribed nomenclature. The programme structure, course outline, and the credit distribution shall be made by the concerned Boards of Studies after getting approval in principle by the academic council.

The recommendations and the above proposal are submitted for kind consideration and approval at the competent level.


5/9/2014

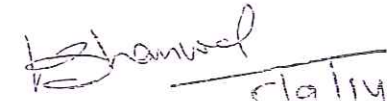
(Dr. Subhasis Bhadra)


5/9/2014

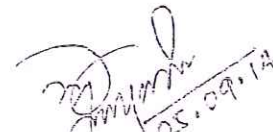
(Dr. S. N. Fatmi)


5/9/2014

(Dr. Anand P. Singh)


5/9/14

(Dr. V. K. Shanwal)


05.09.14

(Dr. Om Prakash)





Gautam Buddha University School of Management

August 20, 2014

Proceedings of the XIV meeting of the Board of Studies

14th meeting of Board of Studies of School of Management was held on August 20th, 2014 at 11:00 AM under the chairpersonship of Dean (I/C) in Dean's conference room.

The following members were present:

1. Dr. Shweta Anand, Dean(I/C)
2. Dr. Dinesh Sharma, HoD
3. Dr. Lovy Sarikwal, Assistant Professor
4. Dr. Manisha Sharma, Assistant Professor
5. Dr. Ombir Singh, Assistant Professor

Expert (s)

1. Prof Nand Dhameja, Former Professor MDI, Gurgaon, IIPA
2. Prof. M. P. Gupta, Department of Management Studies, IIT Delhi

The following decisions/observations were made in the meeting:

1. The Course Structure of MBA programme:
 - a. The course Outlines of Sem I and Sem III were discussed and approved.
 - b. The course 'Professional Development Lab (MB-519)' which was earlier a 'No credit' course was now approved as a '2 credit' course for MBA Sem I, to be implemented from batch 2014-16 onwards.
 - c. Electives which were distributed as 5 each in Sem III and Sem IV, were now redistributed as 6 electives in Sem III and 4 electives in Sem IV, to be implemented from batch 2013-15 onwards.
 - d. The course 'Open Elective' of 2 credits in Sem IV was done away with, to be implemented from batch 2013-15 onwards since this semester is a fast track semester.



2. The Course structure of Integrated MBA programme:


- a. The course outlines of Sem I, III, V, VII and IX were discussed and approved.
- b. The course 'Business Statistics (MB-106)' in Sem II was replaced with 'Business Statistics I', to be implemented from batch 2014-19 onwards.
- c. The course 'Business History (MB-215)' in Sem III was renamed as 'Business Evolution', to be implemented from batch 2013-2018 onwards.
- d. The course 'Operations Research (MB-209)' in Sem III was replaced with 'Business Statistics II', to be implemented from batch 2013-18 onwards.
- e. The course 'Operations Management (MB-208)' in Sem IV was replaced with 'Operations Research', to be implemented from batch 2013-18 onwards.
- f. The course 'Supply Chain Management (MB-309)' in Sem V was replaced with 'Operations Management I', to be implemented from batch 2013-18 onwards.
- g. The course 'Project Management (MB-314)' in Sem VI was replaced with 'Operations Management II', to be implemented from batch 2013-18 onwards.
- h. The course 'Management Info Systems (MB-401)' in Sem VII was renamed as 'Management Information Systems (MB-401)', to be implemented from batch 2011-16 onwards.
- i. The course 'Open Elective' of 2 credits in Sem VII was done away with, to be implemented from batch 2011-16 onwards.
- j. The course 'Foreign Language-I' in Sem VIII was replaced with 'Managing Interpersonal and Team Processes', to be implemented from batch 2011-16 onwards.
- k. The course 'Course on Independent Study (MB-503)' in Sem IX was done away with to create bandwidth for the placement, to be implemented from batch 2010-15 onwards.
- l. The course 'Foreign Language-II' in Sem IX was replaced with 'Manpower Development for Technological Change (Code- MB-472), to be implemented from batch 2010-15 onwards.
- m. The electives in Sem IX were distributed as 4*2 instead of 5*2 and the remaining one elective was replaced with the course 'Case Study method' as a core course, to be implemented from batch 2011-16 onwards.
- n. The course 'Dissertation & Field Training (MB-502)' was renamed as 'Project Dissertation/Field Training (MB-502)', to be implemented from batch 2010-15 onwards.
- o. The course 'Presentation of Dissertation (MB-504)' was renamed as 'Presentation of Dissertation/ Field Training (MB-504)' and its credit was changed from 4 to that of 10, to be implemented from batch 2010-15 onwards.

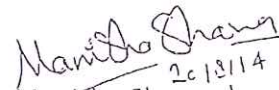
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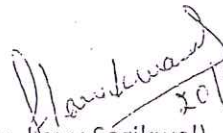


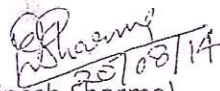
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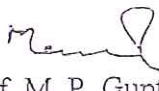
3. The list of area wise electives will be revised from time to time based on changes in business dynamics.
4. The course outlines of Ph.D. Course (Odd Semester, 2014-15) were discussed and approved.

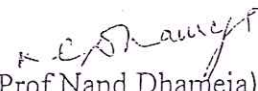

(Dr. Ombir Singh)


(Dr. Manisha Sharma)


(Dr. Lovy Sarikwal)


(Dr. Dinesh Sharma)


(Prof M. P. Gupta)


(Prof Nand Dhameja)

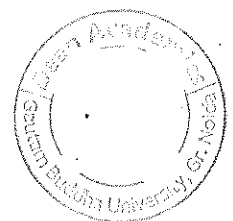

(Dr. Shweta Anand)





SCHOOL OF VOCATIONAL STUDIES & APPLIED SCIENCES

ANNEXURE-IV



GUBU-014/SOVSAS/BOS/26/2014-52

Dated: July, 15, 2014

Proceedings of the sixth meeting of Board of Studies:

The sixth meeting of Board of Studies (BOS) of school of Vocational studies and Applied Sciences was held on 15/07/2013 at 11.00 A.M. onwards in the office of Dean SOVSAS.

The following members were Present/Absent:

S/N	Name	Affiliations	Designation	Remarks
1	Prof. Anuradha Mishra	Gautam Buddha University	Professor	Dean, SOVSAS
2	Prof. Peeyush Chandra	I.I.T. Kanpur	Professor	External Expert
3	Prof. S. Ahmad	Zamia Milia Islamia, Delhi	Professor (External Expert)	Absent
4	Dr. Anjana Solanki	Gautam Buddha University	Associate Professor	Head, Department of Applied Mathematics
5	Dr. Amit Awasthi	Gautam Buddha University	Assistant Professor	Member
6	Dr. Vikas Panwar	Gautam Buddha University	Assistant Professor	Special Invitee
7	Dr. Sushil Kumar	Gautam Buddha University	Assistant Professor	Special Invitee
8	Dr. Pratiksha Saxena	Gautam Buddha University	Assistant Professor	Absent
9	Dr. Amit Ujlayan	Gautam Buddha University	Assistant Professor	Special Invitee
10	Dr. Dipti Singh	Gautam Buddha University	Assistant Professor	Special Invitee
11	Dr. Fahed Zulfeqarr	Gautam Buddha University	Assistant Professor	Special Invitee

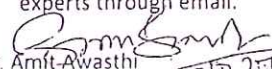
Following were discussed and approved:

1. Modified course structure & syllabi of Doctoral programme in Applied Mathematics.
2. Modified course structure & syllabi of course being offered in two years M.Sc. programme in Applied Mathematics.
3. Modified syllabi of Mathematics offered for integrated B. Tech.+M. Tech./MBA and M. Tech. Programme.

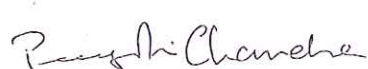
Details of Recommendations Made:


The following recommendations were made:

1. The BOS recommended the minor modification in the course structure of M. Sc. Applied Mathematics and Ph. D. applied Mathematics programme. (The modifications are incorporated)
2. The contents were thoroughly discussed and as per the scope of the programme necessary change were made.
3. The Dean was authorized to carry out changes if needed at any time during the semester after the consultation with the internal members of BOS and the external experts through email.

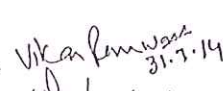
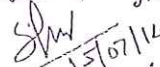
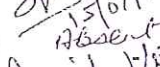
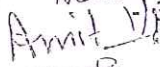



Dr. Amit Awasthi
(Assistant Professor) 15.7.2014


Dr. Anjana Solanki
(Head, Deptt. of Applied Mathematics) 15.07.14


Prof. Peeyush Chandra
(External Expert)


Prof. Anuradha Mishra
(Dean, SOVSAS)

Invitee Members:

Dr. Vikas Panwar -  31.7.14
Dr. Sushil Kumar -  15/07/14
Dr. Pratiksha Saxena -  15/07/14
Dr. Amit Ujlayan -  15/07/2014
Dr. Dipti Singh - 
Dr. Fahed Zulfeqarr - 



Ref. No.GBU-014/SOVSAS/BOS/26/2014- 50

Date: 10/07/2014

Proceeding of the second phase of sixth Board of Studies

The second phase of the meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 10/7/2014 at 9:30 am onwards in the office of Dean SoVSAS. Following members attended the meeting of the Board:

S. No.	Name	Affiliations
1.	Prof. Anuradha Mishra	Dean, SoVSAS
2.	Prof. A.K. Singh	Professor, Department of Chemistry, IITD, New Delhi
3.	Prof. R.K. Sharma	Professor, Department of Chemistry, Delhi University, Delhi
4.	Dr. Rajesh Kumar Gupta	Assistant Professor, Department of Applied Chemistry, GBU
5.	All Faculty Members	Special Invitees

Agenda

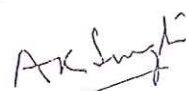
1. Approval of modified course structure & syllabi of Engineering Chemistry courses (CY101 & CY103).
2. Approval of modified course structure and syllabi of M.Sc. Applied Chemistry programme
3. Approval of course structure and syllabi of Ph.D. programme in applied Chemistry.
4. Any other matter if required.

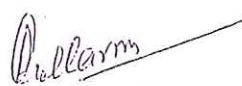
Details of the Recommendations Made:

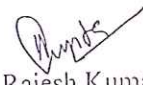
The following recommendations were made:

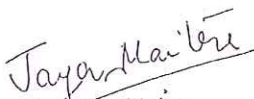
1. The BoS recommended the modified syllabi of CY101 and CY103.
2. The BoS recommended the proposed course structure and syllabi of M.Sc. programme. The BoS approved the revised list of experiments for M.Sc. programme.
3. The BoS recommended the proposed course structure and syllabi of Ph.D. programme.
4. The Dean was authorized to carry out the changes if needed at any time during the semester after due consultation with the internal members of BoS and the external expert through email.


The meeting was concluded with thanking note to Prof. A.K. Singh and Prof. R.K. Sharma.

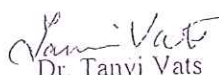

Prof. A.K. Singh
(External Expert)


Prof. R.K. Sharma
(External Expert)

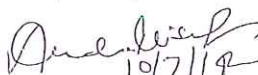

Dr. Rajesh Kumar Gupta
(Member)


Dr. Jaya Maitra
(Assistant Professor)


Dr. Deepti Goyal
(Faculty Associate)


Dr. Tanvi Vats
(Faculty Associate)

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Prof. Anuradha Mishra
(Dean)



ABU-014/SoVSAS/BoS/26/2014-51

Date: 12/07/2014

Proceedings of the Board of Studied (BoS) Meeting Held on July 12, 2014.

The Board of Studied meeting of Applied Physics department (School of Vocational Studies & Applied Sciences, SOVSAS) was held on 12/07/2014 at 10:00 A.M. in the office of Dean, SoVSAS.

The following members were present/absent:

S. NO.	NAME	AFFILIATION	DESIGNATION	REMARKS
1.	Dr. Anuradha Mishra	Gautam Buddha University	Professor	Dean, SoVSAS
2.	Dr. Ravi Kant Soni	IIT-Delhi	Professor	External Experts
3.	Dr. Ravindra Nath	IIT-Roorkee	Professor	Absent
4.	Dr. Manmohan S. Shishodia	Gautam Buddha University	Asst. Professor	Member
5.	Dr. Mausumi Pohit	Gautam Buddha University	Asst. Professor	Member
6.	Dr. Bhawana Joshi	Gautam Buddha University	Asst. Professor	Member
7.	Dr. Anuj K. Sharma	Gautam Buddha University	Asst. Professor	Special Invitee

The following points were discussed and approved by BoS:

1. Modified course structure and syllabi of Ph.D. Programme in Applied Physics.
2. Modified course structure and syllabi of M.Sc. Applied Physics Programme.
3. Approved Physics course (Applied Physics) offered for Integrated B.Tech+M.Tech./MBA (Food/Bio Technology).

Details of Recommendations Made

1. The BoS recommended minor modification in the course structure of M.Sc. Applied Physics and Ph.D. Applied Physics programmes. Modified course structure/syllabi will be effective from admissions in Session 2014-15. For admissions prior to Session 2014-15, previously approved syllabus/course structure will be followed (The modifications are incorporated).
2. The BoS recommended separate Physics course for Integrated B.Tech+M.Tech./MBA (Food/Bio Technology). The content of this course (Applied Physics, PH-101) was approved by the BoS.
3. The contents were thoroughly discussed and as per the scope of the programme necessary changes were made.
4. The BoS revised the list of experiments for M.Sc., and B.Tech+M.Tech./MBA programmes. The final list of experiments and the instrument specifications were approved.
5. The Dean, SoVSAS was authorized to carry out changes if needed at any time during the semester after due consultation with the internal members of BoS, and the external experts through E-Mail.

Dr. Bhawana Joshi
(Assistant Professor)

Dr. Mausumi Pohit
(Assistant Professor)

Dr. Manmohan S. Shishodia
(Assistant Professor)

Prof. Ravi Kant Soni
(External Expert)

Prof. Anuradha Mishra
(Dean, SoVSAS)

Invitee Members:

Dr. Anuj Kumar Sharma (Assistant Professor)



ABU-014/SoVSAS/26/2014-49

Dated: 09/7/14

Proceeding of the first phase of sixth meeting of Board of Studies:

The first phase of the sixth meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 09/07/2014 at 11:30 am onwards in the office of Dean SoVSAS.

Following members attended the meeting of the Board:

S. No.	Name	Affiliation
1	Prof. Anuradha Mishra	Dean, SoVSAS
2	Dr. P. Barnwal	Senior Scientist, NDRI, Karnal
3	Mr. Ashish Dixit, Special Invitee	FPT, SoVSAS
4	Mr. Kshitiz Kumar, Special Invitee	FPT, SoVSAS
5	Er. Ashish M. Mohite, Special Invitee	FPT, SoVSAS

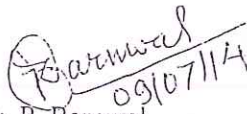
Agenda

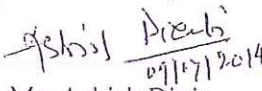
- Approval of changes made in the structure & syllabi for the below mentioned courses starting from the new academic session (2014-15)
 - M.Sc. in Food Science
 - M.Tech in Food Processing & Technology (2 years)
 - Integrated Dual Degree Programme (BTech.+MTech/MBA) (5 years)
- Discussion and approval of any other related issue if required.

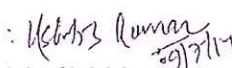
Details of the Decisions taken

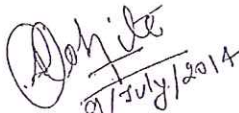
- 6.1 The course structure for all the three programmes as mentioned in the agenda was approved (Annexure 1 -).
- 6.2 The contents of detailed syllabus of each course were discussed and the modification suggested by the expert was made. Further, the Dean was authorized to carry out the changes if need be at any time during the semester after consultation with faculty/experts through email.


The meeting was concluded with thanking note to Dr. P. Barnwal.


Dr. P. Barnwal
(Senior scientist)


Mr. Ashish Dixit
(Special Invitee)


Mr. Kshitiz Kumar
(Special Invitee)


Er. Ashish M. Mohite
(Special Invitee)


Prof. Anuradha Mishra
(Dean)



Ref. No.GBU-014/SOVSAS/BOS/26/2014- 53

Date: 02/08/2014

Proceeding of the fifth phase of sixth Board of Studies

The fifth phase of the meeting of the Board of Studies of School of Vocational Studies and Applied Sciences was held on 02/08/2014 at 9:30 am onwards in the office of Dean SoVSAS. Following members attended the meeting of the Board:

S. No.	Name	Affiliations
1.	Prof. Anuradha Mishra	Dean, SoVSAS
2.	Prof. A.K. Attri	Dean, School of Environmental Sciences, JNU
3.	Dr. Athar Hussain	Assistant Professor, Environmental Engineering, SoE (Special Invitee)
4.	Dr. Alpa Yadav	Faculty Associate (Special Invitee)
5.	Dr. Namrata Pathak	Guest Faculty (Special Invitee)

Agenda

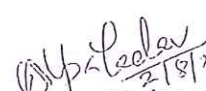
1. Approval of modified course structure & syllabi of Masters programme in Environmental Science.
2. Approval of course structure and syllabi of PhD. programme in Environmental Science.
3. Any other matter if required.

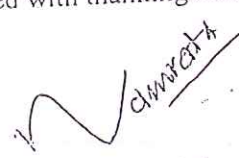
Details of the Recommendations Made:

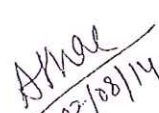
The following recommendations were made:

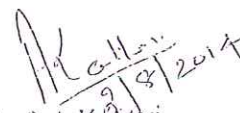
1. The BOS recommended the proposed course structure and syllabi of M.Sc programme.
2. The BOS recommended the proposed course structure and syllabi of Ph.D programme. It was also recommended by the external expert that more Ph.D. courses may be offered if the expertise in the department is available.
3. The BoS approved the revised list of experiments for M.Sc. programme and the list of instruments with specifications required for the same.
4. The Dean was authorized to carry out the changes if needed at any time during the semester after due consultation with the internal members of BoS and the external expert through email.

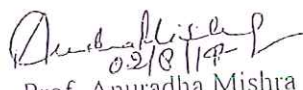
The meeting was concluded with thanking note to Prof. A.K. Attri.


Dr. Alpa Yadav
(Faculty Associate)


Dr. Namrata Pathak
(Guest Faculty)


Dr. Athar Hussain
(Assistant Professor)


Prof. A.K. Attri
(External Expert)


Prof. Anuradha Mishra
(Dean)



SCHOOL OF HUMANITIES AND SOCIAL SCIENCES

ANNEXURE-V



School of Humanities and Social Sciences Gautam Buddha University

Minutes of the meeting of the Board of Studies conducted on 18th January, 2014 II

A meeting of the Board of Studies, constituted under the Clause no. 1.3 of the Ordinances of the University and subsequently approved by the Competent Authority vide GBU/007/HSS/07/2013-08 was convened in the office of the Dean of the School to update and finalize the following:

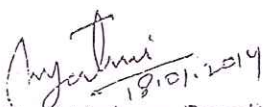
1. Name of the Department as 'Department of Sociology'
2. Detailed course syllabi of MA Programme in Sociology
3. Course structure and syllabi of Ph.D. Programme in Sociology

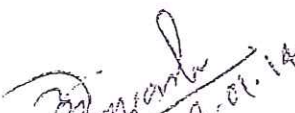
The meeting was attended by the following members:

- Dr. Indu Uprety, Dean (I/C) and Chairperson
- Prof. Vinay Kumar Srivastava, Expert Member, University of Delhi
- Prof. Mahavir Singh, School of Humanities and Social Sciences
- Dr. Syed Nadeem Fatmi, Head of the concerned Department
- Dr. Om Prakash, School of Humanities and Social Sciences

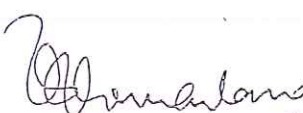
The BoS reviewed the existing MA and Ph.D. Programme structures and unanimously approved the same after deliberations on the issues. The Board also discussed the detailed course contents and approved the topic wise syllabi of different courses offered in MA and Ph.D. Programmes. It also consented upon the name the Department to be called as 'Department of Sociology'. The approved Programme structures are attached overleaf.


The meeting ended with the vote of thanks to the Chair.


(Dr. Syed Nadeem Fatmi)


(Dr. Om Prakash)


(Prof. Mahavir Singh)


(Prof. Vinay Kumar Srivastava)


(Dr. Indu Uprety)

18 January 2014





**Department of Psychology & Wellbeing
School of Humanities and Social Sciences
Gautam Buddha University, Greater Noida**

Minutes of the Board of Studies Meeting 4th

A meeting of Board of Studies (BoS) of Department of Psychology & Wellbeing was convened in the School of Humanities & Social Sciences on 19th July, 2014 at 10.00 A.M.

Following members were present in the meeting to discuss the various agenda.

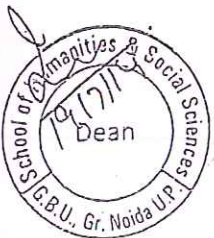
1. Dr. Indu Uprety, Dean, School of Humanities & Social Sciences, GBU, Chairperson
2. Prof. Manju Mehta, Professor, AIIMS, New Delhi, Expert Member
3. Dr. Subodh Kumar, Deputy Director (Acad.), RCI, New Delhi, Expert Member
4. Prof. Mahavir Singh, Professor, GBU, Member
5. Dr. A. P. Singh, Head, Deptt. of Psychology & Wellbeing, GBU, Member
6. Dr. Om Prakash, Assistant Professor, GBU, Member

Agenda:

1. To discuss and finalize the nomenclature of the Department of Psychology & Wellbeing in accordance with the guidelines of RCI.
2. To discuss and finalize the course outline and syllabi of M.A. (Applied Psychology) programme.
3. To discuss and finalize the course outline and syllabi of M.Phil. (Clinical Psychology) programme.
4. To discuss and finalize the allocation of course credits for different courses, dissertation work and examination pattern for M.A. (Applied Psychology) and M.Phil. (Clinical Psychology) programmes.
5. The other relevant issues related to the growth and development of the students of various programmes, faculty members and the Department.

The above mentioned agenda were discussed in the meeting and the Board consented upon the following points:

1. The Board reviewed the earlier meetings and respective approved minutes. In continuation to that after minor revisions, the following were discussed and agreed upon.
 - a. In the light of approval received from of M.Phil. in Clinical Psychology from RCI, The Board unanimously adopted all the guidelines and requirement of M.Phil, Clinical Psychology Training Programme, proposed in the RCI guidelines.
 - b. It was also agreed upon that any modification made in the original guidelines of the Council shall be incorporated from time to time to maintain the parity and uniformity in the entire programme structure.



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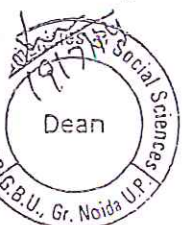
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Page 1 of 3

- c. The board consented upon to change the nomenclature of the department and recommended to make it "Department of Psychology and Mental Health" in place of the old name Department of Psychology & Wellbeing.
- d. In conformity with the RCI guidelines (Cl. 4.9), it was consented by the Board that for M.Phil. Clinical Psychology Programme, the theory and practical papers shall carry 30% weightage based on internal evaluation which will be decided on the basis of written examination 70% weightage shall be placed on external evaluation of the students' performance.
- e. For the conducting Practicum & Viva-Voce examination, Psychodiagnostic & Psychotherapeutic submissions & Viva Voce examination, and Dissertation & Viva Voce examination, two experts from the relevant disciplines as External Examiners will be invited and the examination will be conducted in the presence of the committee comprising of the two External Experts, Head of the Department and other Faculty Members. The logistics, honorarium and travel expenses incurred in the process of inviting the external experts shall be supported by the university.
- f. For the evaluation of dissertation work of M.Phil, Clinical Psychology student, the dissertation theses will be sent to the external examiner, who shall be an expert from the Clinical Psychology Area, for the evaluation the same examiner will be invited to take the viva-voce examination. In this regard, further it was consented upon that one external examiner can evaluate a maximum of 3 dissertations at a time. Also, the number of external examiner will be decided in a proportion of 3:1 (3 students to 1 external examiner).
- g. The allocation of credits to various courses were reviewed and with minor modification approved to be executed (Annexure II).
- h. During the winter and summer vacation period of the university, the students of M.Phil, Clinical Psychology Programme will be advised to utilise their maximum vacation as a clinical psychology trainee at their respective clinical setups wherever they have already been posted for their clinical exposure. This training period will also be included in their total designated hours of clinical training. However, with the consent of the Coordinator of the clinical setup and approval of Head of the Department, the students might avail the vacation period for a short duration such as, maximum a week or 10 days.
- i. Every student in M.Phil. Clinical Psychology programme will be permitted maximum of 30 days of Casual Leave over a period of two years M.Phil, Clinical Psychology training programme, which implies that a student can only avail up to 15 days of leave for one academic year.
- j. For M.Phil. programme admission of students, annual evaluation and examination as contained in (clauses 4.13, 4.14, 4.15 of RCI guidelines) was adopted without any deviation.
- k. The Board also agreed upon and recommended that in the light of Clause No. 4.1 of RCI guidelines, the University has to ensure the appropriate no. of faculty in the Department at least one at Associate Professor Level and rest at the level of Assistant Professor.



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19/7/14

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19/7/2014

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19.07.14


Page 2 of 3


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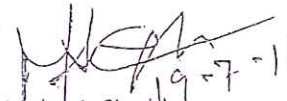


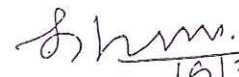
- I. It was also consented upon that the procurement of reference books, relevant national and international journals in the area, and lab instruments to be expedite and ensure at earliest.


The meeting ended with vote of thanks to the Chair.

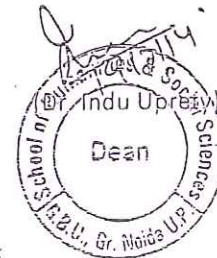

(Dr. Om Prakash) 19.07.14



(Dr. A. P. Singh) 19/7/14


(Prof. Mahavir Singh) 19-7-14


(Dr. Subodh Kumar) 19/7/14


(Prof. Manju Mehta) 19/7/14




19.07.14





Gautam Buddha University
SCHOOL OF HUMANITIES & SOCIAL SCIENCES
Department of Political Science and International Relations

Minutes of the Meeting of the Boards of Studies conducted on 12th September 2014

A meeting of the Board of Studies, constituted under the clause no. 1.3 of the Ordinances of the University and subsequently approved by the competent authority vide GBU/-007/HSS/07/2013-08, was convened on 12th September 2014 in the office of the Dean of the School to update and finalize the detailed course contents of MA in Political Science and International Relations in the School.

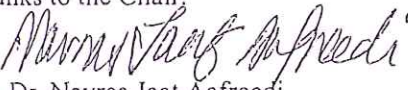
The meeting was attended by the following members:

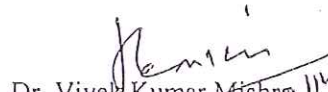
1. Dr Indu Uprety, Dean (I/C) and Chairperson, School of Humanities and Social Sciences, GBU,
2. Prof. Aswini Mohapatra, Expert Member, School of International Studies, Jawaharlal Nehru University, New Delhi.
3. Prof. Narender Kumar, Expert Member, Centre for Political Studies, SSS, Jawaharlal Nehru University, New Delhi.
4. Dr Navras Jaat Aafreedi, Faculty from School, GBU
5. Dr Vivek Kumar Mishra, Invited Member, School of Law, Justice & Governance, GBU

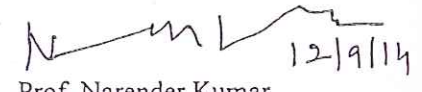
The Board reviewed the existing programme structure and course curriculum and modified the same after extensive deliberations on the issues. In addition to the review, the board also discussed the detailed course contents and approved the topic-wise syllabi of different courses offered in the programme. The expert members have suggested to introduce a course on Research Methodology in the third semester of the programme. They have also suggested the following changes in the existing course titles:

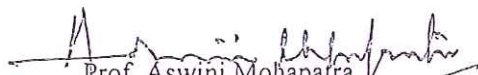
1. Modern Diplomatic History (PIR-503) as Diplomatic History
2. History of Political Thought (PIR-507) as Western Political Thought
3. Conflict Resolution, Knowledge System and Vision of Peace (PIR-613) as Conflict and Peace in Contemporary World

The revised programme structure is attached overleaf as Annexure-1. The meeting ended with the vote of thanks to the Chair.


Dr. Navras Jaat Aafreedi
(Member)


Dr. Vivek Kumar Mishra
(Member)


Prof. Narender Kumar
(Member)


Prof. Aswini Mohapatra
(Member)



SCHOOL OF BUDDHIST STUDIES AND CIVILIZATION

ANNEXURE-VI





Gautam Buddha University

(Established by UP Act (9) of 2002)

Minutes of the Board of Studies

The Board of Studies of School of Buddhist Studies and Civilization held on August 2, 2014 at 11.00 AM in Conference Room under the Chairpersonship of Dr. Neeti Rana, Dean (I/C) & Associate Professor.

The agenda of the meeting are:

1. To discuss the Course Content of proposed syllabus for 5 years Integrated BA (H) + MA in Buddhist Studies & Civilization

The names of the members of Board of Studies:

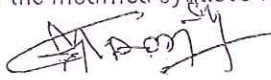
1. Dr. Neeti Rana, Dean (I/C) & Associate Professor (Chairperson)
2. Prof. K. T. S. Sarao, Department of Buddhist Studies, University of Delhi (External Expert)
3. Dr. Anand Singh, Associate Professor
4. Dr. Arvind Kumar Singh, HoD and Ph. D. Program Coordinator
5. Dr. Indu Girish, M. A. Program Coordinator (On Leave)
6. Dr. Gurmet Dorje, M. Phil. Program Coordinator

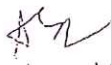
Names of other Special Invitees:

1. Dr. Priyasen Singh, Assistant Professor
2. Dr. Chandrashekhar Paswan, Assistant Professor
3. Dr. Chintala Venkat Sivasai, Assistant Professor
4. Dr. Priyadarsini Mitra, Assistant Professor
5. Dr. Gyanaditya Shakya, Assistant Professor
6. Dr. Manish Tarachand Meshram, Assistant Professor
7. Dr. Mukesh Kumar Verma, R/F Associate
8. Ms. Sangeeta Wadhwa, R/F Associate

Resolution: Since the Course structure for 5 years Integrated BA (H) + MA in Buddhist Studies & Civilization of School has been approved by the Board of Studies of Buddhist Studies and Civilization held on 18 July 2013 which was duly approved by the Academic Council held on September 3, 2013. This Board of Studies of School has met to finalize the Course Content of the above mentioned course structure. After thorough discussion on each and every papers content and suggested reading, Board of Studies has recommended some modifications which have been duly incorporated and modified it as per the suggestion of the Expert and other members. The Board of Studies have cleared and approved the modified syllabus for the above said programme.


Dr. Arvind Kumar Singh


Dr. Gurmet Dorje


Dr. Anand Singh


Dr. Neeti Rana


Prof. K. T. S. Sarao



SCHOOL OF I.C.T.

ANNEXURE-VII



School of Information & Communication Technology

Date: 02.09.13

Minutes of the 9th meeting of Board of Studies (BoS) of the School of Information and Communication Technology held in the conference room of the school on 2nd September 2013 at 11:00 AM.

Following members were present:

Internal Members:

- | | | |
|----|------------------------|---|
| 1. | Dr. Ela Kumar | Dean I/C, School of ICT and Chairperson |
| 2. | Dr. Om Prakash Sangwan | Assistant Professor, School of ICT |
| 3. | Dr. Pardeep Tomar | Assistant Professor, School of ICT |
| 4. | Dr. Karan Singh | Assistant Professor, School of ICT |

External Members:

- | | | |
|----|-------------------------|--|
| 1. | Prof. V. K. Jain | Indian Institute of Technology, New Delhi |
| 2. | Prof. J. R. P. Gupta | NSIT, New Delhi |
| 3. | Prof. M. N. Doja | Jamia Millia Islamia University, New Delhi |
| 4. | Prof. Sonali Priya Minz | JNU, New Delhi |

Mr. Navaid Zafar Rizvi, Research/Faculty Associate School of ICT was present in the meeting as special invitee.

The following decisions were taken in the meeting:

- 09.01 Replacement of "Engineering Mechanics (CE101)" by "Fundamental of Information Security CS103" for the current semester of Dual Degree B.Tech + M.Tech/MBA, CSE and ECE, Semester I.

After the discussions held in the meeting, the committee gave its recommendations for replacement of the subject. The approved course structure of "Fundamental of Information Security CS103" is attached as "Annexure A"

- 09.02 Replacement of course "Cyber Law Laboratory" by the course "Cyber Security Laboratory CS183" of 02 credits for the current semester of Dual Degree B.Tech + M.Tech/MBA, CSE and ECE 1st Semester.

After the discussions held in the meeting the committee gave its recommendations for replacement of the subject. The approved course structure of "Cyber Law Laboratory CS183" is attached as "Annexure B"

- 09.03 Modification and Correction of existing Course Code to the syllabus of "Wireless Technologies EC564" to new Course Code "Wireless Technologies EC451" from list of elective courses of Dual Degree B.Tech+M.Tech/MBA Programme, Semester VII. The faculty also proposed to introduce few latest topics in the syllabus and modified the course

Committee has given its recommendation to correct the existing course code to new Course Code "EC451: Wireless Technologies" and approved modified syllabus is attached as "Annexure C".



09.04

Modification to the syllabus of "Antenna and Wave Propagation EC305" and "Microwave Engineering EC302". The faculty proposed to introduce few latest topics in the syllabus and modified the course.

Board gave its consent for the same. The modified syllabi of both the courses are attached as "Annexure D and Annexure E".

09.05

School of ICT has started full time research scholar in the Academic Session 2013-14. As per the UGC guidelines regarding the course work for PhD scholars, it is proposed to have course work of 12 credits as an essential part for the full time research scholars.

After discussion committee has agreed on this proposal and gave consent to introduce 12 credit course work for full time research scholars. Approved course work of 12 credits for full time research scholar is attached as "Annexure F".

(09.06)

School of ICT has admitted few students as full time research scholar in the Academic Session 2013-14. It is proposed to give some monetary compensation (be as per the University policy regarding the payment to Guest Faculty). The full time scholars will be assigned them teaching load of minimum of 08 hours at School of ICT.

After discussion, the committee has agreed on this proposal to engage full time research scholars as guest faculty as per the parity of JRF and payment will be made as per GBU rules devised for guest faculty.

09.07

Guidelines for the submission of PhD thesis for the Working Professional /Full time research scholars at School of ICT as per the proposed guidelines.

Committee has given its recommendation regarding the submission of PhD thesis for the Working Professional /Full time research scholar as per the proposed guidelines attached is attached as "Annexure G"

09.08

It is proposed that course "Social Aspects of Engineering SS401" of 03 credits to be replaced by "Research Techniques in ICT CS527/CS459" of 03 credits for the current semester for Dual Degree B.Tech + M.Tech/MBA, CSE and ECE, Semester VII, for the students opting for M.Tech Stream with Specialization in Software Engineering, Intelligent Systems & Robotics, Wireless Communications & Networks and VLSI.

After the discussion held in the meeting the committee gave its recommendation for replacement of the subject. The approved course structure of "Research Techniques in ICT CS527/CS459" is attached as "Annexure H"

09.09

It is proposed that the course "Social Aspects of Engineering SS401" to be replaced by one of the elective course given by the School of Management for the current semester of Dual Degree B.Tech + M.Tech/MBA, CSE and ECE, Semester VII, for the students opting for MBA Stream with various specialization as given by School of Management.

After the discussions held in the meeting the committee gave its consent for replacement of the course "Social Aspects of Engineering SS401" with the elective course as decided by School of Management.



- External Members:

Prof. Sona Jahriya Minz

Mr. Navaid Zafar Rizvi 2/9/13

Dr. Om Prakash Sangwan

Prof. J. R. P. Gupta

Dr. Pardeep Tomar

Dr. Ela Kumar

Date:11/09/2014

School of Information and Communication Technology

Proceedings of the first phase of tenth meeting of Board of Studies:

The first phase of the tenth meeting of the Board of Studies of School of ICT was held on 11/09/2014 at 3:00 PM onwards at the conference hall of School of ICT.

Following members attended the meeting of the Board:

S. No.	Name	Affiliation
1.	Prof. Anuradha Mishra (Chairperson)	Dean I/C, School of ICT
2.	Prof. A. Q. Ansari	Jamia Millia Islamia University, Delhi
3.	Prof. D. P. Vidhyarthi	Jawaharlal Nehru University, Delhi
4.	Prof. R. K. Agrawal	Jawaharlal Nehru University, Delhi
5.	Dr. Mukul Verma	Former Dean, IRISSET, Hyderabad
6.	Dr. Rajesh Mishra	HoD (ECE) SICT
7.	Dr. Anurag Singh Baghel	HoD (CSE) SICT
8.	Dr. Gurjit Kaur	School of ICT
9.	Dr. Neeta Singh	School of ICT
10.	Dr. Vidushi Sharma, Special Invitee	School of ICT
11.	Dr. Pradeep Tomar, Special Invitee	School of ICT

Agenda

1. Approval of course structure for M.Tech. Embedded Systems and its syllabi for first semester from session 2014-15.
2. Approval of course structure for M.Tech. (Computer Science) and approval of its syllabi for first semester from session 2014-15.
3. Approval of course structure and syllabi for M.Tech. (Information and Communication Technology) specialization - Intelligent Systems and Robotics, Software Engineering, VLSI Design, and Wireless and Communication & Networks from academic session 2014-15.
4. Replacement of "Engineering Mechanics" CE101 of 03 credits by subject "Fundamental of Information Security" CS103 of 03 credits for Dual degree B.Tech.+M.Tech. /MBA for CSE and ECE Sem I.
5. Approval of modification in title of subject code CS183.
6. Approval of subject "Stress Management" of 03 credits offered by School of Humanities and Social Sciences as an elective subject for M.Tech. (ICT) ISR, SE, VLSI, and WCN Sem-III.
7. Reporting about swapping the core subject "Advanced Communication Networks" course code EC532 with subject "Ad-hoc Wireless Networks" course code EC546 of 3 credits in M.Tech. (ICT) WCN Sem II and its approval.
8. To approve the modifications in the syllabi of the subject "Expert System Design" code "CS661" of Dual Degree B.Tech.(CSE)+M.Tech/MBA Sem IX and "Internet Technology" CS201 of Dual Degree B.Tech.(CSE)+M.Tech/MBA Sem III.

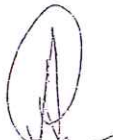


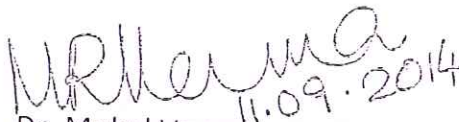
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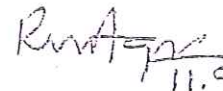
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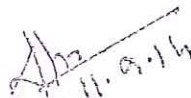
Details of the decisions taken

- 10.1 The course structure of M.Tech. Embedded Systems and its syllabi was approved from session 2014-15 (Annexure-10.1).
- 10.2 The course structure of M.Tech. Computer Science and its syllabi for first semester were approved from session 2014-15 (Annexure-10.2)
- 10.3 The course structure and syllabi for all the M.Tech. ICT streams as given in agenda were approved from 2014-15. (Annexure -10.3 to 10.6).
- 10.4 The replacement as mentioned in the agenda point 4 was not approved.
- 10.5 The change as mentioned in the agenda point 5 was approved from session 2013-14(Annexure 10.7).
- 10.6 Agenda point 6 was not approved.
- 10.7 The BOS took note of the change in agenda point 7 and gave its approval.
- 10.8 Syllabi of the subjects in agenda point 8 were approved (Annexure 10.8 and 10.9).
- Further, the Dean was authorized to carry out the changes if need be at any time during the semester after consultation with faculty/experts through email.
- The meeting was concluded with thanking note to invited experts.



11/9/2014
Dr. A. Q. Ansari


11.09.2014
Dr. Mukul Verma

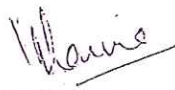

11.9.14
Dr. R.K. Agrawal


11.9.14
Dr. D. P. Vidyarthi

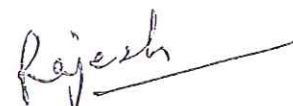

11/9/14
Dr. Neeta Singh

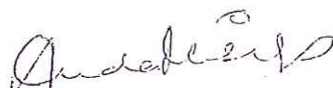

Dr. Pradeep Tomar


11/9/14
Dr. Gurjit Kaur


Dr. Vidushi Sharma


Dr. A. S. Baghel


Dr. Rajesh Mishra


Dr. Anuradha Mishra



SCHOOL OF BIOTECHNOLOGY

ANNEXURE-VIII



Gautam Buddha University
School of Biotechnology
Greater Noida

Date: 27/8/13

Proceedings of 8th BOS meeting of SoBT

A meeting of BOS of school of biotechnology was held on 27/8/13 at 2.00 pm in the conference room of Dean, School of Biotechnology. The following members attended the meeting:

- a. Dr. Seema Dwivedi (Dean, SoBT)
- b. Dr. J.P. Moyal (HoD, SoBT)
- c. Dr. Gunjan Garg (Assistant Professor, SoBT)
- d. Dr. Nagendra Singh (Assistant Professor, SoBT)
- e. Prof. Satyawati Sharma (external expert; Department of CRDT-IIT Delhi) - ABSENT
- f. Prof. Moshahid Rizvi (external expert; Department of Biosciences, Jamai Millia Islamia University, New Delhi)
- g. Prof. Anuradha Mishra, Dean Academics – Special invitee
- h. Dr. Athar Hussain, Assistant Professor, SoE – Special invitee

The following agenda were placed in the meeting for discussion:

- 1.1 Modifications in the Course curriculum of different M.Tech (Biotechnology) programs of School of Biotechnology from Academic session 2013 onwards.
 - a. Modifications in the Course curriculum of M.Tech (Biotechnology)-2 years program
 - b. Modifications in the Course curriculum of M.Tech (Biotechnology)-3 years program]
 - c. Modifications in the Course curriculum of Integrated B.Tech+M.Tech/MBA (Biotechnology)-5 years program
- 1.2 Approval for second last semester in Genetic engineering, Bioinformatics and food tech specializations for the students of batch 2010-2015, 2011-2016 and 2012-2017 (5 yr program), 2011-2014 and 2012-2015(3 yrs program) and 2012-2014 (2 yrs program)



Signature
27/8/13

- 51
Signature

Signature

Signature

Signature

- 1.3 Modification and approval of Course Curriculum of Ph. D Course Work/Research methodology
- 1.4 Special approval for relaxation in promotion of students to next semester for non-credit course(s)
- 1.5 Opting MBA or M.tech (Biotech) in dual degree program
- 1.6 Proposal of number of PhD students for assistant professor, associate professor, professor.
- 1.7 Discussion about course codes for biotechnology programs
- 1.8 Consumption of chemicals/consumable for PhD students.
- 1.9 Conversion of some part of PDA money for research activities.
- 1.10 Approval for students doing outside M.Tech dissertation.
- 1.11 To activate departmental library at SoBT.
- 1.12 Foundation day celebration of SoBT.

Recommendations and Approval:

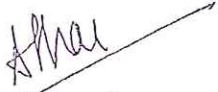
The following recommendations were approved:

1. Agenda 1.1: The course curriculum of the following programs for the academic session 2013 onwards were thoroughly reviewed and after requisite modifications approved by Board of Studies:
 - a. M.Tech (Biotechnology), 2 years
 - b. M.Tech (Biotechnology), 3 years
 - c. Integrated B.Tech+M.Tech(Biotechnology)/MBA, 5 years
2. Agenda 1.2: Second last semester in Genetic engineering, Bioinformatics and food tech specializations for the students of batch 2010-2015, 2011-2016 and 2012-2017 (5 yr program), 2011-2014 and 2012-2015(3 yrs program) and 2012-2014 (2 yrs program) was approved by Board of Studies.
3. Agenda 1.3: The course curriculum of Ph.D Course work was thoroughly reviewed amended and was approved by Board of Studies.
4. Agenda 1.4: BOS recommended that for non-credit course, the students are required to pass the exam anytime till the completion of the program.



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5. Agenda 1.5: In dual degree program i.e. 5 years B.Tech+M.Tech (biotech)/MBA, those students who want to move for MBA can do so only after completion of his/her seven semesters.
6. Agenda 1.6: 2, 4, and 6 numbers of PhD students were recommended for assistant professor, associate professor, professor respectively.
7. Agenda 1.7: Uniformity in course codes distribution for all biotechnology programs was recommended.
8. Agenda 1.8: The consumables acquired for M.Tech dissertation should also be used for full time for PhD students.
9. Agenda 1.9: 40% of PDA money may be used for research activities by individual faculty
10. Agenda 1.10: up to 50% of the students may be permitted to do outside M.Tech dissertation with the permission of Dean, SoBT. If more than 50% student desired for the same, permission may be granted by Vice Chancellor, GBU.
11. Agenda 1.11: The departmental library at SoBT was recommended to be activated at the earliest.
12. Agenda 1.12: The Foundation day celebration of SoBT was approved.


Dr. Athar Hussain

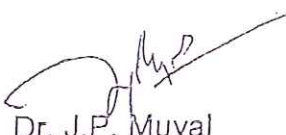
(Assistant Professor, SoE – Special invitee)


Dr. Nagendra Singh

(Assistant Professor, SoBT)


Dr. Gunjan Garg

(Assistant Professor, SoBT)


Dr. J.P. Moyal

(HoD, SoBT)






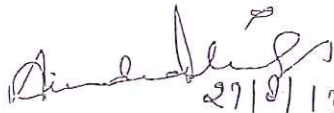






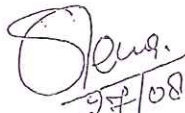

27.8.13
Prof. Moshahid Rizvi

(external expert; Department of Biosciences,
Jamai Millia Islamia University, New Delhi)


27/8/13
Prof. Anuradha Mishra

(Dean Academics – Special invitee)




27/08/2013
Dr. Seema Dwivedi

(Dean, SoBT)



Dated: 15.09.14

To,
The Registrar,
GBU


Dear Sir,

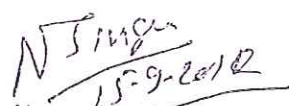
As per desired by the Registrar Office, this is for your kind information that some minor changes in the course structures of M.Tech (Biotech) programs, which were approved in 8th BOS meeting, have been made and approved through circulation by all members of Ex-BOS committee on 27.01.14. A copy of signed course structures is attached herewith.

This is for your kind information. *It may be considered as 9th meeting via circulation.*

Sincerely,


(Dr. Gunjan Garg)


(Dr. J.P. Moyal)


(Dr. Nagendra Singh)

(Ex-internal member of BOS-SoBT)





Jan27, 2014

To
The Members of BOS
School of Biotechnology
GBU
Greater Noida

Subject. approval of the corrected course structure of Integrated B. Tech-M. Tech (5 year), M. Tech. (3 year) and M. Tech. (2 year) programs.

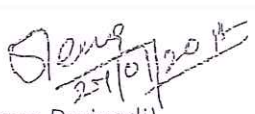
Dear members

We have made the following correction in the existing course structures of the above mentioned subject:

1. The courses have been prepared separately for all the batches, as it was not possible to implement all approved changes in all the batches of 2,3 and 5 year programs.
2. The Inconsistencies in total credits has been removed from all the batches.

I request you to approve the same.

Thanking you


(Dr. Seema Dwivedi)
Dean, So Bt
GBU



2 year batch 2013 onwards

M. Tech (Biotechnology) 4 Semester Program

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
BT401	Recombinant DNA technology	3	0	0	3
BT403	Biophysical Chemistry	3	0	0	3
BT405	Immunology and Immunotechnology	3	0	0	3
BT417	Cell and molecular biology	3	0	0	3
MA415	Biostatistics	2	1	0	3
BT309	Principles of management and entrepreneurship	2	0	0	2
	General Proficiency	0	0	0	1
Practical					
BT411	Recombinant DNA technology lab	0	0	3	2
BT413	Biophysical Chemistry lab	0	0	3	2
BT415	Immunotech. lab	0	0	3	2
	Total	16	1	9	24

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
BT402	Genomics and proteomics	4	0	0	4
BT404	Bio analytical techniques	3	0	0	3
BT406	Bioprocess Engineering and Technology	3	1	0	4
BT418	Molecular Microbial Biotechnology	3	0	0	3
BT306	Bioinformatics and Computational Biology	3	0	0	3
BT310	Enzyme technology	3	0	0	3
	General Proficiency	0	0	0	1
PRACTICAL					
BT412	Genomics and Proteomics lab	0	0	3	2
BT414	Bioprocess Engineering and Technology lab	0	0	3	2
BT316	Bioinformatics and Computational Biology lab	0	0	3	2
BT420	Molecular Microbial Biotech. lab	0	0	3	2
	Total	19	1	9	29

2 year Batch 2013 onwards

Semester 3

S.No.	Course	L	T	P	Credits
(Select any Four papers)					
BT501	Advanced Animal Biotechnology *	3	0	0	3
BT503	Advanced Plant Biotechnology *	3	0	0	3
BT505	Regulation, Ethics and patenting in Biotechnology	3	0	0	3
BT507	Protein Engineering	3	0	0	3
BT509	Molecular modelling and Drug design	3	0	0	3
BT511	Systems biology and computational genomics	3	0	0	3
BT513	Advanced Environmental Biotechnology	3	0	0	3
LABS (select any Three lab)					
BT515	Animal Biotech lab *	0	0	3	2
BT517	Plant Biotech lab *	0	0	3	2
BT519	Bioinformatics lab	0	0	3	2
BT521	Environmental Biotech lab	0	0	3	2
PROJECTS					
BT523	Minor Project	0	0	3	3
BT525	Seminar	0	2	0	2
	General Proficiency	0	0	0	1
	Total credits	9	3	13	24

* The compulsory subjects

Semester 4

S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BT502	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

2 year Batch 2012-14

M. Tech (Biotechnology) 4 Semester Program

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
BT579	Cell and molecular biology	3	0	0	3
BT571/BT411	Microbial Biotechnology	3	0	0	3
BT563/BT403	Biophysical Chemistry	3	0	0	3
BT565/BT405	Immunotechnology	3	0	0	3
BT561/BT401	Recombinant DNA technology	3	0	0	3
BT569	Biostatistics	2	1	0	3
	General Proficiency	0	0	0	1
Practical					
BT573/BT413	Recombinant DNA technology lab	0	0	3	2
BT575/BT415	Biophysical Chemistry lab	0	0	3	2
BT577/BT417	Microbial Biotechnology and Immunotechnology lab	0	0	3	2
	Total	17	1	9	25

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
BT562/BT402	Genomics and Proteomics	4	0	0	4
BT564/BT404	Bio analytical techniques	3	0	0	3
BT566/BT406	Bioprocess Technology	3	0	0	3
BT568/BT408	Regulation, Ethics and patenting in Biotechnology	2	0	0	2
BT574	Bioinformatics	2	0	0	2
	Elective Paper-I	3	0	0	3
	Elective Paper-II (Specialization)	3	0	0	3
	Open Elective-2	2			2
PRACTICAL					
BT570/BT410	Genomics and Proteomics lab	0	0	3	2
BT572/BT412	Bioprocess Technology lab	0	0	3	2
PROJECTS					
	General Proficiency	0	0	0	1
	Total	22	0	6	27



2 year Batch 2012-14

S.No.	Course	L	T	P	Credits
GE SPECIALIZATION (Select any three papers)					
BT501	Advanced Animal Biotechnology	3	0	0	3
BT503	Advanced Plant Biotechnology	3	0	0	3
BT527	Molecular Microbial Biotechnology	3	0	0	3
BT507	Protein Engineering	3	0	0	3
	Lab Techniques (Select any two labs)				
BT515	Animal Biotech lab	0	0	3	2
BT517	Plant Biotech lab	0	0	3	2
BT531	Molecular Microbial Biotechnology lab	0	0	3	2
DI SPECIALIZATION (all are compulsory)					
BT523	Minor Project	0	0	7	7
BT525	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				25
DI SPECIALIZATION (all are compulsory)					
BT509	Molecular modeling and Drug design	2	1	0	3
BT511	Systems Biology and computational genomics	3	0	0	3
BT529	Computer programming	2	1	0	3
	Lab Techniques				
BT519	Bioinformatics lab techniques	0	0	3	2
BT523	Minor Project	0	0	7	7
BT525	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22

2 year Batch 2012-14

Semester 4					
S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BT502	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

SEMESTER 2

Code	Course name
Specialization Elective Paper-I	
BT574/BT414	Cell and Tissue Culture Techniques
BT576/BT416	Data structure and database management system
BT578/BT418	Introduction to food technology
Specialization Elective Paper-II	
BT580/BT420	Structural Genomics and gene mapping
BT582/BT422	Computational Biology
BT584/BT424	Chemistry for Food Technology



3 year Batches -2013

M. Tech (Biotechnology) 6 Semester Program

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
BT301	Cell Biology	3	0	0	3
BT303	Genetics	3	0	0	3
BT305	Microbiology	3	0	0	3
BT309	Principles of management and entrepreneurship	2	0	0	2
BT315	Principles of Physiology	4	0	0	4
MA107	Foundation course in mathematics	2	0	0	2
	General Proficiency	0	0	0	1
PRACTICALS					
BT311	Cell Biology: recs	0	0	3	2
BT313	Microbiology lab	0	0	3	2
BT317	Information Technology lab	0	0	2	1
	Total	17	0	8	23

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
BT302	Molecular Biology	3	0	0	3
BT306	Bioinformatics and Computational biology	3	0	0	3
BT310	Enzyme technology	3	0	0	3
BT318	Biochemistry	3	0	0	3
BT408	Environmental biotechnology	3	0	0	3
PRACTICAL					
BT312	Molecular Biology lab	0	0	3	2
BT316	Bioinformatics and computational biology lab	0	0	3	2
BT320	Biochemistry and enzyme technology lab	0	0	3	2
BT416	Environmental biotechnology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	16	0	12	24



3 year Batches -2013

Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
BT401	Recombinant DNA technology	3	0	0	3
BT403	Biophysical Chemistry	3	0	0	3
BT405	Immunology and Immunotechnology	3	0	0	3
MA415	Biostatistics	2	1	0	3
BT407	Nanobiotechnology	3	0	0	3
	General Proficiency	0	0	0	1
PRACTICAL					
BT411	Recombinant DNA technology lab	0	0	3	2
BT413	Biophysical Chemistry lab	0	0	3	2
BT415	Immunotech. lab	0	0	3	2
	Total	14	1	9	22

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT402	Genomics and proteomics	4	0	0	4
BT404	Bio analytical techniques	3	0	0	3
BT406	Bioprocess Engineering and Technology	3	1	0	4
BT418	Molecular Microbial Biotechnology	3	0	0	3
BT308	Molecular Virology	3	0	0	3
PRACTICAL					
BT412	Genomics and Proteomics lab	0	0	3	2
BT414	Bioprocess Engineering and Technology lab	0	0	3	2
BT420	Molecular Microbial Biotechnology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	25	1	9	24

Semester 5

3 year Batches -2013

S.No.	Course	L	T	P	Credits
(Select any four papers)					
BT501	Advanced Animal Biotechnology *	3	0	0	3
BT503	Advanced Plant Biotechnology *	3	0	0	3
BT505	Regulation, Ethics and patenting in Biotechnology	3	0	0	3
BT507	Protein Engineering	3	0	0	3
BT509	Molecular modeling and Drug design	3	0	0	3
BT511	Systems Biology and computational genomics	3	0	0	3
BT513	Advanced Environmental Biotechnology	3	0	0	3
LABS (Select any three lab)					
BT515	Animal Biotech lab *	0	0	3	2
BT517	Plant Biotech lab *	0	0	3	2
BT519	Bioinformatics lab	0	0	3	2
BT521	Environmental Biotech lab	0	0	3	2
PROJECTS					
BT523	Minor Project	0	0	3	3
BT525	Seminar	0	2	0	2
	General Proficiency	0	0	0	1
	Total credits	9	3	13	24

Semester 6

S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BT502	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

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3 year Batch 2011-14

M. Tech (Biotechnology) 6 Semester Program
Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
BT231/BT301	Cell Biology	3	0	0	3
BT233/BT303	Genetics	3	0	0	3
BT235/BT305	Principles of Physiology	4	0	0	4
BT242/BT312	Principles of management and entrepreneurship	2	0	0	2
BT239/BT307	Microbiology	3	0	0	3
BT241/BT309	Information Technology for Biologists	2	0	0	2
IMA207	Basic Mathematics *				
PRACTICALS					
BT243/BT311	Cell Biology lab	0	0	3	2
BT245/BT313	Microbiology lab	0	0	3	2
BT247/BT315	Information Technology lab	0	0	3	2
	General Proficiency	0	0	0	1
Total		17	1	9	24

*It is a non-credit course but passing in the paper is essential

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
BT232/BT302	Molecular Biology	3	0	0	3
BT234/BT304	Principles of Biochemistry	3	0	0	3
BT236/BT306	Developmental biology	3	0	0	3
BT238/BT308	Environmental biotechnology	3	0	0	3
BT240/BT310	Introduction to bioinformatics	2	1	0	3
BT242	Enzyme technology	3	0	0	3
MA108	Mathematics *				
PRACTICAL					
BT244/BT314	Molecular Biology lab	0	0	3	2
BT246/BT316	Biochemistry and enzyme technology lab	0	0	3	2
BT248/BT318	Bioinformatics lab	0	0	3	2
	General Proficiency	0	0	0	1
Total		17	1	9	25

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Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
BT561/BT401	Recombinant DNA technology	3	0	0	3
BT563/BT403	Biophysical Chemistry	3	0	0	3
BT565/BT405	Immunotechnology	3	0	0	3
BT567/BT407	Nanobiotechnology	3	0	0	3
BT569/BT409	Biostatistics	2	1	0	3
BT571/BT411	Microbial biotechnology	3	0	0	3
	Open Elective-1	2			2
	General Proficiency	0	0	0	1
PRACTICAL					
BT573/BT413	Recombinant DNA technology lab	0	0	3	2
BT575/BT415	Biophysical Chemistry lab	0	0	3	2
	Microbial Biotechnology and Immunotechnology lab	0	0	3	2
Total		19	1	9	27

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT562/BT402	Genomics and Proteomics	4	0	0	4
BT564/BT404	Bio analytical techniques	3	0	0	3
BT566/BT406	Bioprocess Technology	3	0	0	3
BT568/BT408	Regulation, Ethics and patenting in Biotechnology	2	0	0	2
	Elective Paper-I	3	0	0	3
	Elective Paper-II (Specialization)	3	0	0	3
	Open Elective-2	2			2
PRACTICAL					
BT570/BT410	Genomics and Proteomics lab	0	0	3	2
BT572/BT412	Bioprocess Technology lab	0	0	3	2
PROJECTS					
	General Proficiency	0	0	0	1
Total		20	0	6	25

3 year Batch 2011-14



3 year Batch 2011-14

Semester 6

S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BT502	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

SEMESTER 4 (Elective papers)

Code	Course name
Elective Paper- 1	
BT576/BT516	Data structure and database management system
BT578/BT518	Introduction to food technology
BT588/BT520	Molecular Virology
BT586	Dairy stream processing
Elective Paper-II (Specialization)	
BT574/BT514	Cell and Tissue Culture Techniques
BT582/BT522	Computational Biology
BT584/BT524	Chemistry for Food Technology

3 year Batch 2011-14

Semester 5

S.No.	Course	L	T	P	Credits
GE SPECIALIZATION (Select any three papers)					
BT501	Advanced Animal Biotechnology	3	0	0	3
BT503	Advanced Plant Biotechnology	3	0	0	3
BT527	Molecular Microbial Biotechnology	3	0	0	3
BT507	Protein Engineering	3	0	0	3
	Lab Techniques (Select any two labs)				
BT515	Animal Biotech lab	0	0	3	2
BT517	Plant Biotech lab	0	0	3	2
BT531	Molecular Microbial Biotechnology lab	0	0	3	2
BT529	Minor Project	0	0	7	7
BT525	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				24
BI SPECIALIZATION (all are compulsory)					
BT509	Molecular modelling and Drug design	2	1	0	3
BT511	Systems Biology and computational genomics	2	0	0	2
BT528	Computer programming	2	1	0	3
	Lab Techniques				
BT519	Bioinformatics lab techniques	0	0	6	4
BT523	Minor Project	0	0	7	7
BT525	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				24
FOOD TECH SPECIALIZATION (all are compulsory)					
BT533	Food Engineering and Technology-I	3	0	0	3
BT535	Food Engineering and Technology-II	3	0	0	3
BT537	Food analysis and Quality Control	3	0	0	3
BT539	Food Technology Lab	0	0	6	4
BT523	Minor Project	0	0	7	7
BT525	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				24



3 year Batch 20120-15

M. Tech (Biotechnology) 6 Semester Program

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
BT431/BT301	Cell Biology	3	0	0	3
BT432/BT303	Genetics	3	0	0	3
BT435/BT305	Principles of Physiology	4	0	0	4
BT442/BT312	Principles of management and entrepreneurship	2	0	0	2
BT439/BT307	Microbiology	3	0	0	3
BT441/BT309	Information Technology for Biologists	2	0	0	2
MA107	Basic Mathematics *				
PRACTICALS					
BT443/BT311	Cell Biology lab	0	0	3	2
BT445/BT313	Microbiology lab	0	0	3	2
BT447/BT315	Information Technology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	17	0	6	24

*It is a non-credit course but passing in the paper is essential

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
BT432/BT302	Molecular Biology	3	0	0	3
BT434/BT304	Principles of Biochemistry	3	0	0	3
BT436/BT306	Developmental biology	3	0	0	3
BT438/BT308	Environmental biotechnology	2	0	0	3
BT440/BT310	Introduction to bioinformatics	2	1	0	3
BT442	Enzyme technology	3	0	0	3
MA108	Mathematics *				
PRACTICAL					
BT444/BT314	Molecular Biology lab	0	0	3	2
BT446/BT316	Biochemistry and enzyme technology lab	0	0	3	2

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3 year Batch 20120-15

M. Tech (Biotechnology) 6 Semester Program

Semester 3

BT418/BT318	Bioinformatics lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	17	1	3	25

S.No.	Course	L	T	P	Credits
THEORY					
BT401	Recombinant DNA technology	3	0	0	3
BT403	Biophysical Chemistry	3	0	0	3
BT405	Immunology and Immunotechnology	3	0	0	3
MA415	Bioinformatics	2	1	0	3
BT407	Nanobiotechnology	3	0	0	3
	General Proficiency	0	0	0	1
PRACTICAL					
BT412	Recombinant DNA technology lab	0	0	3	2
BT413	Biophysical Chemistry	0	0	3	2
BT415	Immunotech. lab	0	0	3	2
	Total	14	1	9	22

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT402	Genomics and proteomics	4	0	0	4
BT404	Bio analytical techniques	3	0	0	3
BT406	Bioprocess Engineering and Technology	3	1	0	4
BT418	Molecular Microbial Biotechnology	3	0	0	3
BT308	Molecular Virology	3	0	0	3
PRACTICAL					
BT412	Genomics and Proteomics lab	0	0	3	2
BT414	Bioprocess Engineering and Technology lab	0	0	3	2
BT420	Molecular Microbial Biotechnology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	15	1	5	24



3 year Batch 20120-15

3 year Batch 20120-15

Semester 5

S.No.	Course	L	T	P	Credits
GE SPECIALIZATION (Select any three papers)					
BT501	Advanced Animal Biotechnology	3	0	0	3
BT503	Advanced Plant Biotechnology	3	0	0	3
BT527	Molecular Microbial Biotechnology	3	0	0	3
BT507	Protein Engineering	3	0	0	3
	Lab Techniques (Select any two labs)				
BT515	Animal Biotech lab	0	0	3	2
BT517	Plant Biotech lab	0	0	3	2
BT531	Molecular Microbial Biotechnology lab	0	0	3	2
BI SPECIALIZATION (All are compulsory)					
BT523	Minor Project	0	0	7	7
BT525	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				24
BT509	Molecular modelling and Drug design	2	1	0	3
BT511	Systems Biology and computational genomics	3	0	0	3
BT529	Computer programming	2	1	0	3
	Lab Techniques				
BT519	Bioinformatics lab techniques	0	0	6	4
BT523	Minor Project	0	0	7	7
BT525	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				24

Semester 6

S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BT502	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

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5 year Batch 2013-onwards

5 year Batch 2013-onwards

Integrated M.Tech. Biotechnology (B.Tech + M.Tech) Programme

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA103	Mathematics for Biotechnology/Food technology-I	3	1	0	4
CS101	Computer Programming-I	2	0	0	2
BT101	Life sciences -I	4	0	0	4
HU101	English Proficiency	2	0	0	2
SS101	Human values and Buddhist ethics	2	0	0	2
PRACTICALS					
BT103	Life sciences -I Lab	0	0	3	2
CY103/PH104	Chemistry Lab/ Physics Lab	0	0	2	1
CS102	Computer Programming Lab-I	0	0	3	2
Total					
		16	2	8	24

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA104	Mathematics for Biotechnology/Food technology-II	3	1	0	4
BT102	Life sciences-II	4	0	0	4
CS102	Computer Programming-II	2	0	0	2
HU102	Professional Communication	2	0	0	2
SS102	History of Science & Technology	2	0	0	2
BT104	Ecology and Environment	3	0	0	3
PRACTICALS					
PH104/CY103	Physics Lab/Chemistry Lab	0	0	2	1
CS102	Computer Lab-II	0	0	2	1
Total					
		19	2	4	24

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Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
BT201	Organic chemistry	3	1	0	4
MA203	Quantitative Techniques in Biotechnology	3	1	0	4
BT203	Life sciences -III	3	0	0	3
BT205	Biomolecules	3	0	0	3
PRACTICALS					
	Open Elective	2	0	0	2
BT207	Fundamental Biochemistry lab	0	0	3	2
	General Proficiency	0	0	0	1
Total					
		14	2	3	15

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT202	Principles of biochemical engineering	3	1	0	4
BT204	Bioenergetics	2	1	0	3
BT206	Biochemistry	3	0	0	3
EE202	Measurements and Instrumentation	2	0	0	2
BT208	Physical and Inorganic chemistry	2	1	0	3
PRACTICALS					
	General Proficiency	0	0	0	1
BT210	Biochemical engineering and Biochemistry lab	0	0	3	2
EE212	Measurements and Instrumentation Lab	0	0	2	1
Total					
		12	3	5	15

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Semester 5

S.No.	Course	L	T	P	Credits
THEORY					
BT301	Cell Biology	2	0	0	3
BT303	Genetics	3	0	0	3
BT305	Microbiology	3	0	0	3
BT307	Plant Physiology	3	0	0	3
BT309	Principles of management and entrepreneurship	2	0	0	2
PRACTICALS					
BT311	Cell Biology lab	0	0	0	1
BT313	Microbiology lab	0	0	3	2
Total					
		14	0	5	19

Semester 6

S.No.	Course	L	T	P	Credits
THEORY					
BT302	Molecular Biology	2	0	0	3
BT304	Animal Physiology	3	0	0	3
BT306	Bioinformatics and Computational biology	3	0	0	3
BT308	Molecular virology	3	0	0	3
BT 310	Enzyme technology	3	0	0	3
PRACTICAL					
BT312	Molecular Biology Lab	0	0	3	2
BT314	Enzyme technology lab	0	0	3	2
BT316	Bioinformatics and Computational biology lab	0	0	3	2
General Proficiency					
		0	0	0	1
Total					
		17	0	9	22



Semester 7

S.No.	Course	L	T	P	Credits
THEORY					
BT401	Recombinant DNA technology	3	0	0	3
BT403	Biophysical Chemistry	3	0	0	3
BT405	Immunology and Immunotechnology	3	0	0	3
BT407	Nanobiotechnology	3	0	0	3
BT409	Industrial & Food Biotechnology	3	0	0	3
PRACTICAL					
BT411	Recombinant DNA technology lab	0	0	3	2
BT413	Biophysical Chemistry lab	0	0	3	2
BT415	Immunotech. lab	0	0	3	2
Total					
		15	0	5	22

Semester 8

S.No.	Course	L	T	P	Credits
THEORY					
BT402	Genomics and Proteomics	4	0	0	4
BT404	9to analytical techniques	3	0	0	3
BT406	Bioprocess Engineering and Technology	3	1	0	4
BT408	Environmental biotechnology	3	0	0	3
BT410	Molecular Therapeutics	2	0	0	3
BT412	Molecular Microbial Biotechnology	3	0	0	3
PRACTICAL					
BT420	Molecular Microbial Biotechnology lab	0	0	3	2
BT412	Genomics and Proteomics lab	0	0	3	2
BT414	Bioprocess Engineering & Technology lab	0	0	3	2
BT416	Environmental biotechnology lab	0	0	3	2
Total					
		16	1	9	25

5 year Batch 2013-onwards

Semester 9

S.No.	Course	L	T	P	Credits
(Select any Four papers)					
BTS01	Advanced Animal Biotechnology *	3	0	0	3
BTS03	Advanced Plant Biotechnology *	3	0	0	3
BTS05	Regulation Ethics and patenting in Biotechnology	3	0	0	3
BTS07	Protein Engineering	3	0	0	3
BTS09	Molecular modeling and Drug design	3	0	0	3
BTS11	Systems Biology and computational genomics	3	0	0	3
BTS13	Advanced Environmental Biotechnology	3	0	0	3
LABS (select any Three lab)					
BTS15	Animal Biotech lab *	0	0	3	2
BTS17	Plant Biotech lab *	0	0	3	2
BTS19	Bioinformatics lab	0	0	3	2
BTS21	Environmental Biotech lab	0	0	3	2
PROJECTS					
BTS23	Minor Project	0	0	3	3
BTS25	Seminar	0	2	0	2
	General Proficiency	0	0	0	1
Total credits		9	3	13	24

* The compulsory subjects

Semester 10

S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BTS02	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
Total					28

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5 year Batch 2013-16

Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
MA201	Quantitative Techniques	3	1	0	4
BT201	Introductory Microbiology	3	0	0	3
BT203	Basic Cell Biology	3	0	0	3
BT205	Fundamentals of Biochemistry	3	0	0	3
BT207/CY201	Organic chemistry	3	1	0	4
BT209	Fundamentals of Genetics	3	0	0	3
PRACTICALS					
BT211	Cell Biology Lab	0	0	3	2
BT213	Fundamental Biochemistry lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	18	2	6	25

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT202	Introduction to Molecular biology	3	0	0	3
BT204	Principles of Immunology	3	0	0	3
BT206	Principles of biochemical engineering	3	1	0	4
BT208	Bioenergetics	3	1	0	4
BT 214	Enzyme technology	3	0	0	3
BT216	Molecular modeling	3	1	0	4
BT202	Measurements and Instrumentation	2	0	0	2
PRACTICALS					
BT210	Immunology and enzyme technology lab	0	0	3	2
BT212	Measurements and Instrumentation Lab	0	0	2	1
	General Proficiency	0	0	0	1
	Total	20	3	5	27

5 year Batch 2013-16

Integrated M.Tech. in Biotechnology (B.Tech + M.Tech) programme

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA103	Basic Mathematics	3	1	0	4
CS101	Computer Programming-I	2	0	0	2
BT101	Evolutionary biology and biodiversity	3	0	0	3
BT103	Life sciences-I	3	0	0	3
HU101	English Proficiency	2	0	0	2
SS101	Human values and Buddhist ethics	2	0	0	2
PRACTICALS					
CY103/PH104	Engineering Chemistry Lab/ Physics lab	0	0	2	1
CS101	Computer Programming Lab-I	0	0	3	2
	General Proficiency	0	0	0	1
	Total	18	2	5	24

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA104	Mathematics	3	1	0	4
BT102	Life sciences-II	3	1	0	4
CS102	Computer Programming-II	2	0	0	2
HU102	Professional Communication	2	0	0	2
SS102	History of Science & Technology	2	0	0	2
CE106	Ecology and Environment	2	1	0	3
PRACTICALS					
BT104	Life sciences Lab	0	0	3	2
PH104/CY103	Engineering Physics Lab/Chemistry Lab	0	0	2	1
CS102	Computer Lab-II	0	0	2	1
	General Proficiency			1	1
	Total	17	4	7	26



S.No.	Course	L	T	P	Credits
THEORY					
BT301	Cell Biology	3	0	0	3
BT303	Genetics	3	0	0	3
BT305	Microbiology	3	0	0	3
BT307	Plant Physiology	3	0	0	3
BT309	Principles of management and entrepreneurship	2	0	0	2
PRACTICALS					
BT311	Cell Biology/lab	0	0	3	2
BT313	Microbiology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	14	0	6	19

Semester 6

S.No.	Course	L	T	P	Credits
THEORY					
BT262	Molecular Biology	3	0	0	3
BT304	Animal Physiology	3	3	0	3
BT306	Bioinformatics and Computational biology	3	0	0	3
BT308	Molecular virology	3	0	0	3
BT 318	Biochemistry	3	0	0	3
PRACTICAL					
BT312	Molecular Biology Lab	0	0	3	2
BT 322	Biochemistry Lab	0	0	3	2
BT316	Bioinformatics and Computational biology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	15	0	9	22

Semester :-

S.No.	Course	L	T	P	Credits
THEORY					
BT401	Recombinant DNA technology	3	0	0	3
BT403	Biophysical Chemistry	3	0	0	3
BT405	Immunology and Immunotechnology	3	0	0	3
BT407	Nanobiotechnology	3	0	0	3
BT409	Industrial & Food Biotechnology	3	0	0	3
	General Proficiency	0	0	0	1
PRACTICAL					
BT411	Recombinant DNA technology lab	0	0	3	2
BT413	Biophysical Chemistry	0	0	3	2
BT415	Immunotech lab	0	0	3	2
	Total	15	0	9	22

Semester 8

S.No.	Course	1	2	3	4	Credits
THEORY	BT402	Genomics and Proteomics	2	0	0	2
	BT406	Bio analytical techniques	3	0	0	3
	BT408	Bioprocess Engineering and Technology	3	1	0	4
	BT410	Environmental biotechnology	3	0	0	3
	BT422	Molecular Therapeutics	3	0	0	3
PRACTICAL	BT 422	Regulation ethics and patenting	2	0	0	2
	BT412	Genomics and Proteomics lab	0	0	3	3
	BT416	Bioprocess Engineering & Technology lab	0	0	3	3
	BT416	Environmental biotechnology lab	0	0	3	3
	PROJECTS					
General Proficiency		0	0	0	0	0
Total		16	1	9	0	26

5 year Batch 2011-15

Semester 9

S.No.	Course	L	T	P	Credits
For GE SPECIALIZATION (Select any three theory papers for GE)					
BT501	Animal Biotechnology	2	0	0	3
BT503	Plant Biotechnology	3	0	0	3
BT509	Molecular Microbial Biotechnology	3	0	0	3
BT507	Protein Engineering	3	0	0	3
BT511	Lab Techniques	0	0	3	2
BT513	Minor Project	0	0	7	7
BT515	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22
For BI SPECIALIZATION (all are compulsory)					
BT517	Molecular modelling and Drug design	2	1	0	3
BT519	Systems Biology and computational genomics	2	0	0	3
BT521	Computer programming	2	1	0	3
BT523	Lab Technique	0	0	3	2
BT513	Minor Project	0	0	7	7
BT515	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22
FOOD TECH SPECIALIZATION (all are compulsory)					
BT529	Food Engineering and Technology-I	3	0	0	3
BT533	Food Engineering and Technology-II	3	0	0	3
BT535	Food analysis and Quality Control	3	0	0	3
BT537	Lab Technique	0	0	3	2
BT513	Minor Project	0	0	7	7
BT515	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22

5 year Batch 2011-16

Semester 10

S.No	Course	L	T	P	Credits
MAJOR PROJECT					
BT522	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28



Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH101	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA103	Basic Mathematics	3	1	0	4
CS101	Computer Programming-I	2	0	0	2
BT101	Evolutionary biology and biodiversity	3	0	0	3
GT103	Life sciences -I	2	0	0	3
HU101	English Proficiency	2	0	0	2
SS101	Human values and Buddhist ethics	2	0	0	2
PRACTICALS					
CY103/PH104	Engineering Chemistry Lab/ Physics Lab	0	0	2	1
CS101	Computer Programming Lab-I	0	0	3	2
	General Proficiency	0	0	0	2
	Total	18	2	5	24

Semester 4

S.No	Course	L	T	P	Credits
THEORY					
BT201	Principles of biochemical engineering	3	1	0	4
BT204	Bioenergetics	2	1	0	3
BT206	Biochemistry	3	0	0	3
EE202	Measurements and Instrumentation	2	0	0	2
BT208	Physical and Inorganic chemistry	2	1	0	3
PRACTICALS					
BT210	Biochemical engineering and Biochemistry lab	0	0	3	2
EE212	Measurements and Instrumentation Lab	0	0	2	1
	General Proficiency	0	0	0	2
	Total	12	3	5	19

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics				
MA104	Mathematics	3	1	0	4
BT102	Life sciences-II	3	1	0	4
CS102	Computer Programming-II	3	1	0	4
HUI02	Professional Communication	2	0	0	2
SS102	History of Science & Technology	2	0	0	2
CE106	Ecology and Environment	2	0	0	2
PRACTICALS		2	1	0	3
BT104	Life sciences Lab				
PH104/CY103	Engineering Physics Lab/Chemistry Lab	0	0	3	2
CS182	Computer Lab-II	0	0	2	1
	General Proficiency	0	0	2	1
	Total				
		17	4	7	26

5 year Batch 2012-17

Semester 5

S.No.	Course	L	T	P	Credits
THEORY					
BT301	Cell Biology	3	0	0	3
BT303	Genetics	3	0	0	3
BT305	Microbiology	3	0	0	3
BT307	Plant Physiology	3	0	0	3
BT309	Principles of management and entrepreneurship	2	0	0	2
PRACTICALS					
BT311	Cell Biology lab	0	0	3	2
BT313	Microbiology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	14	0	6	15

Semester 6

S.No.	Course	L	T	P	Credits
THEORY					
BT302	Molecular Biology	3	0	0	3
BT304	Animal Physiology	3	0	0	3
BT306	Bioinformatics and Computational biology	3	0	0	3
BT308	Molecular virology	3	0	0	3
BT310	Enzyme technology	3	0	0	3
PRACTICAL					
BT312	Molecular Biology Lab	0	0	3	2
BT314	Enzyme technology lab	0	0	3	2
BT316	Bioinformatics and Computational biology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	17	0	9	22

5 year Batch 2012-17

Semester 7

S.No.	Course	L	T	P	Credits
THEORY					
BT401	Recombinant DNA technology	3	0	0	3
BT403	Biophysical Chemistry	3	0	0	3
BT405	Immunology and Immunotechnology	3	0	0	3
BT407	Nanobiotechnology	3	0	0	3
BT409	Industrial & Food Biotechnology	3	0	0	3
	General Proficiency	0	0	0	1
PRACTICAL					
BT411	Recombinant DNA technology lab	0	0	3	2
BT413	Biophysical Chemistry	0	0	3	2
BT415	Immunotech. Lab	0	0	3	2
	Total	15	0	3	22

Semester 8

S.No.	Course	L	T	P	Credits
THEORY					
BT402	Genomics and Proteomics	4	0	0	4
BT404	Bio analytical techniques	3	0	0	3
BT406	Bioprocess Engineering and Technology	3	1	0	4
BT408	Environmental biotechnology	2	0	0	3
BT410	Molecular Therapeutics	3	0	0	3
BT422	Regulation ethics and patenting	2	0	0	2
PRACTICAL					
BT412	Genomics and Proteomics lab	0	0	3	2
BT414	Bioprocess Engineering & Technology lab	0	0	3	2
BT416	Environmental biotechnology lab	0	0	3	2
PROJECTS					
	General Proficiency	0	0	0	1
	Total	16	1	9	26

5 year Batch 2012-17

Semester 9

S.No.	Course	L	T	P	Credits
For GE SPECIALIZATION [Select any three theory papers for GE]					
BT501	Animal Biotechnology	3	0	0	3
BT503	Plant Biotechnology	3	0	0	3
BT509	Molecular Microbial Biotechnology	3	0	0	3
BT507	Protein Engineering	3	0	0	3
BT511	Lab Techniques	0	0	3	2
BT513	Minor Project	0	0	7	7
BT515	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22
For BI SPECIALIZATION [all are compulsory]					
BT517	Molecular modelling and Drug design	2	1	0	3
BT519	Systems Biology and computational genomics	3	0	0	3
BT521	Computer programming	2	1	0	3
BT523	Lab Technique	0	0	3	2
BT513	Minor Project	0	0	7	7
BT515	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22

Semester 10

S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BT502	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

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5 year Batch 2010-15

Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
MA201	Quantitative Techniques	3	1	0	4
BT201	Introductory Microbiology	2	0	0	3
BT203	Basic Cell Biology	3	0	0	3
BT205	Fundamentals of Biochemistry	3	0	0	3
BT207/CY201	Organic chemistry	3	1	0	4
BT209	Fundamentals of Genetics	3	0	0	3
PRACTICALS					
BT211	Cell Biology Lab	0	0	3	2
BT215	Fundamental Biochemistry lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	16	2	6	25

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT202	Introduction to Molecular biology	3	0	0	3
BT204	Principles of Immunology	3	0	0	3
BT206	Principles of biochemical engineering	3	1	0	4
BT208	Bioenergetics	3	1	0	4
BT214	Enzyme technology	3	0	0	3
BT216	Molecular modeling	3	1	0	4
EE202	Measurements and instrumentation	2	0	0	2
PRACTICALS					
BT210	Immunology and enzyme technology lab	0	0	3	2
EE212	Measurements and instrumentation Lab	0	0	2	1
	General Proficiency	0	0	0	1
	Total	20	3	5	27

5 year Batch 2010-15

Integrated M.Tech. in Biotechnology (B.Tech + M.Tech) programme

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA103	Basic Mathematics	3	1	0	4
CS101	Computer Programming-I	2	0	0	2
BT101	Evolutionary biology and biodiversity	3	0	0	3
BT103	Life sciences-I	3	0	0	3
HU101	English Proficiency	2	0	0	2
SS101	Human values and Buddhist ethics	2	0	0	2
PRACTICALS					
CY103/PH104	Engineering Chemistry Lab/ Physics Lab	0	0	2	1
CS181	Computer Programming Lab-I	0	0	3	1
	General Proficiency	0	0	0	1
	Total	16	2	5	26

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA104	Mathematics	3	1	0	4
BT102	Life sciences-II	3	1	0	4
CS102	Computer Programming-II	2	0	0	2
HU102	Professional Communication	2	0	0	2
SS102	History of Science & Technology	2	0	0	2
CE106	Ecology and Environment	2	1	0	3
PRACTICALS					
BT104	Life sciences Lab	0	0	3	2
PH104/CY103	Engineering Physics Lab/Chemistry Lab	0	0	2	1
CS182	Computer Lab-II	0	0	2	1
	General Proficiency	0	0	0	1
	Total	17	4	7	26



5 year Batch 2010-15

Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
MA201	Quantitative Techniques	3	1	0	4
BT201	Introductory Microbiology	3	0	0	3
BT203	Basic Cell Biology	3	0	0	3
BT205	Fundamentals of Biochemistry	3	0	0	3
BT207/CY201	Organic Chemistry	3	1	0	4
BT209	Fundamentals of Genetics	3	0	0	3
PRACTICALS					
BT211	Cell Biology Lab	0	0	3	2
BT213	Fundamental Biochemistry lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	24	2	6	25

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT202	Introduction to Molecular Biology	3	0	0	3
BT204	Principles of Immunology	3	0	0	3
BT206	Principles of biochemical engineering	3	1	0	4
BT208	Bioenergetics	3	1	0	4
BT 214	Enzyme technology	3	0	0	3
BT216	Molecular modeling	3	1	0	4
EE202	Measurements and Instrumentation	2	0	0	2
PRACTICALS					
BT210	Immunology and enzyme technology lab	0	0	3	2
EE212	Measurements and Instrumentation Lab	0	0	2	1
	General Proficiency	0	0	0	1
	Total	20	3	5	27

5 year Batch 2010-15

Integrated M.Tech. in Biotechnology (B.Tech + M.Tech) programme

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA103	Basic Mathematics	3	1	0	4
CS101	Computer Programming-I	2	0	0	2
BT101	Evolutionary biology and biodiversity	3	0	0	3
BT103	Life sciences-I	3	0	0	3
HU101	English Proficiency	2	0	0	2
SS101	Human values and Buddhist ethics	2	0	0	2
PRACTICALS					
CY103/PH104	Engineering Chemistry Lab/ Physics Lab	0	0	2	1
CS181	Computer Programming Lab-I	0	0	3	2
	General Proficiency	0	0	0	1
	Total	18	2	5	26

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA104	Mathematics	3	1	0	4
BT102	Life sciences- II	3	1	0	4
CS102	Computer Programming-II	2	0	0	2
HU102	Professional Communication	2	0	0	2
SS102	History of Science & Technology	2	0	0	2
CE106	Ecology and Environment	2	1	0	3
PRACTICALS					
BT104	Life sciences Lab	0	0	3	2
PH104/CY103	Engineering Physics Lab/Chemistry Lab	0	0	2	1
CS182	Computer Lab-II	0	0	2	1
	General Proficiency	0	0	0	1
	Total	17	4	7	26



5 year Batch 2010-15

Semester 7

S.No.	Course	L	T	P	Credits
THEORY					
BT401	Recombinant DNA technology	3	0	0	3
BT403	Biophysical Chemistry	3	0	0	3
BT405	Immunology and Immunotechnology	3	0	0	3
BT407	Memobiotechnology	3	0	0	3
BT409	Industrial & Food Biotechnology	3	0	0	3
	General Proficiency	0	0	0	1
PRACTICAL					
BT411	Recombinant DNA technology lab	0	0	3	2
BT413	Biophysical Chemistry	0	0	3	2
BT415	Immunotech Lab	0	0	3	2
	Total	15	0	9	22

Semester 8

S.No.	Course	L	T	P	Credits
THEORY					
BT402	Genomics and Proteomics	3	0	0	3
BT404	Bio analytical techniques	3	0	0	3
BT406	Bioprocess Engineering and Technology	3	1	0	4
BT410	Molecular Therapeutics	3	0	0	3
BT422	Regulation ethics and patenting	2	0	0	2
PRACTICAL					
BT412	Genomics and Proteomics lab	0	0	3	2
BT414	Bioprocess Engineering & Technology lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	16	1	9	21

5 year Batch 2010-15

Semester 5

S.No.	Course	L	T	P	Credits
THEORY					
BT301	Cell Biology	3	0	0	3
BT303	Genetics	3	0	0	3
BT305	Principles of Physiology	4	0	0	4
CE305	Environmental engineering- II	2	1	0	3
BT307	Microbiology	3	0	0	3
BT309	Information Technology for Biologists	2	0	0	2
BT317	Seminar	3	0	0	2
PRACTICALS					
BT311	Cell Biology lab	0	0	3	2
BT313	Microbiology lab	0	0	3	2
BT315	Information Technology lab	0	0	3	1
	General Proficiency	0	0	0	1
	Total	20	1	9	27

Semester 6

S.No.	Course	L	T	P	Credits
THEORY					
BT302	Molecular Biology	4	0	0	4
BT304	Principles of Biochemistry	3	0	0	3
BT306	Developmental biology	3	0	0	3
BT308	Environmental biotechnology	3	0	0	3
BT310	Introduction to Bioinformatics	2	1	0	3
BT312	Principles of management and entrepreneurship	2	0	0	2
BT320	Molecular virology	3	0	0	3
PRACTICAL					
BT314	Molecular Biology lab	0	0	3	2
BT316	Biochemistry lab	0	0	3	2
BT318	Bioinformatics lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	20	1	9	28



5 year Batch 2010-15

Semester 10

S.No.	Course	L	T	P	Credits
MAJOR PROJECT					
BTS07	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

5 year Batch 2010-15

Semester 9

S.No.	Course	L	T	P	Credits
For GE SPECIALIZATION (Select any three theory papers for GE)					
BTS01	Animal Biotechnology	3	0	0	3
BTS03	Plant Biotechnology	3	0	0	3
BTS09	Molecular Microbial Biotechnology	3	0	0	3
BTS07	Protein Engineering	3	0	0	3
BTS11	Lab Techniques	0	0	3	2
BTS13	Minor Project	0	0	7	7
BTS15	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22
For BI SPECIALIZATION (all are compulsory)					
BTS17	Molecular modelling and Drug design	2	1	0	3
BTS19	Systems Biology and computational genomics	3	0	0	3
BTS21	Computer programming	2	1	0	3
BTS23	Lab Techniques	0	0	3	2
BTS25	Minor Project	0	0	7	7
BTS15	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22
FOOD TECH SPECIALIZATION (all are compulsory)					
BTS29	Food Engineering and Technology-I	3	0	0	3
BTS33	Food Engineering and Technology-II	3	0	0	3
BTS35	Food analysis and Quality Control	3	0	0	3
BTS37	Lab Techniques	0	0	3	2
BTS13	Minor Project	0	0	7	7
BTS15	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22



5 year Batch 2010-15

Semester 3

S.No.	Course	L	T	P	Credits
THEORY					
MA201	Quantitative Techniques	3	1	0	4
BT201	Introductory Microbiology	3	0	0	3
BT203	Basic Cell Biology	3	0	0	3
BT205	Fundamentals of Biochemistry	3	0	0	3
BT207/CY201	Organic chemistry	3	1	0	4
BT209	Fundamentals of Genetics	3	0	0	3
PRACTICALS					
BT211	Cell Biology Lab	0	0	3	2
BT213	Fundamental Biochemistry lab	0	0	3	2
	General Proficiency	0	0	0	1
	Total	18	2	6	25

Semester 4

S.No.	Course	L	T	P	Credits
THEORY					
BT202	Introduction to Molecular biology	3	0	0	3
BT204	Principles of Immunology	3	0	0	3
BT206	Principles of biochemical engineering	3	1	0	4
BT208	Bioenergetics	3	1	0	4
BT 214	Enzyme technology	3	0	0	3
BT215	Molecular modelling	3	1	0	4
EE202	Measurements and Instrumentation	2	0	0	2
PRACTICALS					
BT210	Immunology and enzyme technology lab	0	0	3	2
EE212	Measurements and Instrumentation Lab	0	0	2	1
	General Proficiency	0	0	0	1
	Total	20	3	5	27

5 year Batch 2010-15

Integrated M.Tech. in Biotechnology (B.Tech + M.Tech) programme

Semester 1

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA103	Basic Mathematics	3	1	0	4
CS101	Computer Programming-I	2	0	0	2
BT101	Evolutionary biology and biodiversity	3	0	0	3
BT103	Life sciences-I	3	0	0	3
HU101	English Proficiency	2	0	0	2
SS101	Human values and Buddhist ethics	2	0	0	2
PRACTICALS					
CY103/PH104	Engineering Chemistry Lab/ Physics Lab	0	0	2	1
CS103	Computer Programming Lab-I	0	0	3	2
	General Proficiency	0	0	0	1
	Total	18	2	5	24

Semester 2

S.No.	Course	L	T	P	Credits
THEORY					
CY101/PH102	Engineering Chemistry/ Engineering Physics	3	1	0	4
MA104	Mathematics	3	1	0	4
BT102	Life sciences-II	3	1	0	4
CS102	Computer Programming-II	2	0	0	2
HU102	Professional Communication	2	0	0	2
SS102	History of Science & Technology	2	0	0	2
CE106	Ecology and Environment	2	1	0	3
PRACTICALS					
BT104	Life sciences Lab	0	0	3	2
PH104/CY103	Engineering Physics Lab/Chemistry Lab	0	0	2	1
CS102	Computer Lab-II	0	0	2	1
	General Proficiency	0	0	0	1
	Total	17	4	7	26



5 year Batch 2010-15

S.No.	Course	L	T	P	Credits
Semester 10					
MAJOR PROJECT					
BTS02	Research Project	0	0	0	27
	General Proficiency	0	0	0	1
	Total				28

5 year Batch 2010-15

Semester 9

S.No.	Course	L	T	P	Credits
For GE SPECIALIZATION (Select any three theory papers for GE)					
BTS01	Animal Biotechnology	3	0	0	3
BTS03	Plant Biotechnology	3	0	0	3
BTS09	Molecular Microbial Biotechnology	3	0	0	3
BTS07	Protein Engineering	3	0	0	3
BTS11	Lab Techniques	0	0	3	3
BTS13	Minor Project	0	0	7	7
BTS15	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22
For BI SPECIALIZATION (all are compulsory)					
BTS17	Molecule: modelling and Drug design	2	1	0	3
BTS19	Systems Biology and computational genomics	3	0	0	3
BTS21	Computer programming	2	1	0	3
BTS23	Lab Techniques	0	0	3	3
BTS15	Minor Project	0	0	7	7
BTS15	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22
FOOD TECH SPECIALIZATION (all are compulsory)					
BTS29	Food Engineering and Technology-I	3	0	0	3
BTS33	Food Engineering and Technology-II	3	0	0	3
BTS35	Food analysis and Quality Control	3	0	0	3
BTS27	Lab Techniques	0	0	3	3
BTS13	Minor Project	0	0	7	7
BTS15	Seminar	0	3	0	3
	General Proficiency	0	0	0	1
	Total				22



Gautam Buddha University

School of Biotechnology

Proceedings of 10th BOS meeting of SoBT

A meeting of BOS of School of Biotechnology was held on 02nd August, 2014 in the conference room of Dean, School of Biotechnology. The following members attended the meeting:

- 1 Prof. Anuradha Mishra, Dean, School of Biotechnology
- 2 Prof. K.J. Mukherjee, School of Biotechnology, JNU (External Expert)
- 3 Prof. P.C. Sharma, Dean, School of Biotechnology, GGSIPU (External Expert)
- 4 Dr. Shakti Sahi, HoD, School of Biotechnology
- 5 Dr. Rekha Puria, Assistant Professor, School of Biotechnology

Dr. Seema Dwivedi could not attend the meeting.

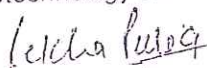
The following agenda were placed in the meeting for discussion:

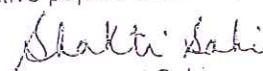
- 10.1 Modifications in the Course Structure of different M.Tech (Biotechnology) programs of School of Biotechnology
 - A. Modifications in the Course Structure of M.Tech (Biotechnology)-2 years
 - B. Modifications in the Course Structure of M.Tech (Biotechnology)-3 years
 - C. Modifications in the Course Structure of Integrated B.Tech+M.Tech/MBA (Biotechnology)-5 years
- 10.2 Modifications in the Course structure and curriculum of Ph.D program
- 10.3 Opting MBA or M.tech (Biotech) in dual degree program

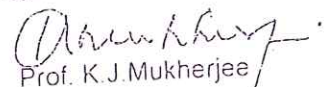
The following recommendations were made:

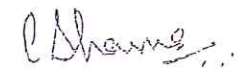
1. Agenda 10.1: The course structure of the following programs for the academic session 2014 were reviewed and approved:
 - A. M.Tech (Biotechnology) 2 years (Annexure-1)
 - B. M.Tech (Biotechnology) 3 years (Annexure-2)
 - C. Integrated B.Tech+M.Tech/MBA (Biotechnology)-5 years (Annexure-3)
 - i. It was recommended that the number of credits for Practical labs. should be increased.
 - ii. Students of Integrated B.Tech+M.Tech (Biotech) Batch 2012-17 will do a summer project after 8th semester based upon lectures and hands on training sessions.
2. Agenda 10.2: The course structure and curriculum of Ph.D Course work was reviewed for academic session 2014 onwards and approved by Board of Studies (Annexure-4).
 - i. All Ph.D Students will have to take two compulsory papers (Research Methodology-3 credits and Journals Club -2 credits). In addition the students will opt for elective papers in a semester course work, offered from time to time, to fulfill the credit requirements as per University rules.


The number of Ph.D students registered with individual faculty members should be as per University policy.
3. Agenda 10.3: Students of Integrated B.Tech+M.Tech/MBA program (Batch 2011 onwards) who want to opt for MBA will have to study three papers in Seventh semester offered by School of Biotechnology and two elective papers offered by School of Management from time to time.


Dr. Rekha Puria


Dr. Shakti Sahi


Prof. K.J. Mukherjee


Prof. P.C. Sharma
Prof. P. C. SHARMA
Dean

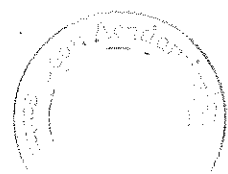

Prof. Anuradha Mishra

University School of Biotechnology
Guru Gobind Singh Indraprastha University
Dwarka, Sector-16C, New Delhi-110079



SCHOOL OF ENGINEERING

ANNEXURE-IX

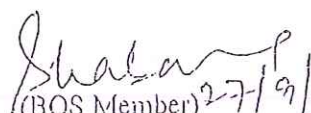


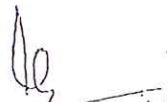
Electrical Engineering Department

Minutes of 8th Board of study meeting held on 27th Sep. 2013

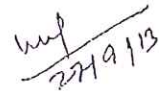
1. The BOS has approved two specializations namely (Instrumentation and Control) & (Power Electronics and Drives) for Integrated B.Tech. + M.Tech. (Electrical Engg.).
2. The BOS has approved the revised course structure and detailed syllabus for 02 Year M. Tech. (Instrumentation & Control) Programme.
3. The BOS has approved the course structure and syllabus for two year M. Tech. (Power Electronics and Drives) programme.
4. The BOS has approved the course structure and syllabus for two year M. Tech. (Power Electronics and Drives) program.
5. The BOS has approved the syllabus of EEP503 (Power System Transients) and EEP501 (Power System Analysis) of M.Tech. (Power System) program.
6. The BOS has approved tow M.Tech. specializations i.e. (Power Systems, Instrumentation and Control) for the current Five Year Integrated programme.
7. The BOS has approved the inclusion of third specialization i.e. (Power Electronics and Drives) for the second batch (2011-2016) onwards.

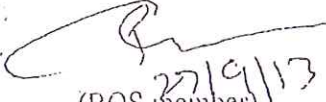

(BOS Member) 27/9/13

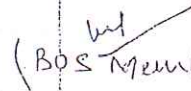

(BOS Member) 27/9/13
(DR. SHABANA UROOJ)

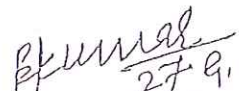

(BOS Member) 27/9/13
(Dr. M. A. Anweri)


(BOS Member) 27/9/13
Prof. P. Singh


(BOS Member) 27/9/13
[VISHAL VERMA]


(BOS member) 27/9/13
(EXTERNAL EXPERT)
Prof. A. P. Mittal


(BOS Member) 27/9/13
EXTERNAL EXPERT
Prof. Vishal Verma


(Chairperson BOS & Dean, SOE) 27/9/13



Academic Council- 12/2014

Gautam Buddha University, Greater Noida
School of Engineering, Electrical Engineering Department

Minutes of the 9th BOS Meeting held on 14th August 2014

1. The BOS has discussed and approved the change in course code of Power system lab from EE 411 to EE 477 and Advance Power Electronics and Drive Lab from EE 433 to EE499 to avoid clashes with the existing lab course codes of integrated Electrical Engineering 7th sem. curriculum.
2. The BOS has discussed and approved the change in credits of control System – II from 3-0-0 to 3-1-0 and Switchgear & Protection from 3-1-0 to 3-0-0 in 6th sem. of integrated Electrical Engineering Programme.
3. The BOS has discussed and not approved the replacement of the subject of Disaster Management of 6th semester of integrated Electrical Engineering Programme with any other subject. Although BOS has recommended to include the subjects of Utilization of Electrical Energy, Introduction to VLSI design in the list of electives.
4. The BOS has discussed and approved the change in L-T-P of Elective-I in 7th sem. of integrated Electrical Engineering Programme from 2-1-0 to 3-0-0 to maintain uniformity with the 2 years M.Tech course.
5. The BOS has discussed and not approved the change in L-T-P of Seminar on Industrial Training in 7th sem. of integrated Electrical Engineering Programme. It is suggested that the evaluation should be done throughout the semester.
6. The BOS has discussed and approved the addition of new subjects in the list of Electives I & II for integrated Electrical Engineering 7th sem. curriculum such as- Low Power VLSI Circuits & Systems, Renewable Energy & Non-conventional Energy sources, Advanced Instrumentation, Optimal Control Theory, Biomedical Electronics and M.Tech (I&C) Electives.
7. The BOS has discussed and approved the addition of one more elective (Elective III) in the 7th sem. of integrated Electrical Engineering Programme in place of subject Energy Audit & Management and this subject is to be put/shifted in the list of electives of Integrated Program.
8. The BOS has discussed and approved that the specialization in the Integrated M.Tech will be given on the merit basis and the total number of students will be equally divided into the existing M.Tech Programs.
9. The BOS has discussed the guidelines of the Summer Project (10 credits) and recommended no change in it and should run as per the previous guidelines.
10. The BOS has discussed and approved the change of the name of Power System Lab-I with course code EEP 519 to Power System Lab in M.Tech 1st sem. PPS.
11. The BOS has discussed and approved the change of the name of subject Power System Analysis to Power System Analysis & Control to reflect the content of syllabus.

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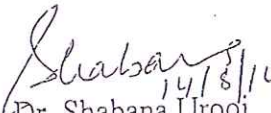
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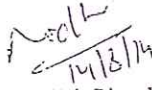


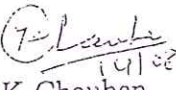
Gautam Buddha University, Greater Noida
School of Engineering, Electrical Engineering Department

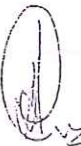
12. The BOS has discussed and approved the change of the credits of specialized elective – I in M.Tech PPS 2nd sem from 3-1-0 to 3-0-0 to maintain the uniformity with other electives. Adjustment of the credits is done by changing credits of EEP 502 from 3-0-0 to 3-1-0
13. The BOS has discussed and approved the addition of new subjects in the list of specialized electives of M.Tech (I&C) such as Artificial Intelligence and Neural Networks, Nanomaterials & Applications, Nanotechnology.
14. The BOS has discussed and approved the detailed syllabus of newly added subjects Artificial Intelligence and Neural Networks, Nanomaterials & Applications in different semesters.
15. The BOS has discussed and approved the list of experiments of various labs.
16. Item 16 has been withdrawn from the agenda.
17. The BOS has approved the name of EIC 621 Soft Computing to Soft Computing Techniques to be mapped with EEP 615.


Dr. Ashok Suhag
(BOS Member)

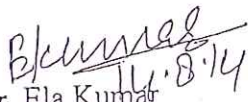

Dr. Shabana Urooj
(BOS Member)


Dr. Nidhi Singh
(BOS Member)


Dr. Y.K. Chauhan
(BOS Member)


Dr. A.Q. Ansari
(BOS Member)


Dr. H.Q. Gupta
(BOS Member)


Dr. Ela Kumar
(BOS Chairperson)



Minutes of Meeting of 11th BOS held on 30 Jan 2014

The 11th BOS meeting of School of Engineering (Mechanical Engineering) was held on 30 Jan 2014 in Dean (I/c) office, SOE. The following external experts and faculty members of School of Engineering (Mechanical Engineering) were present in the meeting.

1. Dr. Ela Kumar, Dean (I/c), SOE,
2. Prof. S. C. Sharma, Mechanical Engineering, IIT, Roorkee, (External Expert in Design Engg.).
3. Dr. R. K. Pandey, Mechanical Engineering, IIT, Delhi, (External Expert in Design Engg.).
4. Dr. Prabal Talukdar, Mechanical Engineering, IIT, Delhi, (External Expert in Thermal Engg.).
5. Dr. Satpal Sharma, Asst. Prof. - Internal Member (Mechanical Engineering).
6. Dr. R. K. Mishra, Asst. Prof. - Internal Member (Mechanical Engineering).
7. Dr. H. C. Thakur, Asst. Prof. - Internal Member (Mechanical Engineering).
8. Dr. B. Tripathi, Asst. Prof. - Internal Member (Mechanical Engineering).

The following points were discussed and approved-

Agenda Item No.	Discussion and approval of points
11.01	The syllabi of various subjects of 2 nd semester of 2 years M. Tech. (also for VIII semester of Integrated B. Tech + M. Tech. / MBA) in Thermal Engineering were discussed and approved.
11.02	The syllabi of various subjects of 2 nd semester of 2 years M. Tech. (also for VIII semester of Integrated B. Tech + M. Tech. / MBA) in

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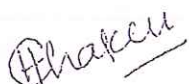
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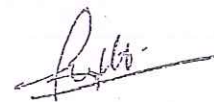
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	Design Engineering were discussed and approved.
11.03	Solid Woks software was discussed and approved along with specifications for Computer Aided Design lab (ME 413).
11.04	
11.05	
11.06	
11.07	
11.08	
11.09	
11.10	
11.11	
11.12	
11.13	
11.14	
11.15	


Meeting was ended with a vote of thanks to chair.



(Dr H. C. Thakur)



(Dr. B. Tripathi)

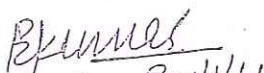

(Dr. R K Mishra)


(Dr Satpal Sharma)


(Dr. Prabal Talukdar)


(Dr. R. K. Pandey)


(Prof. S. C. Sharma)


(Dr. Ela Kumar)



Minutes of Meeting of 12th BOS held on 10 July 2014

The 12th BOS meeting of School of Engineering (Mechanical Engineering) was held on July 2014 in Dean (I/c) office, SOE. The following external experts and faculty members of School of Engineering (Mechanical Engineering) were present in the meeting.

1. Prof. Sagar Maji, Sharma, Mechanical Engineering, Principal GB Pant Engg College Delhi.
2. Dr. R. K. Pandey, Mechanical Engineering, IIT, Delhi, (External Expert in Design Engg.).
3. Dr. Satpal Sharma, Asst. Prof. - Internal Member (Mechanical Engineering).
4. Dr. R. K. Mishra, Asst. Prof. - Internal Member (Mechanical Engineering).
5. Dr. B. Tripathi, Asst. Prof. - Internal Member (Mechanical Engineering).
6. Dr. H. C. Thakur, Asst. Prof. - Internal Member (Mechanical Engineering).

The following points were discussed and approved-

by Minuts
Agenda for 12th BOS meeting to be held on - 10 July 2014

Integrated B. Tech. + M. Tech. / M. B. A. (Mechanical Engineering)		
Agenda Item No.	Approval and Discussion	Annexure No.
12.01	Industrial Training of 10 credits to be included in the curriculum of Integrated B. Tech. + M. Tech. / MBA was discussed and approved. However, it is optional for 2010- 15 batch of Integrated B. Tech. + M. Tech. / MBA students.	M 01
12.02	The increase of credits for Production and Operation Management (MEI 503) from 3 to 4 in order to make	M 02



	the scheme of Ist semester (Ind. Eng. & Management) compatible with other specializations (M. Tech. Thermal and Design Engg.) (Total credits of I sem will be 22) was discussed and approved.	
12.03	The syllabi of various subjects of 2 year M. Tech. in Design Engineering (semester I-IV) was discussed and approved. The subjects of II, III and IV semesters of M. Tech. correspond to VIII, IX, and X semesters of Integrated B. Tech. + B. Tech. / MBA (M. Tech. in Design Engg.).	M 03
12.04	The syllabi of various subjects of 2 year M. Tech. in Thermal Engineering (semester I-IV) was discussed and approved. The subjects of II, III and IV semesters of M. Tech. correspond to VIII, IX, and X semesters of Integrated B. Tech. + B. Tech. / MBA (M. Tech. in Thermal Engg.).	M 04
12.05	The inclusion of Co-supervisor for M. Tech. dissertations in various specializations from external source was discussed approved. There is a huge shortage of faculty in Mech. Engg. In view of this fact the faculty from outside Gautam Buddha University should be permitted to act as a Co-supervisor for M. Tech. dissertations in various specializations. The Working Professionals registered as Ph. D. students in GBU should also be allowed to act as Co-supervisor. The co-supervisor from external source should fulfill the minimum eligibility criteria to act as a co-supervisor.	M 05
12.06	The names of equipments for research lab in Mechanical Engg. Department was discussed and approved.	M 06



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19.7.14

Agenda for 12th BOS meeting to be held on - 10 July 2014

Integrated B. Tech. + M. Tech. / M. B. A. (Mechanical Engineering)		
Agenda Item No.	Points to be discussed	Annexure No.
12.01	Approval of Industrial Training of 10 credits is to included in the curriculum of Integrated B. Tech. + M. Tech. / MBA	M 01
12.02	Approval for increase of credits for Production and Operation Management (MEI 503) from 3 to 4 in order to make the scheme of 1st semester (Ind. Eng. & Management) compatible with other specializations (M. Tech. Thermal and Design Engg.) (Total credits of I sem will be 22).	M 02
12.03	Approval of syllabi of various subjects of 2 year M. Tech. in Design Engineering (semesters I-IV). The subjects of II, III, and IV semesters of M. Tech. correspond to VIII, IX, and X semesters of Integrated B. Tech. + B. Tech. / MBA (M. Tech. in Design Engg.).	M 03
12.04	Approval of syllabi of various subjects of 2 year M. Tech. in Thermal Engineering (semesters I-IV). The subjects of II, III and IV semesters of M. Tech. correspond to VIII, IX, and X semesters of Integrated B. Tech. + B. Tech. / MBA (M. Tech. in Thermal Engg.)	M 04
12.05	Approval of Co-supervisor for M. Tech. dissertations in various specializations from external source. There is a huge shortage of faculty in Mech. Engg. In view of this fact the faculty from outside Gautam Buddha University should be permitted to act as a Co-supervisor for M. Tech. dissertations in various	M 05



	specializations. The Working Professionals registered as Ph. D. students in GBU should also be allowed to act as Co-supervisor. The co-supervisor from external source should fulfill the minimum eligibility criteria to act as a co-supervisor.	
12.06	Approval of names of equipments for research lab in Mechanical Engg. Department.	M 06
12.07	<p>The Modeling, Simulation and Analysis subject is of 3 credits in various M. Tech. specializations (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. - 1st semester)</p> <p>Whereas the Modeling, Simulation and Analysis subject is of 4 credit in M. Tech. Ind. Engg. & Management. In order to make this subject common the credits of this subject in various M. Tech. specializations (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. - 1st semester) will have to increase from 3 to 4 credits.</p> <p>Further this credit will be compensated from 2nd semester of various M. Tech. specializations (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. and Ind. Engg. & Management). In this way the 1st semester will be of 22 credits and 2nd semester will be of 24 credits. In order to complete this exercise the credits of Project will be reduced from 5 to 4 in 2nd semester M. Tech curriculums (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. - 1st semester).</p>	M 07
12.08	Approval of distribution of Integrated B. Tech. + M. Tech. / MBA students in various M. Tech. specializations.	M 08

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12.07	<p>The Modeling, Simulation and Analysis subject is of 3 credits in various M. Tech. specializations (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. - 1st semester)</p> <p>Whereas the Modeling, Simulation and Analysis subject is of 4 credit in M. Tech. Ind. Engg. & Management. In order to make this subject common the credits of this subject in various M. Tech. specializations (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. - 1st semester) will have to increase from 3 to 4 credits.</p> <p>Further this credit will be compensated from 2nd semester of various M. Tech. specializations (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. and Ind. Engg. & Management). In this way the 1st semester will be of 22 credits and 2nd semester will be of 24 credits. In order to complete this exercise the credits of Project will be reduced from 5 to 4 in 2nd semester M. Tech curriculums (M. Tech. in CAD/CAM, Manufacturing, Design and Thermal Engg. - 1st semester).</p> <p>The above point was discussed and approved.</p>	M 07
12.08	<p>The distribution of Integrated B. Tech. + M. Tech. / MBA students in various M. Tech. specializations will be carried out on the basis of application/ option received. The students will be equally distributed in the presently running M. Tech. specialization. In case if more students opt one specific specialization, decision will be made on the basis of CGPA.</p>	M 08

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19.7.14



Meeting was ended with a vote of thanks to chair.



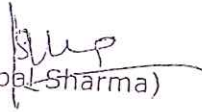
(Dr. H. C. Thakur)



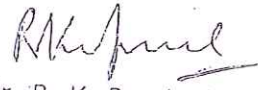
(Dr. B. Tripathi)



(Dr. R K Mishra)



(Dr. Satpal Sharma)



(Dr. R. K. Pandey)



(Prof. Sagar Maji)

Bhupal
19.7.14



Minutes of Meeting of 13th BOS held on 29 Aug 2014

The BOS meeting of School of Engineering (Mechanical Engineering) was held on 29 Aug 2014 in the office of Dean, SOE. The following external experts and faculty members of Mechanical Engineering Department, SOE were present in the meeting.

1. Dr. Anjana Solanki, Dean, SOE,
2. Professor D. Ravi Kumar, Mechanical Engineering, IIT, Delhi, (External Expert in Manufacturing Engg.).
3. Dr. Satpal Sharma, Asst. Professor and HOD, Mechanical Engineering Department.
4. Dr. R. K. Mishra, Asst. Professor, Mechanical Engineering Department.
5. Dr. H. C. Thakur, Asst. Professor, Mechanical Engineering Department.
6. Dr. B. Tripathi, Asst. Professor, Mechanical Engineering Department.

The following member(s) could not attend the meeting

1. Professor N. K. Mehta, Mechanical Engineering, IIT, Roorkee, (External Expert in Design Engg.). – Could not attend the meeting due to some constraint as mentioned in the email.

The following points were discussed and approved-

Agenda Item No.	Discussion and approval of points
13.M.01	The change of code of Product Design and Development (MEM 603) of 2 Year M. Tech. in Industrial Engg. & Management was discussed and approved. The revised code is given below i) Product Design and Development (MEM 607).



Dr. Anjana Solanki

Dr. Ravi Kumar

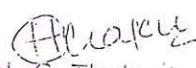
Dr. Satpal Sharma
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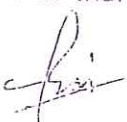
Dr. H. C. Thakur

Dr. B. Tripathi
29.08.14

13.M.02	The syllabi of various subjects of 2 years M. Tech. in Manufacturing Engineering (semesters I-IV) were discussed and approved. The subjects of II, III and IV semesters of M. Tech. which correspond to VIII, IX, and X semesters of Integrated B. Tech. + M. Tech. / MBA (M. Tech. in Manufacturing Engg.) were also discussed and approved.
13.M.03	The "Solid Works Software" was discussed and approved to carry out the experiments of Computer Aided Design Lab (ME 413) of VII Sem. Integrated B. Tech. + M. Tech. / MBA.

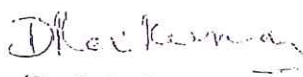
Meeting was ended with a vote of thanks to chair.

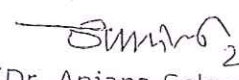

(Dr H. C. Thakur)


(Dr. B. Tripathi)


(Dr. R K Mishra)


(Dr Satpal Sharma) 29.8.14

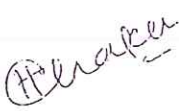

(Prof. D. Ravi Kumar)

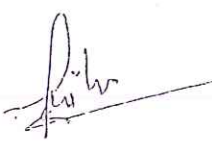

(Dr. Anjana Solanki) 29.8.14



Agenda for 13th BOS meeting to be held on 29 Aug 2014

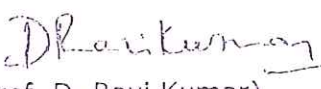
Integrated B. Tech. + M. Tech. / M. B. A. (Mechanical Engineering)		
Agenda Item No.	Points to be discussed	Annexure No.
13.M.01	Approval for change of code of Product Design and Development (MEM 603) of 2 Year M. Tech. in Industrial Engg. & Management. The revised code should MEM 607 in order to match this code with M. Tech. in Manufacturing Engg. and M. Tech. in Industrial Engg. & Management respectively.	13.M 01
13.M.02	Approval of syllabi of various subjects of 2 years M. Tech. in Manufacturing Engineering (semesters I-IV). The subjects of II, III and IV semesters of M. Tech. correspond to VIII, IX, and X semesters of Integrated B. Tech. + B. Tech. / MBA (M. Tech. in Manufacturing Engg.).	13.M 02
13.M.03	To discuss and approve the appropriate software to carry out the experiments of Computer Aided Design Lab (ME 413) of VII Sem. Integrated B. Tech. + M. Tech. / MBA .	13.M 03

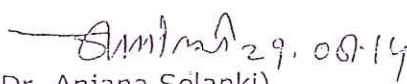

(Dr H. C. Thakur)


(Dr. B. Tripathi)


(Dr. R K Mishra)


(Dr Satpal Sharma) 29.8.14


(Prof. D. Ravi Kumar)


(Dr. Anjana Solanki) 29.08.14

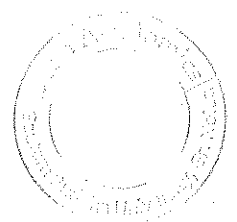


13th BOS

13.04 TO APPRISE THE ACADEMIC COUNCIL ABOUT THE
PROCEEDINGS OF 'BOARD OF STUDIES' OF THE SCHOOLS
OF THE UNIVERSITY

BN





13.04 To apprise the Academic Council about the proceedings of 'Board of Studies' of the Schools of the University.

The meetings of Board of Studies have been conducted by the following Schools of the University. The minutes of the same are presented here for kind perusal and approved of the Council

S.No	Name of the School	Dated	Annexure no.
1.	School of Information and Communication Technology	13.01.2015	Annexure no. X
2.	School of Engineering	21.03.2015	Annexure no. XI

BR



Gautam Buddha University
School of ICT, Greater Noida

Date: 13th January, 2015

Minutes of the 11th meeting of Board of Studies (BoS) of the School of Information and Communication Technology held in the Conference room of the school on 13th January 2015 at 3:00 PM.

Following members were present:

Internal Members:

- | | |
|--------------------------|---|
| 1. Prof. Anuradha Mishra | Dean I/C, School of ICT and Chairperson |
| 2. Dr. Rajesh Mishra | HoD (ECE) School of ICT |
| 3. Dr. Vidushi Sharma | HoD (CSE) School of ICT |
| 4. Dr. Gurjit Kaur | Assistant Professor, School of ICT |
| 5. Dr. Neeta Singh | Assistant Professor, School of ICT |

Special Invitee: All SOICT Faculty Members

External Experts:

1. Prof. R. K. Aggarwal, JNU, Delhi (for CSE, Dept.)
2. Prof. A. Q. Ansari, JMI, Delhi (for ECE, Dept.)

The following decisions were taken in the meeting.

11.1. Dual Degree B.Tech+M.Tech/MBA (CSE & ECE)

Inclusion of new subjects	Course Code	Course name
Semester VI (Core)	CS 312	Management Information System
Removal		
Semester VI	ME 312	Entrepreneurship & Innovation

After the discussion held in the meeting the committee gave its recommendation for inclusion of the subject "CS 312 Management Information System" to Dual Degree B.Tech+M.Tech/MBA (CSE & ECE) Sem VI. The approved syllabi of "CS 312 Management Information System" is enclosed as "Annexure 11.1"



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11.2. M.Tech. (Computer Science)

Syllabus Modified	Course Code	Course Name
Semester 1	CS 521	Advance Database Management system
Inclusion of new subjects		
Semester II	CS 596	Wireless Mobile Networks
Semester II	CS 598	Embedded Linux
Semester III (Core)	CS 695	Computer Security
Semester III (Elective 2&3)	CS 680	Analytical Models for computing System
Semester III (Elective 2&3)	CS 697	Ad-Hoc Networks
Semester III (Elective 2&3) (shifted from core to elective)	CS671	Image Processing and Pattern Recognition

After the discussion held in the meeting the committee gave its recommendation for syllabus approval and inclusion of the above subjects. The approved syllabus of above subjects is enclosed in "Annexure 11.2"

11.3. M.Tech. (Software Engineering)

Syllabus Modified	Course Code	Course Name
Semester 1	CS 521	Advance Database Management System
Subjects Shifted		
Semester II (Elective 1) to Semester III (Elective 2 & 3)	CS 544	Software Measurement and Estimation

After the discussion held in the meeting the committee gave its recommendation for modification in the syllabus of CS 521 Advance Database Management system and shifting of the subject CS 544 Software Measurement and Estimation from Semester II (Elective 1) to Semester III (Elective 2 & 3).

11.4. M.Tech. ISR

Syllabus Modified	Course Code	Course name
Semester 1	CS 521	Advance Database Management System
Inclusion of new subjects		
Semester II (Core)	CS 572	Introduction to Embedded System



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Semester II (Shifted from core to elective)	CS 566	Natural Language Processing
Semester I (Elective)	CS 667	Speech Processing (moved from Elective II to Elective I)
Removed		
Semester II (Elective 1)	CS 570/CS 466	IT Law
Semester II (Elective 1)	CS 568/CS 468	Artificial Intelligence

After the discussion held in the meeting the committee gave its recommendation for syllabus modification and inclusion of the CS 572 Introduction to Embedded System in semester II core. Committee also gave its recommendation for shifting and removing of above subjects. The syllabus of above subjects is enclosed in "Annexure 11.3".

11.5. Approval of the Syllabus of M.Tech CS.

After the discussion held in the meeting the committee gave its recommendation for approval of the syllabus of M.Tech Computer Science.

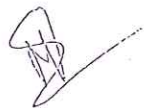
11.6. Approval for Syllabus modification of Optical Networks (EC 562), M Tech ICT (specialization in WCN, Semester II: Elective 1).

After the discussion held in the meeting the committee gave its recommendation for the syllabus approval.

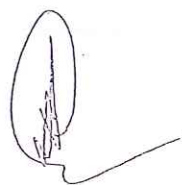
11.7. Approval for addition of three new electives along with their syllabus in the course structure of M Tech ICT (specialization in Embedded Systems, Semester II and Semester

III)

Subject Name	Subject Code	Semester/Elective
Embedded Linux	CS598	Second Semester/ Elective I
System on Chip	EC 548	Second Semester/ Elective I
Sensor and Actuator	EC 655	Third Semester/ Elective II & III



Ru




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455

After the discussion held in the meeting the committee gave its recommendation for addition of the above courses.



Prof. R. K. Aggarwal



Prof. A. Q. Ansari,




Dr. Neeta Singh

Dr. Pradeep Tomar



Dr. Gurjit kaur

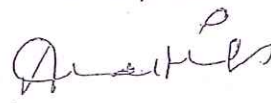


Dr. Vidushi Sharma



13/11/15

Dr. Rajesh Mishra



Prof. Anuradha Mishra



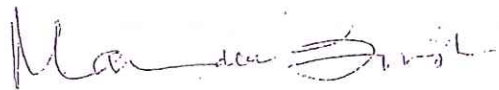
GAUTAM BUDDHA UNIVERSITY
GREATER NOIDA

Minutes of BOS Meeting on 21/3/2015

1. Scheme of Examinations with Weightage of consecutive Five years as 10%, 15%, 20%, 30% and 100% for I, II, III, IV, V..
2. B. Architecture AR 1019 Sem I & Ar 1018 Sem II, Subject of surveying & Levelling combine Theory & Lab
3. Travel Report/Site / Design Office five weeks Training Program after VI sem. Marks will be combined with GP Marks
4. Approval of Two year Master Program in Landscape Architecture, Transportation Planning in Department of Architecture & Planning.



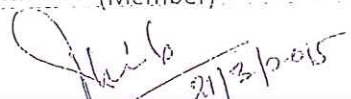
Dr. Mayank Mathur
(Member)



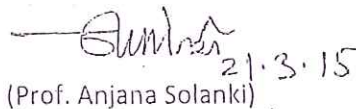
Dr Mandeep Singh
(Member)



Prof AK Sharma
(Member)


21/3/2015

Nirmita Mehrotra
HOD, Architecture & Planning


21.3.15
(Prof. Anjana Solanki)

GAUTAM BUDDHA UNIVERSITY

GREATER NOIDA

SYLLABUS

SCHEME OF EXAMINATION

FIVE YEAR BACHELOR OF ARCHITECTURE



GAUTAM BUDDHA UNIVERSITY

GREATER NOIDA

SYLLABUS

SCHEME OF EXAMINATION

FIVE YEAR BACHELOR OF ARCHITECTURE

The 'Final result' for the award of degree shall be prepared on the basis of the cumulative performance of a student by computing the marks with weightage to marks obtained by him in each semester as noted in the table and the division to a student shall be awarded on the basis of his/her 'Final result' at the end of the final semester, computed in accordance with Table below

Class	Semester	Total marks	Weightage		
			In Percentage	Numerical	
				Semester	Class
First Year	I	1500	10%	150	300
	II	1500	10%	150	
Second Year	III	1500	15%	225	450
	IV	1500	15%	225	
Third Year	V	1500	20%	300	600
	VI	1500	20%	300	
Fourth Year	VII	1500	30%	450	900
	VIII	1500	30%	450	
Fifth Year	IX	1000	100%	1000	3000
	X	3000	100%	2000	
Grand Total				2000	5250



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SCHEME OF FIVE YEAR BACHELOR OF ARCHITECTURE

B. ARCHITECTURE SEM I

S. No	Subject Code	Subject Name	L-T-S/L	Credits	Sesional	Mid term Exam	End exam	Ext viva	Total
1.	AR 1001	Architectural Structures I	2-1-0	3	25	25	50		100
2	SS101	Human Values & Buddhist Ethics	2-0-0	2	25	25	50		100
3	HU101	English Proficiency Communication	2-0-0	2	25	25	50		100
4	AR 1011	Architectural Design I	0-0-6	6	25	25	50	200	300
5	AR1013	Building Construction I	0-0-4	4	25	25	50	100	200
6	AR 1015	Architectural Drawing I	0-0-4	4	25	25	50	50	150
7	AR 1017	Art & Graphics I	0-0-4	4	25	25	50	50	200
8	AR 1019	Surveying & Leveling I	1-0-2	2	25	25	50	50	200
9.	AR 1021	Model Workshop	0-0-3	2	50			50	200
		General Proficiency		1	50			50	100
				30					50
									1500

B. ARCHITECTURE SEM II

S. No	Subject Code	Subject Name	L-T-S/L	Credits	Internal Sesional	Mid Exam	End exam	Ext viva	Total
1.	AR 1002	Architectural Structures II	2-1-0	3	25	25	50		100
2	AR 1004	History Of Architectures I	2-0-0	2	25	25	50		100
3	SS102	History of Science & Technology	2-0-0	2	25	25	50		100
4	HU102	Professional Communication	2-0-0	2	25	25	50		100
5	AR 1010	Architectural Design II	0-0-8	6	25	25	50		200
6	AR1012	Building Construction II	0-0-4	4	25	25	50	100	150
7	AR 1014	Architectural Drawing II	0-0-4	4	25	25	50	50	150
8	AR 1016	Art & Graphics II	0-0-4	4	25	25	50	50	150
9	AR 1018	Surveying & Leveling II	1-0-2	2	25	25	50	50	150
	GP 201	GENERAL PROFICIENCY		1	25	25	50	50	150
		TOTAL		30 /			50		50
									1500

B. ARCHITECTURE SEMI III

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Sesional	Mid Term	End Exam	Ext viva	Total
1	AR 2001	Architectural structures III	2-1-0	3	25	25	50		100
2	AR 2003	History of Architecture II	2-1-0	2	25	25	50		100
3	AR 2005	Building Services I	2-1-0	3	25	25	50		100
4	AR 2007	Climatology	1-1-0	2	25	25	50		100
		Studios							
5.	AR 2011	Architectural Design III	0-0-8	8	100	25	75	200	400
6.	AR2013	Building Construction III	0-0-4	4	25	25	50	50	200
7.	AR 2015	IT Design Tools I	0-0-4	2	50	-	-	50	100
8.	AR 2017	Art & Graphics III	0-0-4	4	25	25	50	50	200
		General Proficiency		1					50.
				30					1500

B. ARCHITECTURE SEMI IV

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Sesional	Mid-Term	End Exam	Ext viva	Total
1	AR 2002	Architectural structures IV	2-1-0	3	25	25	50		100
2	AR 2004	History of Architecture II	2-1-0	2	25	25	50		100
3.	AR 2006	Building Services II	2-2-0	4	25	25	50		100
		Studios							
4.	AR 2010	Architectural Design IV	0-0-8	8	100	25	75	200	400
5.	AR2012	Building Construction IV	0-0-4	4	25	25	50	50	200
6.	AR 2014	IT Design Tools II	0-0-4	2	50	-	-	50	100
7.	AR 2016	Art & Graphics IV	0-0-4	4	25	25	50	100	200
8.	AR 2018	Research I *(Building Appraisal)	0-0-3	2	50	-	-	50	100
		General Proficiency		1					50
		TOTAL		30					1500

AR 2018 (Research I) – Students are required to study and document building complex important from architectural point of view. How architect has fulfilled functional spaces sense of creativity and aesthetics. Evaluation should be based on Presentation and reports submission at various stages.

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B. ARCHITECTURE SEM V

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Sesional	Mid Term	End Exam	Ext viva	Total
1	AR 3001	Architectural structures V	2-1-0	3	25	25	100		150
2	AR 3003	History of Architecture IV	2-1-0	3	25	25	100		150
3	AR 3005	Building Services III	2-2-0	3	25	25	100		150
4	AR 3007	Specification & Costing, Contracts	3-1-0	3	25	25	100		150
		Studios							
5	AR 3011	Architectural Design V	0-0-8	8	100	25	75	200	400
6	AR3013	Building Construction V	0-0-4	4	25	25	50	100	200
8	AR 3015	Site Planning & Landscape	1-0-3	3	25	25	50	50	150
9	AR 3017	Research II (Architects)	0-0-3	2	50	-	-	50	100
		General Proficiency		1					50
		TOTAL		30					1500

* AR 3019 Research III - Based on study of works & philosophy of legend International architects whose contribution to the field of architecture considered remarkable, and significance of learning for students.

B. ARCHITECTURE SEM VI

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Internal Sesional	Mid Term (25)	End Exam (50)	Ext viva	Total
1	AR 3002	Architectural structures	2-1-0	3	25	25	50		150
2	AR 3004	Modern & Contemporary History	2-1-0	3	25	25	50		150
3	AR 3006	Building Services IV (Bye laws, codes & Environment Services)	1-2-0	3	25	25	50		150
		Studios							
5	AR 3010	Architectural Design	0-0-8	8	100	25	75	200	400
6	AR3012	Building Construction	0-0-4	4	25	25	50	100	200
7	AR 3014	Working Drawing	0-0-3	2	50	-	-	50	100
8	AR 3016	Art & Graphics IV (Interior Design)	0-0-4	4	50	25	50	75	200
9	AR 3018	Research III *	0-0-2	2	50	-	-	50	100
	GP 301	General Proficiency		1					50
		TOTAL		30					1500

* AR 3018 Research III - Seminar on topics of recent and upcoming issues & trends in building technology, to widen perspective of students to cross cutting contemporary themes in Architecture & development sector.

B. ARCHITECTURE SEM VII

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Sessional	Mid Term	End Exam	Ext viva	Total
1	AR 4001	Building Economics	2-1-0	3	25	25	50		150
2	AR 4003	Contemporary Architecture	2-1-0	3	25	25	50		150
3.	AR 4005	Building Services (Acoustics & Security)	2-2-0	3	25	25	50		100
5	AR 4011	Architectural Design VII	0-0-8	8	100	25	75	200	400
6.	AR 4013	Advance Construction I (Equipments)	0-0-4	4	25	25	50	100	200
7.	AR 4015	Principle Of Human Settlement	0-0-4	4	25	25	50	100	200
8.	AR 4017	Project & Construction Management I	2-0-2	4	25	25	50	100	200
		General Proficiency		1				50	50
		TOTAL		30					1500

B. ARCHITECTURE SEM VIII

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Sessional	Mid Term	End Exam	Ext viva	Total
1	AR 4002	Service Coordination	1-0-2	3	25	25	50	50	150
2	AR 4004	Professional Practice I	2-0-0	2	25	25	50	-	100
3	AR 4006	Elective I	1-0-2	2	25	25	50	-	100
4.	AR 4010	Architectural Design VIII	0-0-8	8	100	25	75	200	400
5.	AR4012	Advance Construction II	0-0-4	4	25	25	50	50	200
6.	AR 4014	Project Management II	0-0-4	4	25	25	50	-	200
7.	AR 4016	Town Planning	0-0-4	4	25	25	50	-	200
8.	AR 4018	Elective II	1-0-2	2	50	-	-	50	100
		General Proficiency		1					50
		TOTAL		31					1500



LIST OF ELECTIVES

S. No	List of Electives I		Subjects of Elective II	
1	AR 4006/HCP	Housing & Community Planning	AR 4018/ BA	Bioclimatic & Energy Conscious Architecture
2	AR 4006/UD	Urban Design	AR 4018/MA	Modular Architecture
3	AR 4006/CV	Conservation	AR 4018/IB	Intelligent Building
4	AR 4006/AJ	Architectural Journalism	AR 4018/DR	Disaster Resilience Architecture
5	AR 4006/AA	Art in Architecture	AR 4018/ER	Ergonomic in Product Design
6	AR 4006/TFD	Theatre Film Design	AR 4018/LCC	Low cost construction Technology
7	AR 4006/VA	Vernacular Architecture	AR 4018/EXC	Expert System Advance Computing
8	AR 4006/SSS	Security & Surveillances System	AR 4018/RA	Retail Architecture
9.	AR 4006/APS	Art in Public Spaces	AR 4018/BES	Building Enclosure System

B. ARCHITECTURE SEM IX

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Internal Sessional	External Viva	Total
1	AR 5011	Professional Internship with Practicing Architect	20 Weeks	16	300	500	800
2	AR 5013	Seminar II (Tour Report)		3	150		150
	GP501	General Proficiency		1	50		50
		TOTAL		20			1000

B. ARCHITECTURE SEM X

S. No	Subject Code	Subject Name	L-T-S/L	Credit	Sessional	Mid Sem (Ex. Jury)	End Sem	External viva	Total
1	AR 5010	Thesis Project	10 hrs contact / week	30	600	300		600	1500
2	AR 5012	Professional Practice II	3-2-0	5	25	25	50		250
3.	AR-5014	Development Legislation	4-0-0	4	25	25	50		200
	GP-502	General Proficiency		1					50
		TOTAL		40					2000

MASTERS IN TRANSPORT PLANNING

Semester I -

S. no	Subject	Teaching Hours		Marks			
		L-T-P	Credits	exams	I A	Exam	Total
MTP 511	Planning history and theory	3-0-0	3		50	50	100
MTP 513	Socio economic base for planning	3-0-0	3		50	50	100
MTP 515	Planning Techniques	3-0-0	3		50	50	100
MTP 517	Infrastructure Planning	3-0-0	3		50	50	100
MTP 519	Transport & Logistics	3-0-0	3		50	50	100
MTP 521	Planning and design studio	0-0-6	6		250	250	500
GTP 101	General Proficiency		1				
	Total		22		500	500	1000

Semester II -Transport Planning

Course no	Subject	Teaching Hours		Internal	Exam	Total
		L-T-P	credits			
MTP 510	Urban Transport Planning	3-0-0	3	50	50	100
MTP 512	Public Transport Planning	3-0-0	3	50	50	100
MTP514	Freight Transport	3-0-0	3	50	50	100
MTP 516	Transport Economics	3-0-0	3	50	50	100
MTP 518	Theory of Traffic Flow	3-0-0	3	50	50	100
MTP 520	Studio	6		250	250	500
GTP 201	General Proficiency		1			
	Total	22	22	500	500	1000

Elective I

- MTP 621 Highway Design Theory and Methods
- MTP 622 Highway Operation and Management
- MTP 623 Urban Transport Network Analysis
- MTP 624 Theory and Method for Pavement Design
- MTP 625 Road Traffic Safety Highway Materials



Course No	Subject	Teaching hours	Credits	internal	Exam	Total
MTP 611	Analytical Transport Planning	3	3	50	50	100
MTP 613	Highway Planning and design	3	3	50	50	100
MTP 615	Traffic Engineering control Systems	3	3	50	50	100
MTP 617						
MTP 619	Research Seminar	3	2	50	50	100
	Elective II	3	2	50	50	100
MTP 619	Studio	15	6	250	250	500
GTP 301	General Proficiency		1			
	Total		22	500	500	1000

Course Code	Subject	Teaching hours	Credits	Internal	Exam	Total
MTP610	Project formulation	3	3	50	50	100
MTP612	Institutional framework and Legislation	3	3	50	50	100
MTP 614	Studio-Thesis	24	18	400	400	800
	General Proficiency		1			
	Total	30	25	500	500	1000

MTP- 626	Intelligent Transportation Systems: Engineering & Management
MTP 627	Quantitative Methods for Transportation Systems Analysis
MTP 628	Transportation Modelling and Traffic Network Operation and Management
MTP. 629	Urban Public Transportation Systems
MTP 630	Sustainable Transportation Systems Planning

- Case Studies in Transportation Systems
- Environmental Life Cycle Assessment for Integrated Transportation and Land Use Planning
- Enhancing transport system sustainability, resilience and human interface



Maize

for Feb

—E.M.

MASTERS IN LANDSCAPE PLANNING

Semester I - (Integrated with MURP Sem I)

S. No	Subject	Teaching Hours		Marks		
		L-T-P	Credits	I A	Exam	Total
MLP 101	Evolution of Human Settlement	3-0-0	3	50	50	100
MLP 103	Socio economic base & Community planning	3-0-0	3	50	50	100
MLP 105	Planning Theory & Techniques	3-0-0	3	50	50	100
MLP 107	Land Information system : Remote Sensing & GIS	2-0-1	3	50	50	100
MLP 109	Landscape Graphics	0-0-3	3	50	100	150
MLP 111	Landscape design studio I	0-0-6	6	200	200	400
	Professional Communication I			50	50	100
GLP 101	General Proficiency		1			50
	Total		22	500	500	1100

Semester II – Landscape Architecture

Course no	Subject	Teaching Hours		Internal	Exam	Total
		L-T-P	credits			
MLP 102	History of Modern Landscape Architecture	3-0-0	3	50	50	100
MLP 104	Theory of Landscape Architecture	2-0-1	3	50	50	100
MLP 106	Ecology & Ecosystem : Natural Processes in Design	2-0-1	3	50	50	100
MLP 108	Plant Systematic & Horticulture Processes	2-0-1	3	50	100	150
MLP 110	Landscape Construction I	2-0-2	4	50	50	100
MLP 112	Landscape Studio II	0-0-6	6	200	200	500
	Professional Communication II			50	50	100
GLP 201	General Proficiency		1			50
	Total	22	22	500	500	1100

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SEMESTER III – Landscape Architecture

Course No	Subject	Teaching hours	Credits	Internal	Exam	Total
MLA 201	Landscape Conservation & Regional Planning	3-0-0	3	50	50	100
	Elective I	3-0-0	3	50	50	100
MLA 203	Critical Appraisal – Contemporary Landscapes	1-0-2	3	50	50 + 50 = 100	150
MLA 205	Research Seminar (Dissertation)	0-0-3	2	50	50	100
MLA 207	Landscape Construction II	2-0-2	4	50	50	100
MLA 209	Landscape Studio III	0-0-6	6	200	200	400
	Professional Communication III			50	50	100
	General Proficiency		1			50
	Total	21	22	500	550	1100

SEMESTER IV- Landscape Architecture

Course Code	Subject	Teaching hours	Credits	Internal	Exam	Total
MLA 202	Environment Legislation & Professional Practice	3-0-0	3	50	50	100
MLA 204	Landscape Economics : Project Management & Operations	2-0-3	3	50	100	150
MLA 206	Professional Training (Summer)		4			100
MLA 208	LA Studio IV- Thesis	8	8	300	300	600
	Professional Communication IV			100	100	200
	General Proficiency		1			50
	Total	16	18			1200
	Grand Total (Sem I –IV)					4500

Elective I
 MTP 622 Natural Resource Management
 MLA 623 Landscape Urbanism
 MLA 624 Human Experience of Place

RESEARCH SEMINAR : Energy Efficient landscapes, Sustainability. Sustainable Site Construction



NOTE :

Landscape Construction I (Grading & Drainage),
Landscape Construction II (Materials & Methods),

Landscape Studio I

Landscape Studio II

Landscape Studio III

Landscape Studio IV

- Neighbourhood Design Studio
- Cultural Landscape Design Studio
- Community Design Studio
- Design Thesis



14.07 TO APPRISE THE ACADEMIC COUNCIL ABOUT THE PROCEEDINGS OF 'BOARD OF STUDIES' OF THE SCHOOLS OF THE UNIVERSITY AS PER CHOICE BASED CREDIT SYSTEM IN THE LINES OF UGC GUIDELINES AND TO APPRISE THE ACADEMIC COUNCIL ABOUT THE CHANGE OF NOMENCLATURE OF:

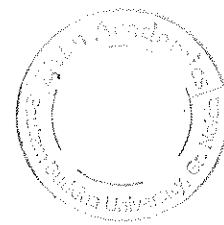
- "DEPARTMENT OF PSYCHOLOGY AND WELL BEING" TO "DEPARTMENT OF PSYCHOLOGY AND MENTAL HEALTH" (SoHSS) AS APPROVED BY BoS
- "DEPARTMENT OF LAW AND JUSTICE" TO "DEPARTMENT OF LAW, JUSTICE & GOVERNANCE" (SoLJG)
- "DEPARTMENT OF APPLIED BUDDHIST STUDIES" TO "DEPARTMENT OF BUDDHIST STUDIES AND CIVILIZATION" (SoBSC)

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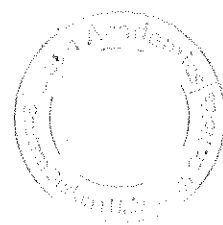
14.07 To apprise the Academic Council about the proceedings of 'Board of Studies' of the Schools of the University as per Choice Based Credit System in the lines of UGC Guidelines and to apprise the Academic Council about the change of nomenclature of:

- "Department of Psychology and Well Being" to "Department of Psychology and Mental Health" (SoHSS) as approved by BoS.
- "Department of Law and Justice" to "Department of Law, Justice & Governance" (SoLJG).
- "Department of Applied Buddhist Studies" to "Department of Buddhist Studies and Civilization" (SoBSC).

The meetings of Board of Studies have been conducted by the following Schools of the University. The minutes of the same are presented here for kind perusal and approved of the Council

S.No	Name of the School	Annexure no.
1.	School of Vocational Studies & Applied Sciences	Annexure no. 16
2.	School of Information and Communication Technology	Annexure no. 17
3.	School of Management	Annexure no. 18
4.	School of Buddhist Studies & Civilization	Annexure no. 19
5.	School of Engineering	Annexure no. 20
6.	School of Humanities & Social Sciences	Annexure no. 21
7.	School of Law, Justice & Governance	Annexure no. 22
8.	School of Biotechnology	Annexure no. 23





Fifteenth Academic Council Meeting, ^{Neetu Singh.}
26th Dec. 2016

Minutes of Board of Studies of
all Schools of the University

BOOKLET NO. 2
(Annexure no. 21 – 28)





School of Humanities and Social Sciences
Gautam Buddha University
Greater Noida

**Minutes of the Board of Studies Meeting held on 12 November 2016 in the
School of Humanities & Social Sciences**

In compliance to the directions from the Dean, Academics (vide GBU-010/Acad./01/2016-63 dated 14.10.2016), a meeting of the Board of Studies was convened in the School of Humanities & Social Sciences on 12 November 2016 at 11.30 A.M. The meeting was presided over by the Dean, School of Humanities and Social Sciences.

The following members were present in the meeting:

- | | |
|---|---------------|
| 1. Dr. Neeti Rana, Dean, School of Humanities & Social Sciences, GBU, | Chairperson |
| 2. Prof. S. Imtiaz Hasnain, AMU, Aligarh | Expert Member |
| 3. Prof. Ahrar Husain, JMI, New Delhi | Expert Member |
| 4. Prof. Neera Agnimitra, DSW, Delhi University | Expert Member |
| 5. Prof. U. K. Sinha, IHBAS, New Delhi | Expert Member |
| 6. Dr. Om Prakash, Head, All Humanities Departments | Member |
| 7. Dr. V. K. Shanwal, Head, Education and Training | Member |
| 8. Dr. A. P. Singh, Head, Applied Psychology & Mental Health | Member |
| 9. Dr. Shubhashish Bhadra, Head Social Work | Member |

Agenda of the meeting:

- ✓ 1. Approval of the List of Experts for Academic Work in the concerned Departments
2. Approval of Faculty Strength as per the instructions received from the Dean, Academics (vide GBU-010/Acad./01/2016-63 dated 14.10.2016)
3. Review and approval of Course Codes in case of duplication in different Programmes
4. New Item: Proposal for starting Undergraduate Programmes in the School from the academic session 2016-17
5. Any Other Matter with the permission of the Chair: Vetting of the detailed course structure of Value Education; Social Problems in India; Environmental Education; and Stress Management

Deliberations and Recommendations:

After long discussions and objective assessment of the proposal, the members unanimously agreed upon the recommendations and the proposal given as under.

Item No. 01 List of Experts: The Board revised the existing list of subject experts and recommended updated list of subject experts. The subject-wise experts lists are attached as annexure- 01 to 9 overleaf.



Item No. 02 Faculty Strength in the School: The Board reviewed and discussed the faculty strength and approved the following distribution.

S. No.	Areas	Created Faculty Position
1	Department of English & Modern European Languages	07
2	Department of Social Work	05
3	Department of Psychology and Mental Health	06
4	Department of Sociology	03
5	Department of Education & Training	1+07= 08
6	Department of Indian Languages and Literature	Hindi-02+ Urdu-01= 03
7	Department of Political Science & International Relations	02
8	Department of Mass Communication & Media Studies	01
9	Department of Economics, Planning & Development	03
Total		38

Item No. 03 Review and approval of Course Codes in case of duplication in different Programmes:
The Board was appraised of no such duplication of the course in the School across all Departments.

Item No. 04 Proposal for starting 03 Years B.A. Honours Programmes in selected areas from Academic Year 2016-17 in the School:

5.1 In order to support and strengthen the Postgraduate Programmes in the School, the Board considered the possibility of starting new Undergraduate Programmes for two reasons:

- The Undergraduate Programmes will feed into the already running Postgraduate Programmes. These programmes will feed into the need of the higher level Programmes and also orient the existing students towards pursuing degrees at higher levels (M.Phil./Ph.D. level) in the School. This proposal is an effort to nurture the young minds at an age when they are vulnerable and it will be easier to tap that energy, mould them as committed and sincere individuals and harness the talent to help them build a better life and future. Also, immediately after the senior secondary school education, the students are introduced to the world concerning their social lives which help them acknowledge the standards of rigorous scholastic endeavours required when they are promoted to the Masters programme.
- Such Programmes will generate substantial revenue with the existing faculty and infrastructure facilities.

Looking at the available faculty strength and feasibility of the programmes, the proposal for starting UG Programme in various areas in the coming academic year—



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12/11/2016

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12/11/16

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12/11/16

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12/11/16

2016-17 was considered and approved as per the following details. The recommendations for starting the programme in any of the following areas are restricted by the number of available faculty strength in the particular area. The competent authority may decide to start with a few Programmes as pilot Programmes in the beginning.

4.2 Proposed and recommended three years B. A. Honours Programmes in the following Areas:

1. English
2. Applied Psychology
3. Social Work
4. Political Science
5. Education

4.3 The Board's Recommendations for:

- i. **Number of seats:** 30 in each programme (30x5= 150 seats)
- ii. **Mode of Admission:** Academic Weightage (cut off based on the qualifying examination i.e. 12th (Senior Secondary))
- iii. **Duration of the Programme:** 03 Years
- iv. **Cost of the Application Form:** INR 200 for Gen/OBC and INR 100 for SC/ST candidates, as there is no entrance test proposed.
- v. **Academic Fee per year:** INR 10,000 (Ten Thousand)
- vi. **One time Registration Fee:** INR 5000 (Five Thousand)
- vii. **Refundable Security Deposit:** INR 5000 (Five Thousand)
- viii. **Hostel and Mess Charges:** Applicable as per the University Rules

4.4 The Board was appraised with the feasibility of the programme in the following manner and the supporting data:

Infrastructure Requirements: 05 Classrooms

Revenue Generation per year: Revenue Earned by Registration: 5,000x150= 7,50,000/- [A]

Revenue Earned by Academic Fee: 10,000x150= 15,00,000/- [B]

The trend in Hostel occupancy suggests that at least upto 40% of the enrolled students may opt for Hostel. In such a there will be case an additional revenue of Rs. 18,00,000/- (30,000x60) [C]

Total revenue earned per year (A+B+C): 40,50,000/- per year.

Faculty Strength:

S.No.	Area	Existing Faculty Strength	Created Faculty Strength
1	English		
2	Applied Psychology		
3	Social Work		
4	Political Science		
5	Education		




1	English	05	07
2	Applied Psychology	01	06
3	Social Work	03	05
4	Political Science	04	02
5	Education	01	07


Cost Effectiveness: There will be very little financial liability for the first two years from the commencement of the Programmes. We require additional faculty members only in the third year of the programmes. By then we will be in a position to review and revise the number of seats and consequently increase the revenue as well.


4.5 The Board recommended that the programme structure, course outline, and the credit distribution shall be made by the concerned Boards of Studies after getting this proposal approved in principle. The Board also recommended that hostel should be made available only on demand and the charges will be applicable as per the University Rules.

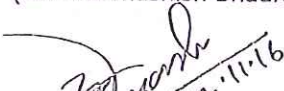
Item No. 05 As Prof. Ahrar Husain and other experts were present in the meeting and who also happen to be the member of the Board of Studies of the concerned Department, the committee was requested to do the vetting of the detailed course structures of four papers namely Value Education; Social Problems in India; Environmental Education; and Stress Management with the permission of the Chair. Out of the four papers listed above, it was decided that the Course on Stress Management should be revised in terms of the course contents and renamed as 'Health Education and well Being'. The issue may be taken up in the concerned Board of Studies of the Department.

The meeting ended with the proposal of vote of thanks to the Chair.


(Dr. Shubhashish Bhadra)

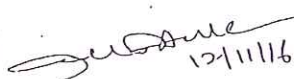

(Dr. A. P. Singh)

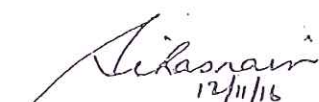

(Dr. V. K. Shanwal)


(Dr. Om Prakash)


(Prof. U. K. Sinha)


(Prof. Neera Agnimitra)


(Prof. Ahrar Husain)


(Prof. S. Imtiaz Hasnain)


(Dr. Neeti Rana)





Department of English and Modern European Languages
School of Humanities and Social Sciences
Gautam Buddha University, Greater Noida

Minutes of the Board of Studies Meeting held on 10 September 2016

Consequent upon the approval by the competent authority, a meeting of Board of Studies (BoS) of Department of English and Modern European Languages was convened in the School of Humanities & Social Sciences on 10 September 2016 at 11.30 A.M.

The following members were present in the meeting:

- | | |
|--|----------------|
| 1. Dr. Indu Uprety, Dean, School of Humanities & Social Sciences, GBU, | Chairperson |
| 2. Prof. S. Imtiaz Hasnain, AMU, Aligarh | Expert Member |
| 3. Prof. Vivek Sachdeva, GGSIP University, Dwarka, New Delhi | Expert Member |
| 4. Dr. Om Prakash, Head, Department of EMEL | Member |
| 5. Dr. Sumitra Huidrom, Assistant Professor | Invited Member |
| 6. Dr. Shubhashish Bhadra, Assistant Professor | Invited Member |

Agenda of the meeting:

1. To discuss and finalize M.A. Programme Structure
2. To discuss and finalize detailed course contents and suggested reading list
3. To review and update the following courses offered in other Schools of Studies:

- | | | |
|-----------|---|------------------------|
| a. EN-101 | [English Proficiency] | UG level course |
| b. EN-102 | [Professional Communication] | UG level course |
| c. EN-521 | [Advanced Course in Professional Communication] | PG level course |
| d. EN-111 | [Introduction to Language, Culture and Society] | New course at UG level |

Deliberations and Recommendations: The Board reviewed the Programme Structure of M. A. English and finalized it. The detailed course contents and suggested reading list were discussed and approved after incorporating all required changes suggested by the external experts. The Board also reviewed the course contents of the existing courses offered in various Schools of Studies and updates them with its input. A newly offered course [EN-111, Introduction to Language, Culture and Society] was also approved by the Board. All the comments and suggestions incorporated were validated by the experts. The newly approved Programme Structure for M.A. English; reviewed, revised and approved existing courses along with the detailed course contents are attached herewith.

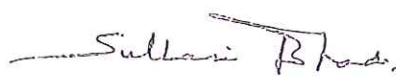
The meeting ended with proposing vote of thanks to the chair.

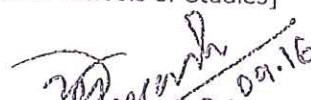
ENCL: **Annexure-01** [M. A. in English Programme with detailed syllabus]


Annexure-02 [Reviewed and updated Core Courses offered in other Schools of Studies]

Annexure-03 [Reviewed and updated Open Elective Courses offered in other Schools of Studies]


(Dr. Sumitra Huidrom)


(Dr. Shubhashish Bhadra)


(Dr. Om Prakash) 10.09.16


(Prof. Vivek Sachdeva)


(Prof. S. Imtiaz Hasnain)


(Dr. Indu Uprety)





Department of English and Modern European Languages
School of Humanities & Social Sciences
Gautam Buddha University

M.A. in English Programme Structure

Total No. of Credits: 84

Semester- I

S. No.	Type of Papers	Code	Name of Papers	Credits
1	Core	EN-501	English Poetry-I (14th century to 18 th century)	4
2		EN-503	English Fiction-I (18 th -19 th century)	4
3		EN-505	English Drama-I (16 th -17 th century)	4
4		DSE-1	Any one out of the following	3
		EN-507	Literature from the South Asian Diaspora	
		EN-509	Indian Literature in English Translation (the classics and after)	
5	Discipline Specific Elective	DSE-2	Any one out of the following	3
		EN-511	Indian Writing in English (the contemporary period)	
		EN-513	European Literature (the eighteenth to the twentieth century)	
6	Generic Elective Course	GE	Any one out of the following	3
		EN- 531	Language, Culture and Society	
	Non-Credit	ET-515	Value Education	0
			General Proficiency	0
			Total Credits	21

Semester-II

S. No.	Type of Papers	Code	Name of Papers	Credits
1	Core	EN-502	English Poetry-II (19 th century and after)	4
2		EN-504	British Fiction-II (20 th century and after)	4
3		EN-506	English Drama-II(18 th century and after)	4
4		DSE-3	Any one out of the following	3
		EN-508	American Literature	
		EN-510	Australian Literature	
5	Discipline Specific Elective	DSE-4	Any one out of the following	3
		EN-512	Caribbean Literature	
		EN-514	African Literature	
6	Open Elective-1 (Non-Disciplinary Elective Course)	Code to be supplied by the concerned Department	One course to be selected from Open Elective courses offered by other Departments/Schools	3
	Non-Credit		General Proficiency	0
			Total Credits	21



Semester-III

S. No.	Type of Papers	Code	Name of Papers	Credits
1	Core	EN-601	Western Literary Theory and Criticism-I	4
2		EN-603	Introduction to General Linguistics	4
3		EN-605	Gender and Literature	4
4		DSE-5	Any one out of the following	3
	Discipline	EN-607	Folk Literature and Culture	
	Specific Elective	EN-609	Canadian Literature	
5		DSE-6	Any one out of the following	3
		EN-611	English Language Teaching [ELT]	
		EN-613	Translation: Theory and Practice	
6	Open Elective-2 (Non-Disciplinary Elective Course) Non-Credit	Code to be supplied by the concerned Department	One course to be selected from Open Elective courses offered by other Departments/Schools	3
			General Proficiency	0
			Total Credits	21

Semester-IV

S. No.	Type of Paper	Code	Name of Paper	Credit
1	Core	EN-602	Cultural Studies	4
2		EN-604	Sociolinguistics	4
3		EN-606	Western Literary Theory and Criticism- II	4
4	Project/Dissertation	EN-652	Dissertation	6
5		DSE-7	Any one out of the following	3
	Discipline Specific Elective	EN-608	Literary Voices from the Margins	
		EN-610	Stylistics	
	Non-Credit		General Proficiency	0
			Total Credit	21





Department of English and Modern European Languages
School of Humanities and Social Sciences
Gautam Buddha University, Greater Noida

Annexure-01

M. A. in English Programme
Programme Structure and Detailed Syllabus



Department of English and Modern European Languages
School of Humanities & Social Sciences
Gautam Buddha University

Programme Structure with Detailed Course Contents

Name : M.A. in English
Level : Postgraduate Programme
Duration : 02 Years [04 Semesters]
Credits : 84

Semester- I

S. No.	Type of Papers	Code	Name of Papers	Credits	
1	Core	EN-501	English Poetry-I (14 th century to 18 th century)	4	
2		EN-503	English Fiction-I (18 th -19 th century)	4	
3		EN-505	English Drama-I (16 th -17 th century)	4	
4		DSE-1	Any one out of the following	3	
		EN-507	Literature from the South Asian Diaspora		
		EN-509	Indian Literature in English Translation (the classics and after)		
5	Discipline Specific Elective	DSE-2	Any one out of the following	3	
		EN-511	Indian Writing in English (the contemporary period)		
		EN-513	European Literature (18 th – 19 th century)		
6	Generic Elective Course Non-Credit Course	GE	Any one out of the following	3	
		EN-531	Language, Culture and Society		
		ET-515	Value Education		
			General Proficiency	0	
		Total Credits			21

Course Name: English Poetry-I (14th century to 18th century)
Course Code: EN 501
Credit: 04

Unit 1 Geoffrey Chaucer: *The Canterbury Tales* (The General Prologue)
The Pardoner's Tale (for non-detailed study)
Nun's Priest Tale (for non-detailed study)



- Unit 2 Edmund Spenser: *The Faerie Queen* Book I
 William Shakespeare: *Sonnets* (18, 20, 23, 27, 30, 42, 73, 94, 116, 147)
- Unit 3 John Donne: *The Canonization*, *The Relic*
 Andrew Marvell: *To his Coy Mistress*, *The Garden*
 John Milton: *Paradise Lost* Book I
- Unit 4 Alexander Pope: *The Rape of the Lock*
 John Dryden: *Mac Flecknoe*

Suggested Reading:

1. Geoffrey Chaucer - *The Canterbury Tales* (The General Prologue, The Pardoner's tale & Nun's Priest's Tale), Penguin Books, David Wright(trans.) & Christopher Cannon(intro.)
2. Andrew Marvell: *To His Coy Mistress*
3. John Dryden: *Mac Flecknoe*
4. *Paradise Lost* by John Milton Penguin Publisher (2003)
5. *The Complete English Poems* by John Donne Penguin Publisher (1976)
6. *The Sonnets* William Shakespeare, G. Blakemore Evans, Stephen Orgel (Cambridge University Press)
7. *The Rape of the Lock* Alexander Pope, Aubrey Beardsley (Dover Publications)
8. Bloom, Harold. *Geoffrey Chaucer's the General Prologue to the Canterbury* (Chelsea house: New York, 1988)
9. Brown, Peter. *Geoffrey Chaucer (Author in context)*, OUP publication
10. Sutherland, James. *The Eighteenth Century Background*
11. Burrow, Colin. *Metaphysical Poetry* (Penguin, 2006)
12. *The Critical Response to Milton's Paradise Lost* by Timothy C. Miller (Publisher: ABC-CLIO)

Course Name: English Fiction- I (18th - 19th century)
 Course Code: EN-503
 Credit: 04

- Unit 1 Daniel Defoe: *Robinson Crusoe*
 Henry Fielding: *Tom Jones*
- Unit 2 Jen Austen: *Emma*
 Charles Dickens: *David Copperfield*
- Unit 3 Emily Bronte: *Wuthering Heights*
- Unit 4 Thomas Hardy: *Tess of the d'Urbervilles*

Suggested Readings:

1. Forster, E.M. *Aspects of the Novel*.
2. Watt, Ian. *The Rise of the Novel*
3. Eagleton, Terry. *The English Novel: An Introduction*
4. Allen Walter: *The English Novel*



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Course Name: English Drama- I (16th - 17th century)
 Course Code: EN 505
 Credit: 04

- Unit 1 Christopher Marlow- Dr. Faustus
 Unit 2 William Shakespeare- Macbeth
 Unit 3 William Shakespeare- Twelfth Night
 Unit 4 John Webster: The Duchess of Malfi

Suggested reading:

- Douglas Bush, Preface to Renaissance Literature
- A.L. Rowse, The Elizabethan Renaissance
- David Norbrook, Politics and Poetry in Renaissance England
- L.C. Knights, Drama and Society in the Age of Jonson
- Stephen Greenblatt, Renaissance Self-Fashioning
- Pascale Aebischer, Jacobean Drama. Palgrave Macmillan
- Allardyce Nicholl: A History of English Drama

Course Name: Literature from the South Asian Diaspora
 Course Code: EN-507
 Credit: 03

- Unit 1 Homi Bhabha: "DissemiNation: Time, Narrative and the margins of the Modern Nation."
 Sara Suleri: "Woman Skin Deep: Feminism and the Post colonial Condition"
 Unit 2 Bapsi Sidwa: Ice Candy Man
 Kiran Desai: The Inheritance of Loss
 Unit 3 Zulfiker Ghosh: "A Memory of Asia"
 Michael Ondaatje: "The man with the seven toes"
 Unit 4 Hanif Kureishi: The Buddha of Suburbia
 Jhumpa Lahiri: The Namesake

Suggested Readings:

1. Ahmad, Aijaz. In Theory: Classes, Nations and Literatures.
2. Bhabha, Homi K. The Location of Culture
3. King, Bruce. New Literatures in English
4. Lal, Malashri and Sukrita Paul Kumar. Interpreting Home in South Asian Literature

Course Name: Indian Literature in English Translation (the classics and after)
 Course Code: EN 509
 Credit: 03

- Unit 1 Kalidasa - Abhijnana Shakuntalam tr. Shakuntala (Sanskrit)
 Mirza Ghalib: (Urdu)
 • It is Heart after all, not brick and stone



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- What shapes and forms must lie buried in dust
- Again I remember my moist eye
- It needs a whole age for a sigh to reach somewhere
- If a little longer this life I find
- Glory of a drop lies in dissolving itself in ocean
- It is hard indeed for anything to be easy
- If she is not satisfied even with my life's sacrifice

Kabir Das (Hindi)

- Abode Of The Beloved
- Are You Looking For Me?
- Where Do You Search Me
- Looking At The Grinding Stones... (Dohas)
- Illusion And Reality
- I Said To The Wanting-Creature....
- There's A Moon Inside My Body

Meera Bai (Hindi)

- A Cowherding girl
- A Limb just moved
- A great Yogi
- Clouds
- Dark Friend, what can I say?
- Friend, without that Dark rapto
- Go To That Impenetrable Realm
- I Danced Before My Giridhara

Unit 2 Premchand-Godan tr. Godan (Hindi)

Rabindranath Tagore- Gora tr. Gora (Bengali)

Unit 3 Ashokamitran- Tanner tr. Water (Tamil)

O.V.Vijayan- Khasakkinte Itihaṣam tr. The Legends of Khasak (Malayalam)

Unit 4 Vijay Tendulkar: Shantatah! Court Chalu Ahe tr. Silence! The Court is in Session (Marathi)

Arupa Patangia Kalita-Written in Tears (Assamese)

Suggested Reading:

1. S.K. Das, A History of Indian Literature, Vols VIII & IX
2. K.R. Srinivasa Iyengar, Indian Writing in English
3. R. Sethi, Myths of the Nation: National Identity and Literary Representation
4. M. Mukherjee, Realism and Reality: The Novel and Society in India
5. Shantha Ramakrishna, ed Translation and Multilingualism: Post Colonial Context
6. A.P.Pandey, Flames and Fire In Kabir's Poetry, Bhasker Publishers, Kanpur, 2008
7. Translation: From Periphery to Centrestage, Tutun Mukherjee, ed.
8. Author, Texts, Issues: Essays on Indian Literature K. Satchidanandan
9. Bassnet McGuire Susan : Translation Studies, Methuen, London and N. Y. 1980.
10. Bassnet McGuire Susan and andre Lefevere : Translation History and Culture.



11. Benjamin, Walter : Illuminations Fontans, 1979, (First Published 1955).
12. Catford J. C. : a Linguistic Theory of Translation, London, OUP, 1965.
13. Holmes, James (ed.) : The Nature of Translation : Essays on the Theory and Practice of Literary Translation, The Hague Mouton, 1970.
14. On Translation, Cambridge Mass Harvard University Press, 1959.
15. Hermas, Thoe : The Manipulation of Literature.
16. Kelly L. G. True Interpreter : a History of Translation Theory and Practice in the West, Oxford, Blackwell, 1979.
17. Levy Jiri : 'Translation as a Decision Process' in To Translation Roman Jacobson II, The Hauge, Mouton, pp.1111-1182.

Course Name: Indian Writing in English (the contemporary period)

Course Code: EN-511

Credit: 03

Unit 1 Raja Rao : Kanthapura

Anita Desai: In Custody

Unit 2 Dina Mehta: Brides are Not for Burning

Mahesh Dattani: Tara

Unit 3 Toru Dutt :Our Casuarena Tree, The Broken bell

Kamala Das: The Old Playhouse, The Dance of the Eunuchs

Unit 4 Nissim Ezekiel: The Night of the Scorpion, Good bye Party for Ms Pushpa T S

H L V Derozio : Harp of India,

Jayanta Mahapatra : Hunger, Ash

Keki N Daruwala: Before the Word

Suggested Readings:

1. Ahmad, Aijaz: In Theory: Classes , Nations, Literatures
2. Iyenger, K.R.Srinivasa.,: Indian Writing in English
3. King, Bruce : Modern Indian Poetry in English
4. Mukherjee, Meenakshi: The Twice Born Fiction, 2nd edition
5. Naik, M. K.: A History of Indian English Literature
6. Naik, M.K. and Shyamala A. Narayan: Indian English Literature 1980-2000: A Critical Survey

Course Name: European Literature (18th - 19th century)

Course Code: EN-513

Credit: 03

Unit 1 Miguel De Cervantes: Don Quixote

Unit 2 Albert Camus: The Outsider

Unit 3 Luigi Pirandello: Six Characters in Search of an Author

Unit 4 Leo Tolstoy Anna Karenina

Anton Chekhov: The Cherry Orchard

Suggested readings:



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1. European Authors 1000-1900: a Biographical Dictionary of European Literature. Kunitz, Stanley J. and Vineta Colby, eds., New York: Wilson, 1967.
2. Clark, Barrett Harper. European Theories of the Drama. New York: Crown publishers, 1947
3. Malcolm Bradbury and James McFarlane, Modernism: A Guide to European Literature 1890-1930(Penguin, rev.ed. 1991).
4. Encyclopedia of Italian Literary Studies.Gaetana Marrone, general editor; New York: Routledge, c2007. 2 vols.
5. Everyman's Dictionary of European Writers. New York: Dutton, 1968
6. Handbook of Russian Literature. Terras, Victor, ed. New Haven: Yale UP, 1985.
7. Modern Encyclopedia of Russian and Soviet Literature.v.1-10. (in progress) Gulf Breeze: Academic International, 1977
8. A New History of German Literature. Belknap Press of Harvard University Press, 2004.
9. Oxford Companion to Spanish Literature. Ward, Phillip, ed. Oxford: Clarendon, 1978.
10. Reader's Encyclopedia of Eastern European Literature. Pynsent, Robert B. with S.I. Kanikova. New York : HarperCollins Pub., 1993.
11. Tables of European History, Literature, Science, and Art, from A.D. 200 to 1909... Nichol, John. 5th ed. Glasgow: Maclehose, 1909

Course Name: Language, Culture and Society
 Paper Code: EN-531
 Credits: 03

- Unit 1 Language as a System; Design Features; Language and Culture; Linguistic and Cultural Relativity; Sapir-Whorf Hypothesis, Language, Gender and Identity; Language Myths
- Unit 2 Language as Social Reality; Notion of Speech Community; Language: Standard and Vernacular; Language, Dialects, Sociolect, and Registers; Bilingualism and Multilingualism; Code Switching and Code Mixing; Pidgin and Creole;
- Unit 3 Introduction to Theories in Language Acquisition; Competence and Performance; Communicative Competence,
- Unit 4 Language Families of India; Language policy and planning in India; Language in Constitution; English in India

Suggested Readings:

1. Crystal, David. 2010. The Cambridge Encyclopedia of Language. Third Edition. Cambridge University Press.
2. Fasold, Ralph. W. (1990) The Sociolinguistics of Language, Oxford: Blackwell.
3. Fromkin, Victoria, Robert Rodman, & Nina Hyams. 10th Edition. An Introduction to Language. Cengage Learning.
4. Hudson, R. A. (2011). Sociolinguistics. Cambridge. Cambridge University Press 2nd Edition.
5. Lyons, John (the 15th Edition reprinted 2014) Language and Linguistics: An Introduction, Cambridge University Press.



Semester-II

S. No.	Type of Papers	Code	Name of Papers	Credits
1	Core	EN-502	English Poetry-II (19 th century and after)	4
2		EN-504	British Fiction-II (20 th century and after)	4
3		EN-506	English Drama-II(18 th century and after)	4
4		DSE-3	Any one out of the following	3
		EN-508	American Literature	
		EN-510	Australian Literature	
5	Discipline Specific Elective	DSE-4	Any one out of the following	3
		EN-512	Caribbean Literature	
		EN-514	African Literature	
6	Open Elective-1 (Non-Disciplinary Elective Course)		One course to be selected from Open Elective courses offered by other Departments/Schools	3
			Non-Credit	0
			Total Credits	21

Course Name: English Poetry-II (19th century and after)
 Course Code: EN 502
 Credit: 04

Unit 1 William Wordsworth: Ode on Intimations of Immortality, Tintern Abbey, Lucy Poems (5)

Samuel Taylor Coleridge: Rhyme of the Ancient Mariner, Kubla Khan, Frost At Midnight

John Keats: Ode on a Grecian Urn, Ode to Autumn, Ode to a Nightingale

P.B. Shalley: Ode to the West Wind, Stanzas written on Dejection, Ode To A Skylark

George Byron: She Walks in Beauty, Youth and Age, When We Two Parted

Unit 2 Mathew Arnold: Dover Beach, The Strayed Reveller, The Scholar Gypsy

Robert Browning: The Last Ride Together, Porphyria's Lover, My Last Duchess

Alfred Tennyson: In Memoriam, Ulysses, The Lotus Eaters

Unit 3 T.S Eliot: The Waste Land

W. H Auden: Unknown Citizen, In Memory of W B Yeats, The Shield of Achilles

W. B Yeats: Sailing to Byzantium, Leda and the Swan, The Second Coming

Unit 4 Seamus Heany: Punishment, Tradition, Ocean's Love to Ireland

Ted Hughes: Hawk Roosting, Relic, A Crow Hymn,

Suggested Reading:

1. M.H. Abrams, The Mirror and the Lamp: Romantic Theory and the Critical Tradition(1953)
2. Cynthia Chase, Romanticism(1993)



3. Stuart Curran, The Cambridge Companion to British Romanticism(1993)
4. Duncan Wu, Romanticism: A Critical Reader(1995)
5. Harold Bloom and Lionel Trilling, Romantic Poetry and Prose(1973)
6. Jerome J. McGann, The New Oxford Book of Romantic Period Verse(1993)
7. Duncan Wu, Romanticism: An Anthology(1994)
8. Duncan Wu, Romantic Women Poets: An Anthology(1994)
9. Madge V. M. The Knight and the Saint: A Study of T. S. Eliot's Development Jaipur: Book Enclave, 2004.
10. Kenner, Hugh. The Invisible Poet: T. S. Eliot. (1969)
11. Maxwell, D. E. S. The Poetry of T. S. Eliot, Routledge and Keagan Paul. (1960).
12. North, Michael (ed.) The Waste Land (Norton Critical Editions). New York:W.W. Norton, 2000.
13. Raine, Craig. T. S. Eliot. Oxford University Press (2006) Jeffares, A Norman (1968).
14. A Commentary on the Collected Poems of W. B. Yeats Stanford University Press
15. Pritchard, William H. (1972).
16. W. B. Yeats: A Critical Anthology. Penguin.
17. Elmer Andrews (ed.) The Poetry of Seamus Heaney, 1993.
18. Parker, Michael. S
19. Seamus Heaney: The Making of the Poet, 1993.
20. Bowra, C.M. *The Romantic Imagination*

Course Name: English Fiction-II (20th century and after)
 Course Code: EN-504
 Credit: 04

Unit 1 Joseph Conrad: Heart of Darkness
 Unit 2 DH Lawrence: Sons and Lovers
 Unit 3 Virginia Woolf: To the Lighthouse
 James Joyce: Portrait of the Artist as a Young Man
 Unit 4 Paul Scott: Staying On

Suggested Readings:

1. Booth, Wayne,: The Rhetoric of Fiction
2. Kettle, Arnold, An Introduction to the English novel, vol.2
3. Frazer, GS. The Modern Writer and his World (Pelican , 1964)
4. Parsons, Deoborah. Theorist of the modernist novel: James Joyce, Dorothy Richardson and Virginia Woolf
5. David Daiches: The Modern Novel
6. F. R Lewis: The Great Tradition
7. Malcolm Bradbury: Modernism



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Course Name: English Drama -II (18th century and after)
 Course Code: EN 506
 Credit: 04

Unit 1 William Congreve: The Way of the World

Unit 2 Oliver Goldsmith: The Deserted Village

Unit 3 G. B. Shaw: Man and Superman

Unit 4 T. S. Eliot: Murder in the Cathedral

Suggested Readings:

1. Ellis Frank H : Sentimental Comedy: Theory and Practice
2. Allardyce Nicoll: A History of English Drama
3. Loftis John: Sheridan and the Drama of Georgian England
4. Niloufer Harben: Twentieth-century English History Plays: From Shaw to Bond
5. Christopher Wheatley : Drama in English From the Middle Ages to the Early Twentieth Century....
6. R. Barton Palmer, William Robert Bray : Modern British Drama on Screen

Course Name: American Literature
 Course Code: EN 508
 Credit: 03

Unit 1 Ernest Hemmingway: The Old Man and the Sea

Unit 2 Toni Morison: The Bluest Eye

Unit 3 Walt Whitman: "When Lilacs last in the Dooryard Bloomed"

Wallace Stevens: Tattoo

Allen Ginsberg : "America"

Sylvia Plath: "Daddy"

Maya Angelou: I Know Why Cage Bird Sings

John Updike: "Morocco"

Sherman Alexei : Evolution

Unit 4 Tennessee Williams: A Street Car Named Desire

Arthur Miller: Death of a Salesman

Suggested Readings:

1. Elliott, Emory, The Cambridge Introduction to Early American Literature
2. Wagner -Martin, Linda, The Routledge Introduction to American Modernism
3. Chapman, Abraham. Black Voices: An Anthology of African American Literature
4. Lehman, David: The Oxford Book of American Poetry
5. Coulombe, Joseph L. Reading Native American Literature
6. Cassuto, Leonard: The Cambridge History of the American Novel
7. Richards, Jeffrey H. The Oxford Handbook of American Drama
8. Adam, Bella: Asian American Literature



Course Name: Australian Literature
Course Code: EN-510
Credit: 03

Unit 1 Patrick White: The Twiborn Affair

Unit 2 Jack Devis: No Sugar
Jane Harrison: Stolen

Unit 3 Sally Morgan: My Place
David Malouf: An Imaginary Life

Unit 4 Anita Heiss: I'm Not Racist, But ...
Judith Wright: The Moving Image

Suggested Readings:

1. Pierce, Peter. A Cambridge History of Australian Literature
2. Edelson, Phylis S. Australian Literature: An Anthology of Writing from the land under
3. Wheeler, Belinda. A companion to Australian Aboriginal Literature

Course Name: Caribbean writing
Course Code: EN 512
Credit: 03

Unit 1 Derek Walcott: "A far cry from Africa", "The Sea is History"
Jamaica Kincaide: A Small Place

Unit 2 Junot Díaz : The Brief Wondrous Life of Oscar Wao,
Marc Aronson: Sugar Changed the World,

Unit 3 Peter Chapman: Bananas: How the United Fruit Company Shaped the World,

Unit 4 V.S Naipaul: India: A House For Mr. Biswas
E R Braithwaite : Choice of Straws

Suggested Reading:

1. The Cambridge history of African and Caribbean Literature 2 Vols. Cambridge History of Australian Literature ed. Peter Pierce
2. The Arnold Anthology of Postcolonial Literatures in English: ed. John Thieme
3. Penguin Book of Caribbean Verse in English ed. Paula
4. Burnett Hinterland Caribbean Poetry ed. E. A Markham
5. Caribbean New Wave Anthology: Contemporary Short Stories selected by Stewart Brown Heinemann

CourseName: African Literature
Course Code: EN 514
Credit: 03

Unit 1 Chinua Achebe: Anthills of Savanah

Unit 2 Ngugi wa Thiong'o: Weep Nöt, Child
Ben Okri: Flowers and Shadows



Unit 3 Mariamna Ba: So Long a Letter
Cofi Awoonor: Night of my Blood

Unit 4 Wole Soyinka: The Lion and the Jewel

Suggested Reading:

1. Penguin Book of Modern African Poetry ed. Gerald Moore and Uili Beier
2. Poems of Black Africa ed. Wole Soyinka
3. A Selection of African Poetry ed. K.E. Senau and T. Vincent
4. Penguin Book of South African Stories ed. Steven Gray.
5. Politics in the novels of Ngũgĩ wa Thiong'o, b. 1938, African writer.

Semester-III

S. No.	Type of Papers	Code	Name of Papers	Credits
1	Core	EN-601	Western Literary Theory and Criticism-I	4
2		EN-603	Introduction to General Linguistics	4
3		EN-605	Gender and Literature	4
4		DSE-5	Any one out of the following	3
	Discipline	EN-607	Folk Literature and Culture	
	Specific Elective	EN-609	Canadian Literature	
5		DSE-6	Any one out of the following	3
		EN-611	English Language Teaching [ELT]	
		EN-613	Translation: Theory and Practice	
6	Open Elective-2 (Non-Disciplinary Elective Course) Non-Credit		One course to be selected from Open Elective courses offered by other Departments/Schools General Proficiency	3 0
			Total Credits	21

Course Name: Western Literary Theory and Criticism-I
Course Code: EN 601
Credit: 04

Unit 1 Plato The Republic, Book X, [tr. Benjamin Jowett (New York: Random House, 1957)]
Aristotle The Poetics, tr. Ingram Bywater (New Delhi: Oxford University Press.)

Unit 2 Philip Sidney An Apology for Poetry
William Wordsworth Preface to Lyrical Ballads (1802)

Unit 3 Samuel Taylor Coleridge: Biographia Literaria, Chapters IV, XIII, and XIV.
Matthew Arnold: 'The Function of Criticism at the Present Time'

Unit 4 T.S. Eliot: Tradition and the Individual Talent
I. A. Richards: Metaphor 'and the Command of Metaphor' New Criticism,



Cleanth Brooks: Irony as the Principle of Structure"
Victor Shlovksy: Art as Technique

Suggested Reading:

1. M.H. Abrams, The Mirror and the Lamp: Romantic theory and the Critical Tradition (New York, 1953)David Lodge: (ed.)
2. Modern Criticism and Theory-A Reader(Pearson, 2005)
3. A Handbook of Critical Approaches to Literature(OUP, 2005)James Reeves,
4. The Critical Sense: Practical Criticism of Prose and Poetry (William Heinemann)
5. The Norton Anthology of Theory and Criticism(2001)
6. Gary Day ,Literary Criticism: A New History , Orient blackswan pvt. Ltd.

Course Name: Introduction to General Linguistics
Course Code: EN 603
Credit: 04

Unit 1 Verbal/non-verbal communication; design features of language; speech and writing; language universals; synchronic and diachronic approaches; langue & parole; sign, signifier and signified; Syntagmatic and paradigmatic relations; competence and performance; emic and etic; form and substance.

Unit 2 Phonetics: Articulatory phonetics, IPA and phonetic transcription; Phonology: phoneme, phones, allophones, minimal pairs; syllable structure and sequential constraints; supra segmental features; Morphology: morpheme, morph, allomorph, free and bound morphemes; inflection and derivation, word formation strategies.

Unit 3 Introduction to English Syntax: phrase structure grammar, transformational generative grammar (basic notions); Grammatical categories: form and classes; Semantics: word meanings; lexical relations; sense and reference,; Pragmatics-language use.

Unit 4 Language and society; standard varieties, dialects, registers, slang, pidgin, creole; Introduction to Language and Mind; Introduction to Language and Computer.

Suggested Readings:

1. Asher, R. (ed.). 1994. Encyclopedia of Language and Linguistics. ElsevierPargamon.
2. Fasold, R. & J. Connor-Linton. 2006. An introduction to language and linguistics. Cambridge: Cambridge University Press.
3. Fromkin, V., and R. Rodman. 1974. An Introduction to Language. New York: Holt, Rinehart and Winston. (2nd Edition)
4. Lyons, John (the 15th Edition reprinted 2014) Language and Linguistics: An Introduction. Cambridge: Cambridge University Press.
5. Yule. George.1996. The Study of Language. Cambridge: Cambridge University Press.



Course Name: Gender and Literature

Course Code: EN-605

Credit: 03

Unit 1 Virginia Woolf: Shakespeare's Sister

The Queen's Looking Glass: Female Creativity, Male Images of Women, and the Metaphor of Literary Paternity.

Unit 2 Charlotte Bronte: Jane Eyre (novel)

Deepa Mehta: Fire (film)

Hanif Qureshi: My Beautiful Launderette

Unit 3 Robert Browning: My Last Duchess

Kamala Das: The Old Playhouse

Mahasweta Devi: Draupadi (Translated by Gayatri Chakravorty Spivak)

Ismat Chughtai: The Quilt

Unit 4 Mahesh Dattani: Dance like a Man

Frank Marcus: The Killing of Sister George

Selected Readings:

1. Mary Wollstonecraft: The Vindication of the Rights of Women
2. Judith Butler: Gender Trouble
3. Sandra M Gilbert, Susan Gubar: No Man's Land: Sex Changes (Second volume)
4. Sandra M Gilbert, Susan Gubar: The Mad Woman in the Attic
5. Kate Millet: Sexual Politics
6. Elaine Showalter: Literature of their Own, British Novelists from Bronte to Lessing
7. Mary Ellmann: Thinking about Women
8. Nibedita Mukherjee: Gendering the Narratives: Indian English Fiction and Gender Discourse

Course Name: Folk Literature and Culture

Course Code: EN-607

Credit: 03

Unit 1 Definition of Folk Literature; Fields of Folk literature; Folk Song : Origin; Characteristics; Classification; Functions and study; Folk Narrative Poems

Unit 2 ME Sharpe: Archetypes and Motifs in Folk lore and Literature; Jawahar Lal Handoo: Folk Lore in modern India

Unit 3 Jaccob Grim and Wilhem Grimm: The Original Fairy Folk and Fairy tales of the Brothers Grimm

Unit 4 Sudhamahi Regunathan and Subir Roy: Folk Tales of the Northeast; A.K Ramanujan: Folk Tales from India

Suggested readings:

1. Richard A Dorson : Folklore and Folk Life: An Introduction
2. Pavoorchatram Raja gopal Subranium An Introduction to the Study of Indian Folk Lore
3. H arris, Joseph : The Ballad and oral Literature



4. V Propp Morphology of Folk Tale , 2nd edition
5. Alan Dundes: Study of Folklore;

Course Name: Canadian Literature
 Course Code: EN 609
 Credit: 03

- Unit 1 Margaret Lawrence: The Stone Angel
 Yann Martel: Life of Pi
- Unit 2 Brad Fraser: The Ugly Man
 Dianne Warren: Club Chernobyl
- Unit-3 Leonard Cohen: "Cherry Orchards"
 P.K Page : "Adolescence"
- Unit 4 Margaret Atwood: "Death of a Young Son Drowning"
 A.M. Klein: Portrait of the Poet as Landscape
 Elizabeth Bishop: "The Moose"

Suggested Reading:

1. Eva- Marie krolller :The Cambridge Companion to Canadian Literature
2. Cynthia Sugars : Oxford Handbook of Canadian Literature
3. K Balachandran: Critical Responses to Canadian Literature
4. Alan Linsay Mcleod :The Common Wealth Pen: An Introduction to the Literature of the British CommonWealth

Course Name: English Language Teaching
 Course Code: EN-611
 Credit: 03

- Unit 1 Language teaching and learning: English language teaching in India, applied linguistics and language teaching; linguistics and language teaching.
- Unit 2 Language Acquisition and language learning: theories of first language acquisition and second language learning; interlanguage.
- Unit 3 Approaches and methods to Language teaching: Grammar translation method, direct method, audio-lingual method, the silent way, communicative language teaching, suggestopedia; the oral approach and situational language teaching, natural approach.
- Unit 4 Theoretical Principles of language testing: Achievement and proficiency test, linguistic and communicative test, cloze test, dictation.

Suggested Readings:

1. Agnihotri, R.K. and Khanna, A. L. (ed.)1995. English Language Teaching in India: Issues and Innovations. New Delhi: Sage Publications
2. Brumfit, C.J. and Roberts, J.T.1983. Language and Language teaching. London: Batsford
3. Davies, A. 1990. Principles of Language Testing. Cambridge: Basil Blackwell.



4. Halliday, M.A.K.et.al.1964. The Linguistic Sciences and Language Teaching. London: Longman.
5. Prabhu, N.S.1987. Second Language Pedagogy. Oxford: Oxford University Press.
6. Richards, J.C.1974. Error Analysis: Perspectives on Second Language Acquisition. Essex: Longman.

Course Name: Translation Studies and Practices
 Course Code: EN 613
 Credit: 03

Unit 1 Definition and concept of translation; the diachronic study of translation; Theories of translation, theory of approximation; equivalence in translation; translation; transliteration; paraphrase and interpretation.

Unit 2 Types of translation: literary and non- literary Partial and total translation; text-oriented and reader-oriented translation; literal and free translation; intralingual; interlingual translation; transmutation.

Unit 3 Problems of translation; Limitations of translation; concept of faithfulness spirit and truth in translation.

Unit 4 Translation oriented text analysis.

Suggested Readings:

1. Basnett, S. and Lefevere, A. ed. 1990. Translation, History and Culture. London: Printer Publishers.
2. Catford, J.C. 1965. A Linguistic Theory of Translation. Oxford University Press.
3. Chesterman, Andrew. 1997. Memes of Translation: the spread of ideas in translation theory John Benjamins
4. Gargesh, R. and Goswami, K.K. (eds) 2007. Translation and Interpreting. Delhi: Orient Longman Pvt. Ltd.
5. Kelly, Louis. G. 1979. The true interpreter, a history of translation theory and practice in the west. Basil Blackwell
6. Newmark, P. 1981. Approaches to Translation. Pergamon Press.
7. Nida, Eugene A. 1975. Language, Structure and Translation (Essays selected by A.S.Dil). Stanford Univ. Press.
8. Nida, Eugene A. & C.R. Taber. 1974. The Theory and Practice of Translation. Leiden: E.J. Brill.
9. Ramakrishna, S.(ed). 1997. Translation and Multilingualism. Delhi: Pencraft. 42 Singh, Udaya Narayana. 2009. Translation as Growth. Delhi: Pearson/Longman.
10. Jeremy Munday .Introducing Translation Studies: Theories and Applications , Routledge Edwin Charles Gentzler,



Semester-IV

S. No.	Type of Paper	Code	Name of Paper	Credit
1	Core	EN-602	Cultural Studies	4
2		EN-604	Sociolinguistics	4
3		EN-606	Western Literary Theory and Criticism- II	4
4	Project/Dissertation	EN-652	Dissertation	6
5	Discipline Specific	DSE-7	Any one out of the following	3
	Elective	EN-608	Literary Voices from the Margins	
		EN-610	Stylistics	
	Non-Credit		General Proficiency	0
			Total Credit	21

Course Name: Cultural Studies

Course Code: EN 602

Credit: 04

Unit 1 Introduction to Culture Studies; (Including British, American, Feminist versions etc.);
Culture Studies and Narratology; Culture Studies and Visual ArtsUnit 2 Stuart Hall: Cultural Studies and Its Theoretical Legacies
Raymond Williams: The Analysis of CultureUnit 3 Shobha De: Socialite Evenings
Ian Fleming: From Russia with LoveUnit 4 Gone with the Wind (Popular English Film)
Zanjeer (Popular Indian Film)

Suggested Reading:

1. Bennett, Tony, Lawrence Grossberg, Meaghan Morris, and Raymond Williams. New Keywords : A Revised Vocabulary of Culture and Society. Malden, MA: Blackwell, 2005
2. Grossberg, Lawrence. Bringing it all Back Home : Essays on Cultural Studies. Durham, NC: Duke University Press, 1997.
3. Grossberg, Lawrence. Cultural Studies in the Future Tense. Durham, NC: Duke University Press, 2010.
4. Grossberg, Lawrence, Cary Nelson, and Paula A. Treichler. Cultural Studies. New York: Routledge, 1992.
5. Storey, John. What is Cultural Studies?: A Reader. London; New York: Arnold, 1996.
6. Cultural Theory and Popular Culture: A Reader. Ed. John Storey
7. Cultural Theory and Popular Culture: An Introduction. John Storey
8. Anderson, Benedict. Under Three Flags: Anarchism and the Anti-Colonial Imaginary
9. Bakhtin, Mikhail. The Dialogic Imagination: Four Essays
10. Barthes, Roland. Mythologies



Course Name: Sociolinguistics
Course Code: EN 604
Credit: 04

- Unit 1 Sociolinguistics: Definition, Nature, and scope; Language, Thought and Culture; Linguistic relativity and determinism.
Unit 2 Speech community; varieties of language; Register and Style; Pidgin and Creole; Language Hybridity: code-switching and code-mixing.
Unit 3 Language Variation and Change; types of language change; Diglossia, Bilingualism, Multilingualism;; Language contact: language maintenance, language shift, language death.
Unit 4 Language planning and language policy; Language and Education, Bilingual education; Language, power, identity and ideology.

Suggested Readings:

1. Crystal, David. 2010. The Cambridge Encyclopedia of Language. Third Edition. Cambridge University Press.
2. Fasold, Ralph. W. (1990) The Sociolinguistics of Language, Oxford: Blackwell.
3. Fromkin, Victoria, Rodman, Robert & Hyams, Nina. 10th Edition. An Introduction to Language. Cengage Learning.
4. Hudson, R. A. (2011). Sociolinguistics. Cambridge. Cambridge University Press 2nd Edition.
5. Lyons, John (the 15th Edition reprinted 2014) Language and Linguistics: An Introduction,, Cambridge; Cambridge University Press.
6. Milroy, Lesley and Gordon, Mathew J. (2003) Sociolinguistics: Method and Interpretation. Blackwell Publishers
7. Woodlar, K.A. and Schieffelin, B.B. (1994) "Language Ideology" In Annual Review of Anthropology. Vol. 23 pp. 55-82

Course Name: Western Literary Theory and Criticism- II
Course Code: EN 606
Credit: 04

- Unit 1 Structuralism & Post Structuralism
Jacques Derrida: Jacques Derrida. "Letter to a Japanese Friend. (Prof. Izutsu)
Unit 2 Marxism & Feminism (Theory)
Terry Eagleton: "Literature and History" & The Writer and Commitment
Toril Moi: Feminist, Female, Feminine
Elaine Showalter: Feminist Criticism in Wilderness
Unit 3 Psychoanalysis
Sigmund Freud: Creative Writers and Day Dreaming
Unit 4 Postcolonialism and Postmodernism



Edward Said: "Crisis"

Leela Gandhi: "Postcolonial literatures"

Jean-François Lyotard: "Answering the Question: What Is Postmodernism?"

Suggested Reading:

1. Lois Tyson, Critical Theory Today: A User Friendly Guide, New York: Routledge, 200
2. M.S. Nagarjan, English Literary Criticism and Theory: An Introductory History, Hyderabad: Orient Longman, 2006
3. Dani Cavallaro, Critical and Cultural Theory: Thematic Variations, London: The Athlone Press, 2001
4. Wilfred L Guerin et al, A Handbook of Critical Approaches to Literature, Oxford: OUP, 1992 (fourth Edition 1999)
5. Taisha Abraham, Introducing Postcolonial Theories: Issues and Debates, Delhi: Macmillan, 2007
6. Kathleen Wheeler, Explaining Deconstruction, Chennai: MacMillan India, 1997
7. Peter Barry, Beginning Theory, Manchester: M Univ Press, 2007

Course Name: Literary Voices from the Margins

Course Code: EN-608

Credit: 03

Unit 1 Om Prakash Valmiki: Jhootan

R. K. Narayan: Kocharethi

Unit 2 Anjum Hasan: Neti Neti

Gurdial Singh: The Last Flicker

Unit 3 Temsula Ao: The Spear

Mamang Dai: "An Obscure Place"

Cherrie L. Chhangte: "What does an Indian Look Like"

Unit 4 Robin Singh Ngangom: "The First Rain"

Yumlembam Ibomcha: "Nightmare"

Temsula Ao: "The curfew man"

Suggested Readings:

1. Prasad, Amarnath: Dalit Literature: A Critical Exploration
2. Diwanji, Malay: Dalit Literature : A Quest for Dalit Liberation
3. Ao., Temsula: These Hills Called Home : Stories From a War Zone
4. Mishra, Tilottoma: The Oxford Anthology of Writings from North -East India, Fiction vol.2
5. Mishra, Tilottoma : The Oxford Anthology of Writings from North -East India, Poetry and Essays, vol.1
6. Ngangom, RobinSingh: Dancing Earth: An Anthology of Poetry from Northeast india
7. Hazarika, Sanjoy: "There are no Sangri-Las Left"



Course Name: Stylistics
Course Code: EN 610
Credit: 03

Unit 1 Style: Definition, types, components; Style in language and literature; Stylistics as an area of Applied Linguistics; Theories of stylistics; Linguistic and literary approaches to Stylistics.

Unit 2 Development and current trends in Stylistics; developments in structural narratology; style and transitivity; transitivity at work; classification of language style

Unit 3 Stylistic devices; tools of analysis; code and message; discourse and text; defamiliarization; foregrounding and interpretation; parallelism and verbal repetition; deviation; principles of equivalence.

Unit 4 Text based analysis

Suggested Readings :

1. Bradford, R. 1997. Stylistics. London: Routledge.
2. Carter, R. (ed) 1982. Language and Literature: An Introductory Reader in Stylistics. London: George Allen and Unwin.
3. Crystal, David. 1994. The Cambridge Encyclopedia of the English Language. London: CUP.
4. Carter, R. and Paul Simpson (ed) 1995. Language Discourse and Literature. London, UK: Routledge
5. Graham, Hough, 1969. Style and Stylistics. Routledge
6. Mills, Sara, 1995. Feminist Stylistics. London: Routledge
7. Misra, Partha Sarthi, 2009. An Introduction to Stylistics. Hyderabad: Orient BlackSwan,
8. Sebeok, T.A.(ed.) 1960. Style in Language. Cambridge, Mass; MIT.Press.
9. Simpson, Paul. 2004. Stylistics: A Resource Book for Students. London, UK: Routledge.
10. .

Course Name: Dissertation
Course Code: EN-652
Credit: 06

Fundamental Guidelines:

1. Every student of M. A. English Programme will require writing a dissertation under a supervisor, assigned to the student in a formal manner at the Departmental level.
2. The area of research for dissertation work will be related to any of the courses taught in the programme.
3. The language of the dissertation work will be English.
4. The dissertation will contain the following components:
 - Introduction
 - Review of Literature
 - Research Methodology



- Discussion and Findings
 - Summary/ Conclusion
 - References
 - Annexure (If required)
 - Appendix (If required)
5. Students are required to consult their respective guide for constant monitoring of the work and instructions regarding the same.
 6. There will be stipulated periods in the time-table of the programme (which may go beyond in case the candidate and guide if decide so.)
 7. Submission deadline: 2nd week of April in the fourth semester of the Programme.
 8. Presentation of the work will be made in front of a panel of experts (all internal) in a manner as decided formally at Departmental level.
 9. Evaluation format and mode of viva-voce examination will be finalized formally at the Departmental level as per the rules of the University.
 10. The above guidelines are in conformity with the rules of the University, in case of any non-conformity, the rules and guidelines as issued by the University shall prevail in respective cases.



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Department of English and Modern European Languages
School of Humanities and Social Sciences
Gautam Buddha University, Greater Noida

Annexure-02

Reviewed and updated Core Courses offered in
other Schools of Studies

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Core Course offered at the Undergraduate Programmes of other Schools
of Studies

Paper Code: EN-101
Paper Name: English Proficiency
Credit: 02

Unit 1 Functional Grammar: Form and Functions; Sentences: Simple, Complex, and Compound; Tense, Mood, an Aspect; Sub-Verb Agreement and Concord; Common Errors; Vocabulary Building: Inflection and Derivation; Conversions, Idioms and Phrases, Words in Context

Unit 2 Language Skills (LSRW): Listening Skills: Activity based, Speaking Skills: Activity based, Introduction to IPA, Use of Dictionary, Word stress, Reading Skills: Skimming and Scanning, Reading Comprehension, Writing Skills: Paragraph, Précis and Compositions, Note Making and Note Taking, Logical Ordering of Ideas and Contents, Figures of Speech

Unit 3 Learning through thematic Texts:

- | | |
|----------------------------------|--------------------|
| ▪ <i>My Visions for India</i> | Dr. Abdul Kalam |
| ▪ <i>From In an Antique Land</i> | Amitav Ghosh |
| ▪ <i>The Gift of Magi</i> | O' Henry |
| ▪ <i>Master and Man</i> | Leo N. Tolstoy |
| ▪ <i>If</i> | Rudyard Kipling |
| ▪ <i>The Solitary Reaper</i> | William Wordsworth |

Suggested Books:

1. *Word for Word*, Pointon & Clark, Oxford University Press
2. Carter, Ronald; McCarthy, Michael (2006). *Cambridge Grammar of English: A Comprehensive Guide*. Cambridge University Press.
3. *An English Pronouncing Dictionary*, London: Dent, rpt in facsimile in Jones (2002). 17th edn, P. Roach, J. Hartman and J. Setter (eds), Cambridge: CUP, 2006.
4. Redman, Stuart. 2011 *English Vocabulary I Use: Pre-intermediate and intermediate*. Cambridge: CUP *Cambridge Phrasal Verbs Dictionary* Second edition, Cambridge University Press



Core Course offered at the Undergraduate Programmes of other Schools of Studies

Paper Code: EN-102
Paper Name: Professional Communication
Credit: 02

Unit 1 Introduction to Communication: Communication: Definition, Nature and Scope, Types: Verbal and Non Verbal Communication, Barriers to Effective Communication, Attributes to Effective Communication, Communication in Professional Domain, Oral Presentations, Group Discussions, Job Interviews, Conducting Meetings/Seminars, Agenda and Minutes

Unit 2 Correspondence and Written Communication

Report Writing, Research Articles, Business Proposals, Writing Résumé, Job Applications, Letters: Order Letter, Complaint Letter, Apology, Persuasive, Other tools of Correspondences: Notice, Circular, Memos, Office Order, Tender Notices, e- mails Etiquettes, etc.

Unit 3 Learning through Thematic Texts

- | | |
|--|------------------|
| ▪ <i>Literature and Science</i> | Aldous Huxley |
| ▪ <i>The Man Who Knew Too Much</i> | Alexander Baron |
| ▪ <i>An Astrologer's Day</i> | R. K. Narayan |
| ▪ <i>The Sniper</i> | Liam O' Flaherty |
| ▪ <i>Road Not Taken</i> | Robert Frost |
| ▪ <i>A refusal to mourn the Death
by Fire of a Child in London</i> | Dylan Thomas |

Suggested Books:

1. Business Correspondence and Report Writing; Sharma and Mohan, TMH
2. Business Communication, Meenakshi Raman, Prakash Singh, Oxford Higher Education
3. An English Pronouncing Dictionary, London: Dent, rpt in facsimile in Jones (2002). 17th edn, P. Roach, J. Hartman and J. Setter (eds), Cambridge: CUP, 2006.
4. McC Arthy Michael and Felicity o'Dell, English Vocalubary in Use CUP.2002



Core Course offered at Postgraduate Programmes of other Schools of
Studies

Paper Code : EN-521
Paper Name : Advanced Course in Professional Communication
Credit : 02

Unit 1 Introduction to Communication: Defining Communication; Process of Communication; Barriers to Communication; Attributes to Effective Communication; Kinesics and Non-Verbal Communication; Significance of Communication in Professional Domain; Negotiations;

Unit 2 Language in Use: Language as a Formal System; Nature and Characteristics of Language (Design Features); Language and Socialization; Competence and Performance; Social and Cultural Appropriateness; Register and Style; Literal and Non-Literal Meaning; Taboo, Biases and Stereotypes in Communication; Politeness and the Notion of Face; Cross-Cultural Communication;

Unit 3 Correspondence in Professional Domain: Manuscript Format of Reports; Formal Proposals; Correspondence: letters, email, notices, memo, circular, office orders, recording minutes etc. Oral Presentations;

Suggested Readings:

1. Grice, H.P. (1975). Logic and Conversation. In P.Cole and J. Morgan (eds.). *Syntax and Semantics*. Vol. 3: Speech Acts. New York. Academic Press, 41-58.
2. Goffman, Erving (1967). *Interaction Ritual: Essays on Face-to-Face Behaviour*. New York: Anchor.
3. Hudson, R. A. (2011). *Sociolinguistics*. Cambridge. Cambridge University Press 2nd Edition
4. Lyons, John. 15th Edition (reprint 2014). *Language and Linguistics: An Introduction*. Cambridge University Press,
5. Brown, P. and S. Levinson (1987). *Politeness: Some Universals in Language Usage Studies in Interactional Sociolinguistics*. New York: Cambridge: Cambridge University Press.
6. Michael, L. Spangle and Myra W. Isenhardt. 2008. *Negotiation*. New Delhi SAGE Publication
7. Watts, Richard J. (2003). *Politeness*. Cambridge: Cambridge University Press.
8. Business Correspondence and Report Writing, Sharma and Mohan, TMH
9. Business Communication, Meenakshi Raman, Prakash Singh, Oxford Higher Education





Department of English and Modern European Languages
School of Humanities and Social Sciences
Gautam Buddha University, Greater Noida

Annexure-03

Reviewed and updated Open Elective Courses offered in
other Schools of Studies

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Open Elective Courses offered at the Postgraduate Programmes of other Schools of Studies

Paper Code	Name of the Paper	Credit
EN-531	Language, Culture and Society	03
EN-605	Gender and Literature	03

Course Name: Language, Culture and Society
 Paper Code: EN-531
 Credits: 03

- Unit 1 Language as a System; Design Features; Language and Culture; Linguistic and Cultural Relativity; Sapir-Whorf Hypothesis, Language, Gender and Identity; Language Myths
- Unit 2 Language as Social Reality; Notion of Speech Community; Language: Standard and Vernacular; Language, Dialects, Sociolect, and Registers; Bilingualism and Multilingualism; Code Switching and Code Mixing; Pidgin and Creole;
- Unit 3 Introduction to Theories in Language Acquisition; Competence and Performance; Communicative Competence,
- Unit 4 Language Families of India; Language policy and planning in India; Language in Constitution; English in India

Suggested Readings:

1. Crystal, David. 2010. The Cambridge Encyclopedia of Language. Third Edition. Cambridge University Press.
2. Fasold, Ralph. W. (1990) The Sociolinguistics of Language, Oxford: Blackwell.
3. Fromkin, Victoria, Robert Rodman, & Nina Hyams. 10th Edition. An Introduction to Language. Cengage Learning.
4. Hudson, R. A. (2011). Sociolinguistics. Cambridge. Cambridge University Press 2nd Edition.
5. Lyons, John (the 15th Edition reprinted 2014) Language and Linguistics: An Introduction,, Cambridge University Press.

Course Name: Gender and Literature
 Course Code: EN-605
 Credit: 03

- Unit 1 Virginia Woolf: Shakespeare's Sister
 The Queen's Looking Glass: Female Creativity, Male Images of Women, and the Metaphor of Literary Paternity.
- Unit 2 Charlotte Bronte: Jane Eyre (novel)
 Deepa Mehta: Fire (film)
 Hanif Qureshi: My Beautiful Launderette
- Unit 3 Robert Browning: My Last Duchess
 Kamala Das: The Old Playhouse
 Mahasweta Devi: Draupadi (Translated by Gayatri Chakravorty Spivak)



Ismat Chughtai: The Quilt
Unit 4 Mahesh Dattani: Dance like a Man
Frank Marcus: The Killing of Sister George

Selected Readings:

1. Mary Wollstonecraft: The Vindication of the Rights of Women
2. Judith Butler: Gender Trouble
3. Sandra M Gilbert, Susan Gubar: No Man's Land: Sex Changes (Second volume)
4. Sandra M Gilbert, Susan Gubar: The Mad Woman in the Attic
5. Kate Millet: Sexual Politics
6. Elaine Showalter: Literature of their Own, British Novelists from Bronte to Lessing
7. Mary Ellmann: Thinking about Women
8. Nibedita Mukherjee: Gendering the Narratives: Indian English Fiction and Gender Discourse

Note: The syllabi for the above two courses are the same as approved in the M.A. in English Programme. These electives are to be offered to other Departments across the University at PG level in respective semesters of their teaching in the Department of English & MEL.

Open Elective Course offered at the Undergraduate Programmes of other Schools of Studies

Course Name: Introduction to Language Culture and Society
Course Code: EN - 111
Credits: 02

- Unit 1 Language as a System; Design Features; Language and Culture; Language, Gender and Identity; Language Myths
- Unit 2 Social Functions of Language; Language: Standard and Vernacular; Language, Dialects, Sociolect, and Registers; Language Acquisition; Bilingualism and Multilingualism; Code Switching and Code Mixing;
- Unit 3 Language Families of India; Language policy and planning in India; Language in Constitution; English in India

Suggested Readings:

1. Crystal, David. 2010. *The Cambridge Encyclopedia of Language*. Third Edition. Cambridge University Press.
2. Fasold, Ralph. W. (1990) *The Sociolinguistics of Language*, Oxford: Blackwell.
3. Fromkin, Victoria, Robert Rodman, & Nina Hyams. 10th Edition. *An Introduction to Language*. Cengage Learning.
4. Hudson, R. A. (2011). *Sociolinguistics*. Cambridge. Cambridge University Press 2nd Edition.
5. Lyons, John (the 15th Edition reprinted 2014) *Language and Linguistics: An Introduction*, Cambridge University Press

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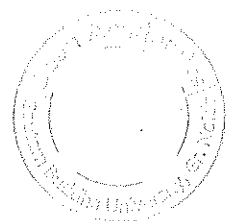
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Minutes of the BoS meeting, School of Biotechnology

A meeting of the BoS members of School of Biotechnology was held on October 21, 2016 (Friday) at 11:00 A.M. in the conference room, SoBT with the following agenda.

- Approval of the names of external expert members for setting of the question papers of end-semester examination
- Approval of the faculty strength in the School of Biotechnology
- Revision of course codes in existing master degree programs at School of Biotechnology
- Introducing a new program at post-graduate level in next academic session, 2017-2018.

The following members were present-

- Dr. Seema Dwivedi, Dean, SoBT, Chairperson
- Dr. Bhupendra Chaudhary, Head, SoBT
- Dr. Jitendra Singh Rathore, Assistant Professor, SoBT
- Prof. J.S.Virdi, Department of Microbiology, University of Delhi South Campus New Delhi -21, External Expert Member

Following points were discussed and approved:

1. A list of external expert members in different teaching areas was approved for setting the question papers of end-semester examinations and others.

2. The faculty strength in the School of Biotechnology was approved as following:

S.N.	Number of Students	Faculty strength	Normalization	Final Faculty strength
1.	360	24	-2	22

3. The course codes in the existing program, Integrated B.Tech.+M.Tech./MBA (Batches: 2013-2017 and 2014-2018) have been revised and attached.

4. The course structure of Integrated B.Tech.+M.Tech./MBA and M.Tech. (2 years) program have been revised and attached.

5. A master degree program was approved to be introduced at School of Biotechnology from academic session 2017-18. Details of the program are as following:

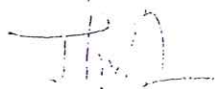
Name of Program : M.Sc. (Biotechnology)
Duration : 2 years (4 semesters)
Intake of students : 45
Mode of admission : On merit basis
Fee Structure : Rs. 40,000/- per year
Course Structure : Attached

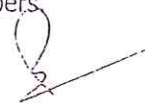
6. A meeting of all faculty members and research scholars will be held every month to address the research-related problems, and the 'action-taken' will be presented in the consequent meeting.

7. The school will offer a summer training program for the interested students from other Universities/institutes. The fees for this program may be as per GBU rules.

The meeting ended with thanks to the Chairperson and the expert members.


Dr. Bhupendra Chaudhary


Prof. J.S.Virdi


Dr. Jitendra Singh Rathore


Dr. Seema Dwivedi





School of Information and Communication Technology

Gautam Buddha University

Proceedings of the 13th Meeting of Board of Studies

13th Board of studies meeting of Department of ECE and Department of CSE was held jointly on August 12, 2016 at 10 a.m. in SolCT. Following members were present in the meeting

- | | |
|-----------------------------------|-----------------|
| 1. Prof. Arun Kansal | Chairperson |
| 2. Prof. V.K. Jain (IIT Delhi) | Expert |
| 3. Prof. R.K. Agarwal (JNU Delhi) | Expert |
| 4. Prof. Arvinder Kaur | Special Invitee |
| 5. Dr. Rajesh Mishra | HOD, ECE |
| 6. Dr. Vidushi Sharma | HOD, CSE |
| 7. Dr. Gurjit Kaur | member |
| 8. Dr. Pradheep Tomar | member |

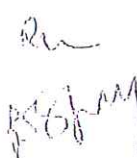


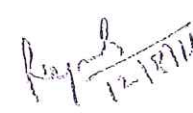
Special Invitee:


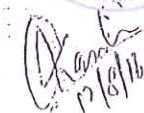
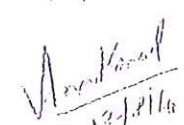
1. Prof. Arvinder Kaur (IP University Delhi)
2. Dr. Anurag Singh Baghel
3. Dr. Neeta Singh
4. Ms. Aarti Gautam Dinkar

The meeting started with the welcome note by the Dean SolCT and Chairperson BOS to all members present. The Dean then informed the BOS members about the agenda of the meeting which is as follows:

- 13.1 To discuss and apprise BOS members about the mission, objectives and goals of the school and to seek approval for activities to be taken-up by the School in short-term and long-term to attain the objectives set by the school.
- 13.2 To seek approval for the creation of a new Department in the School and discuss the name of the Department.
- 13.3 To discuss aims and objectives of the new program B.Tech. IT and to seek approval for objectives and learning outcomes of the proposed program.
- 13.4 To seek approval of the courses to be offered in the first year of the B.Tech. IT program.
- 13.5 To discuss institutionalization of the new program in one of its existing Department and to seek methods of consolidation of existing programme and future plans.
- 13.6 To discuss the requirement of faculty to run various programs of the School and requirement of the supporting staff with commensurate qualification criteria
- 13.7 To seek approval for incorporating course "Research techniques in ICT" as an elective course in Dual Degree B.Tech. Program VII semester.
- 13.8 Any other matter with the permission of Chairperson BOS





Following items were discussed in the meeting :

Item 13. 1 To discuss and apprise BOS members about the mission objectives and the goals of the school and to seek approval for the activities to be taken-up by the School in short-term and long-term to attain the objectives set by the school.

Dr. Vidushi Sharma gave a brief presentation on the mission, objectives and Goals of the school. The brief highlights are as follows:


- i. The school was set up to offer interdisciplinary programs in the University and in that sense the School will act as a nodal point to establish synergies in various academic programs and research carried out in GBU.
- ii. The School will make efforts to bridge the skill gaps that exist in Information and Communication Technology sector and to offer a cadre of professionals who can drive the software industries in India.
- iii. The School will pursue innovative research to contribute towards ICT and mitigate problems that are being faced by the entire ICT sector at present and in future.

In this pursuit, the short term and the long terms goals of the school are as follows:

- i. To offer Bachelor's, Master's and Ph.D. programs in the field of Electronics, Communication and Information Technology.
- ii. To create state of the art infrastructure for carrying out innovative research in the fields of ICT and interdisciplinary computing applications.
- iii. To provide overarching guidance to various Schools of the University on IT Infrastructure and offer elective courses for Students in other schools of GBU.
- iv. To offer Management Development Programs and Faculty Development Programs, conduct workshops and short-term training programs for skill enhancement to mid-career professionals
- v. To offer consultancy services to organizations facing problems related to ICT that warrant some fundamental research.

To achieve the goals and objectives, the school will strive to establish linkages with nodal Ministries in Government of India, relevant corporate sectors and other stakeholder organizations on all matters related to academics, research, outreach and extension activities.

In this regard Dr. Sharma apprised the BOS members about the achievements and gaps in the School with respect to objectives and goals it has set. These are follows:

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Achievements:

- i. The school is currently offering two 5-year integrated B.Tech +M.Tech./MBA programs and three 2-year M.Tech. Programs (M.Tech. ICT, M.Tech. Embedded Systems and M.Tech. Computer Science). These programs are offered through two Departments viz. Department of ECE and Department of CSE. However, M.Tech. ICT being an interdisciplinary program with specialization in the fields of ISR, WCN, SE, VLSI it is not a part of any of the two departments so far. In addition, a new B.Tech. IT 4-year program has started from session 2016-17.
- ii. The school is also offering Ph.D. programs and 11 number has graduated and 32 are currently pursuing research.
- iii. The school currently has one project from DST.
- iv. During past 5 yrs 21 workshop and trainings programs has been conducted by the school. FDP-2, International Conferences -3, Industrial visit 06, National Conference -1.

Gaps

- i. So far the offered programs of the School only caters to providing engineering graduates, but as per mandate of the School, it has yet to offer non-engineering based technical skill programs such as MCA, M.Sc. etc to meet the needs of diversified range of students aspiring to make career in the field of ICT.
- ii. The consultancy services to industries - University linkages need to be strengthened.
- iii. E-learning courses are yet to be started.
- iv. Infrastructure facilities in the area of Information Technology need to be created.

The BOS had a detailed discussion on the presentation given by Dr. Vidushi and following recommendations were made:

- i. BOS strongly recommends the School to first consolidate the existing programs before starting any new program in future. This consolidation should be accomplished during academic year 2016-17. These should also interdisciplinary programs related to applications in other fields of sciences like computational mathematics, bioinformatics, healthcare, environment, MCA, M.Sc. Computer Science/ M.Sc. Electronics, Robotics and Artificial intelligence etc. A proper market survey and industry interaction followed by infrastructure creation and faculty recruitment and can be targeted to start from the year 2018 onwards to realize these courses.
- ii. BOS has recommended that any new program or courses should be driven by the Philosophy of "what ought to be there" instead of the practice that "what we know and can be delivered". Faculty strength and their skills are to identified based on such model curriculum.
- iii. For the existing programs, the BOS recommends establishment infrastructure facilities in the school.
- iv. The BOS suggested that interdisciplinary program should be targeted to start from the academic year 2018-19 after the establishment of new Department and recruitment of faculty members. They recommended that in the initial years short-term certificate programs should be offered through E-learning or classroom mode to mid-career professionals. BOS also expressed their opinion that IT system management of the University should logically come under the purview of School of ICT.

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- v. One credit should be introduced which will be imparted by industry experts on the latest *technologies and practices of industry* so that the gap between the industry and academics can be abridged and further the students skills can be harnesses as per the industry norms.
- vi. Faculty should identify the areas in which they will like to develop their skills. These skill development areas should be identified by the end of this semester and the faculties should be allowed to attend the training programs and courses to harness their skills on the latest trends and technologies in the field of Information and Communication Technology. These skill development programs will add an impetus to the knowledgebase of the ICT.
- vii. BOS has suggested the following guidelines for establishing linkages with external parties
 - a. The linkages with agencies who approaches for joint activities such as MDPs , training programs, certificate course should originate from the School. Such proposals should first be thoroughly evaluated by the respective HOD in terms of complementarities and supplimentarities of the participating institution. This should also be in terms of the appropriate knowledge contribution and commensurate revenue sharing model.
 - b. Such proposal shall then be put forward for the approval from the competent authority through Dean SoICT.

Item 13.2 To seek approval for the creation of a new Department in the School and discuss the name of the Department

The BOS has in principle recommended creation of ^{new} Department which has interdisciplinary courses. New course of B.Tech. IT can be offered through new department once it is approved by competent authority.

Item no 13.3: To discuss aims and objectives of the new program B.Tech. IT and to seek approval for objectives and learning outcomes of the proposed program

Ms. Arti gave presentation on B.Tech. IT 4 year program course structure. B.Tech IT course has started from year 2016-17. B.Tech. IT program meets the requirement of computational and technology demands of industry. Today IT has become the linchpin of all other industries and hence this has resulted in exponential growth of IT sector and thus the demand of professionals who can provide end-to-end solution for IT domain is huge in this area.

Following program objectives were outlined:

PROGRAM EDUCATIONAL OBJECTIVES (PEO):

Information Technology (IT) graduate will be able to:

- Demonstrate technical competence to work in IT sector.
- Analyze, design, and provide solutions to professional needs.



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- Pursue higher studies, carry out research and development in evolving technologies, and demonstrate professionalism.
- Engage in life-long learning, communicate effectively, and exhibit leadership skills
- Demonstrate sensitivity towards ethical and environmental issues, and social responsibilities

PROGRAM OUTCOMES (PO):

The Program Outcomes of Information Technology enable students to:

- Apply knowledge of Computing, mathematics, Science and Engineering to solve engineering problems.
- Identify, formulate and analyze complex engineering problems reaching solutions.
- Design solutions for complex engineering problems and design systems that meet the specified needs with cultural, societal and environmental considerations.
- Use research based knowledge and methods to provide valid solutions to complex problems.
- Create, select and apply appropriate techniques, resources and modern IT tools to complex engineering activities with an understanding of the limitations.
- Apply reasoning to assess societal, health, safety and cultural issues and the consequent responsibilities relevant to professional engineering practice.
- Understand the impact of engineering solutions in societal, and environmental contexts and demonstrate the need for sustainable development.
- Apply ethical principles and commit to professional ethics and responsibilities.
- Function effectively as an individual and as a member or leader in diverse multidisciplinary teams.
- Communicate effectively on complex engineering activities with the engineering community and society such as write effective reports, design documentation and make effective presentations.
- Demonstrate knowledge and understanding of the engineering and management principles and apply these to manage projects.
- Recognize the need for, and engage in independent and life-long learning.

Item 13.4 To seek approval of the courses to be offered in the first year of the B.Tech. IT program.

To realize the program objectives and the learning outcomes BOS members discussed in detail the course curriculum and gave approval for the following

- The course curriculum of B.Tech. IT first year was approved by experts along with the syllabus (Appendix 1)

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Item no 13.5 To discuss institutionalization of the new program in one of its existing Department and to seek methods of consolidation of existing programme and future plans.

The existing programs which are not being offered through any Department at present shall be offered through the Department in the following manner :

Name of the program	Name of the department
M.Tech. ICT Specialization- ISR	CSE
M.Tech. ICT Specialization-WCN	ECE
M.Tech. ICT Specialization VLSI	ECE
M.Tech. ICT Specialization SE	CSE
B.Tech. IT,	CSE, later arranged for other Dept.

Later proposed for New Dept, on 1/1/1900

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- The other programs of the school will continue to be offered through the Department as defined below


M.Tech. Embedded Systems	ECE
M.Tech. Computer Science	CSE
Dual Degree B.Tech. (CSE) + M.Tech./MBA 5 year	CSE
Dual Degree B.Tech. (ECE) + M.Tech./MBA 5 year	ECE



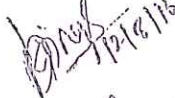
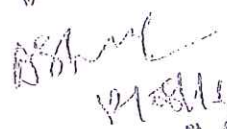


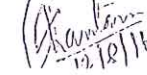
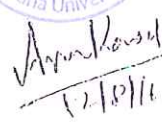

Item 13.6 To discuss the requirement of faculty to run various programs of the School and requirement of the supporting staff with commensurate qualification criteria.

BOS members were apprised of the need for faculty and staff requirements of both the Department and brief presentation was made to them by respective HODs. A summary of the presentation is attached (Appendix 2). The BOS member discussed the requirements with respect to the syllabus offered by the Department in various programmes and had a detailed discussion on '*NEEDS ASSESSMENT*'. After a detailed deliberation, BOS approved the proposal of the department for filling the vacant faculty and staff positions for the consideration of the academic council which is placed as -Annexure DBOS and DBOS II.

BOS members also suggested that for Assistant Professor Position, the recruitment of faculty at AGP of Rs. 6000/-, Rs. 7000/- should also be considered.

Item 13.7 To seek approval for incorporating course “Research techniques in ICT” as an elective course in Dual Degree B.Tech. Program VII semester.

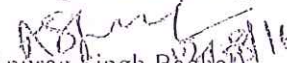
s an elective

 Gacham Buda University, G. Noida

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 Asiminder Kaur
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 Gurjit Kaur
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Dual degree programs offer B.Tech. and M.Tech. Degrees. To strengthen the course curriculum Research Techniques in ICT was added as an elective in VII semester. This course is currently offered to 2 year program but the students who come from dual degree 5 year program are not offered this course. Hence to give insight into the tools and techniques of research the course was proposed to be added as an elective. The consent on the same was given by the BOS members. This would be applicable from current year 2016-17 for all batches. The syllabus is attached as Appendix 4.

Meeting was ended with a vote of thanks to chair.



(Aarti Gaitam Dinkar)

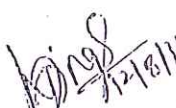

(Anurag Singh Baghel)


(R.K. Agarwal)

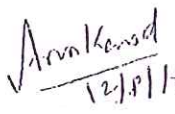

(Pradeep Tomar)

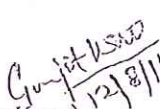

(Vidushi Sharma)

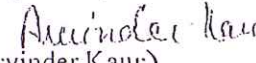

(V.K. Jain)


(Neeta Singh)


(Rajesh Mishra)

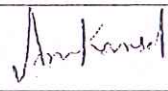
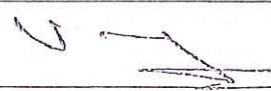
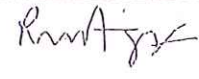
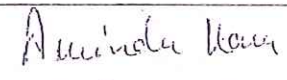

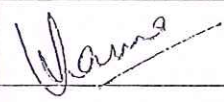
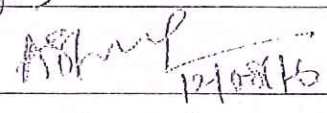
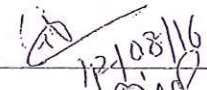

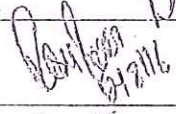
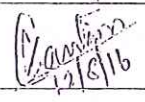

(Arun Kansal)


(Gurjit Kaur)

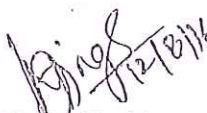

(Arvinder Kaur)

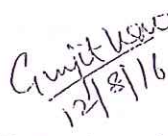


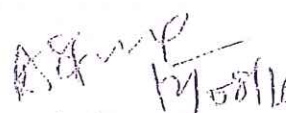


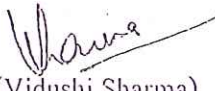
S.No.	Name of the Faculty	Signature
1	Prof. Arun Kansal	
2	Prof. V.K. Jain	
3	Prof. R.K. Agarwal	
4	Prof. Arvinder Kaur	
5	Dr. Rajesh Mishra	
6	Dr. Vidushi Sharma	
7	Dr. Anurag Singh Baghel	
8	Dr. Gurjit Kaur	
9	Dr. Neeta Singh	
10	Dr. Pradeep Tomar	
11	Ms. Aarti Gautam Dinkar	


(Pradeep Tomar)

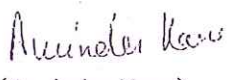

(Neeta Singh)

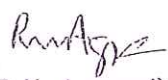

(Gurjit Kaur)

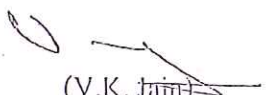

(Anurag Singh Baghel)

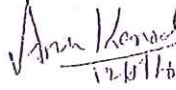

(Vidushi Sharma)


(Rajesh Mishra)


(Arvinder Kaur)


(R.K. Agarwal)


(V.K. Jain)


(Arun Kansal)



School of Information and Communication Technology

Gautam Buddha University

Proceedings of the 14th Meeting of Board of Studies

14th Board of studies meeting of Department of ECE and Department of CSE was held jointly on November 4, 2016 at 10 a.m. in SolCT. Following members were present in the meeting

- | | |
|-----------------------|---------------|
| 1. Prof. A. K. Gautam | Chairperson |
| 2. Prof. Raj Senani | Expert (NSIT) |
| 3. Prof. R.K. Agarwal | Expert (JNU) |
| 4. Dr. Rajesh Mishra | HOD, ECE |
| 5. Dr. Vidushi Sharma | HOD, CSE |
| 6. Dr. Gurjit Kaur | member |
| 7. Dr. Pradeep Tomar | member |

Special Invitee: Dr. Anurag Singh Baghel, Dr. Neeta Singh, Dr. Navaid Zafar Rizvi, Ms. Aarti Gautam Dinkar

The meeting started with the welcome note by the Dean SolCT and Chairperson BOS to all members present. The Dean first apprised the member of BOS with the action taken report of 13th BOS and then informed the BOS members about the agenda of the meeting which is as follows:

- 14.1 To seek approval to start a new course B.Tech. ECE (4 year) program.
- 14.2 To seek approval of the course structure of 4 year B.Tech. IT and B.Tech. ECE.
- 14.3 To approve modification of the course code of various programs.
- 14.4 To discuss and approve the marks distribution scheme of Minor/ Major projects and Dissertation evaluation.
- 14.5 To discuss and seek approval for the Ph.D. entrance exam syllabus and the selection modalities.
- 14.6 To discuss and seek approval for the change of nomenclature of M.Tech ICT for various specializations.
- 14.7 To seek approval for expert list for various examinations including paper setting, external evaluation of Ph.D. thesis, dissertation etc.
- 14.8 To discuss the remuneration of Experts, Guest Faculty and research scholars.
- 14.9 To seek approval of the faculty strength of the Departments.
- 14.10 To discuss the modification in syllabus of few courses and approve the same.
- 14.11 Any other matter with the permission of Chairperson BOS.



Dr

Rampr

Dr

NSIT 4/11/16
Agarwal

Dr. Gurjit Kaur
4/11/16

Dr. Pradeep Tomar

GA
4-11-16

Gautam

4/11/16

Dr. Anurag Singh Baghel

Dr. Neeta Singh

Item 14. 1 To seek approval to start a new course B.Tech. ECE (4 year) program.

Item 14.2 To seek approval of the course structure of 4 year B.Tech. IT and B.Tech. ECE

Item no 14.3: To rectify the course code of various programs.

S.No.	Program	Old course code	Course Name	New course code
1		CS 683	Industrial Practice in Software Engineering	CS 687
2		CS 675	Multimedia and Computer Graphics	CS 671
3		CS 677	Information Theory and Coding	EC 308
4		CS 679	Fuzzy Set Theory	CS 669
5	M.Tech. Computer Science (Semester III)	CS 693	Parallel Computing	CS 675
6		CS 680	Analytical Models for Computing Systems	CS 677
7		CS 697	Ad-hoc Networks	CS 679
8		CS 671	Image Processing and Pattern Recognition	CS 653

BOS members discussed the selection criteria and approved the same. (Annexure 4). The syllabus of the entrance Ph.D. exam of ECE and CSE stream was also approved (Annexure 5)



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BOS suggested that B.Tech. pass out enrolling for Ph.D. should complete coursework not less than 18 credits consisting of 4 Theory, 2 Practical and 1 Seminar. The minimum duration for the completion of Ph.D. should be 3 years for these scholars. At least two SCI or SCI Expanded Journal publication should be there before submitting Ph.D. thesis and it will be applicable for admissions in new session commencing from 2017.

Item no 14.6 To discuss and seek approval for the change of nomenclature of M.Tech ICT for various specializations

Following Nomenclature of various courses were approved by BOS for session 2017 onwards

Name of the program	Name of the department	New Nomenclature
M.Tech. ICT Specialization-ISR	CSE	-
M.Tech. ICT Specialization-WCN	ECE	M.Tech. Electronics and Communication Engineering Specialization - Wireless Communication and Networks
M.Tech. ICT Specialization - VLSI	ECE	M.Tech. Electronics and Communication Engineering Specialization- VLSI
M.Tech. ICT Specialization- SE	CSE	-
M.Tech. CS	CSE	-
M.Tech. Embedded Systems	ECE	M.Tech. Electronics and Communication Engineering Specialization - Embedded Systems
B.Tech. IT	IT	B.Tech. IT

Item no 14.7 To seek approval for expert list for various examinations including paper setting, external evaluation of Ph.D. thesis , dissertation etc.

The expert list for examination paper setting (1st year and 2nd year B.Tech. ECE and CSE) was approved by BOS (Annexure 6). The extended list of Experts for evaluating Ph.D. Thesis and Dissertations was presented to the BOS. The list was approved by BOS for conducting various examinations will supersede the earlier lists (Annexure 7)

Item no 14.8 To discuss the remuneration of Experts, Guest Faculty and Research scholars

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BOS gave consent to allot teaching load to the full time research scholar. Maximum 8 credit of course can be allotted to them. They will be given remuneration as per guest faculty however no TA DA will be given to them. (Refer Annexure 8). The remuneration of Guest faculty and the experts is as per the office order and is subject to change as per the Universities policies.

Item no 14.9 To seek approval of the faculty strength of the Departments.

Name of the program	Student strength	Faculty Strength	Normalization	Final Faculty strength
M.Tech. ICT Specialization- ISR	40+10	4	-2	20
M.Tech. ICT Specialization SE	40+10	4		
M.Tech. Computer Science	40+10	4		
Dual Degree B.Tech. (CSE)+M.Tech./MBA 5 year	180	10	-2	10
B.Tech. IT	180	12		
M.Tech. ICT Specialization-WCN	40+10	4		
M.Tech. ICT Specialization VLSI	40+10	4	-2	20
M.Tech. Embedded Systems	40+10	4		
Dual Degree B.Tech. (ECE)+M.Tech./MBA 5 year	180	10		
B.Tech. EC	180	10	-2	8
Grand Total				58

The Faculty strength of various Department was approved by the BOS as per letter by Dean Academics (GBU-010/Acad./01/2016-58) refer Annexure 9. The faculty strength approved is in line with the decisions made in 13th BOS of the school.

It was also discussed that contractual Faculty should be appointed for a period of 10 months in a year to take various courses and share the academic and administrative responsibility of school.

Item no 14.10 To discuss the modification in syllabus of few courses and approve the same.

The modification of syllabus was proposed by faculty members. Course syllabi were revised for following subjects: (Annexure 10)

1. IC Physical Design
2. Web Development
3. Expert System Lab
4. Design Lab 1
5. Design Lab 2

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Ravi Kumar

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N. S. Srinivas

[Signature]
S. Srinivas

[Signature]
S. Srinivas
Dean Academics
G. B. U. Noida



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Item no 14.11 Any other matter with the permission of Chairperson BOS.

14.11.1 Application given by RA/FA for the increase of the salary was reviewed and following recommendations were made:

- RA/FA being full time faculty here, they should be given a proper pay scale.
- They should be regularized

The application was reviewed and was suggested by BOS members that it should be put forth to the Academic council for approval.

14.11.2 As per the discussion contractual faculty recruitment for 10 months was proposed based on following justification

Guest faculty remuneration for 8 credit load per sem @1000Rs = 1,20,000 Rs.

TA/DA for max 12 visits per month @750Rs per visit for 4 months = 36,000 Rs.

Total Remuneration per sem = 1,56,000 Rs.

Total Remuneration Per year to guest faculty for two semester = 3,12,000 Rs.

Contractual faculty @40,000 for 10 months = 4,00,000 Rs.

Sno		Guest Faculty	Contractual Faculty
	Remuneration for teaching load(8 credit)	2,40,000 Rs	4,00,000
	TA/DA	72,000 Rs	-
	For additional 2 credit course	60,000+ 15,000 = 75,000	
	Total	3,90,000 approx	4,00,000
	Responsibility shared	<ul style="list-style-type: none">• Teaching load• Question paper setting• Answersheet evaluation	<ul style="list-style-type: none">• Teaching load• Question paper setting• Answer sheet evaluation• Invigilation Duty• Administrative responsibility school level• Dissertation evaluation, minor /major project seminar evaluation• Lab development

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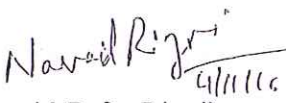
			• Other responsibility
	Credits taken	8	10


It was suggested that contractual faculty for 10 months should be recruited to share the academic and administrative responsibility.

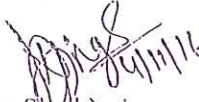
BOS members again and again iterated and gave emphasis on the regularization of current faculty and recruitment of full time faculty as soon as possible.

Meeting ended with a vote of thanks to chair.



(Aarti Gautam Dinker)


(Navaid Zafar Rizvi)


(Pradeep Tomar)

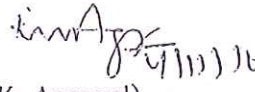

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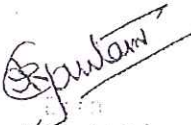

(Vidushi Sharma)


(Rajesh Mishra)


(R.K. Agarwal)


(Raj Senani)


(A. K. Gautam)







WEB DEVELOPMENT			
Course Code:	CS303	Credits:	4
No. of Lectures (Hrs/Week):	3+1	Mid Sem Exam Hours:	2
Total No. of Lectures:	45+15	End Sem Exam Hours:	3

UNIT I INTRODUCTION TO .NET

.NET, advantages of .NET, Common Language Runtime (CLR), CLR architecture, Just-in-time compiler, Microsoft Intermediate Language, IL with IL Disassembler, framework, types and version of framework, common class library, common type system, common language specifications, languages under .NET.

UNIT II LANGUAGE FUNDAMENTALS

Basic programming rules, data types, variable declaration and initialization, using the *using* and *imports* keywords, literals, unicode characters and strings, operators, conditional statements, looping statements, arrays, structures, concept of class and objects, creating and using class library, creating and using namespaces, oops paradigm: encapsulation, abstraction, polymorphism, inheritance.

UNIT III ACTIVE SERVER PAGES

Creating interactive applications using active server pages: client and server side script in C#, creating modules, creating objects from classes, flow control and exception handling, working with windows and web forms, mouse event, hiding and displaying controls, button control, label control, TextBox control, radio button control, check box control, list box control, using request and response objects, integration with database, ADO.NET.

UNIT IV JAVA SERVER PAGES (JSP)

Evolution of web application, overview of Hyper Text Transfer Protocol, servlet, servlet life cycle, servlet classes, threading models, HTTP session, Java Server Pages, JSP syntax and semantics, expression, scriptlets and declaration, request dispatching, session and thread management.

UNIT V JSP APPLICATIONS AND JDBC

Develop and deploy web application with JSP, JSP and XML, JSP testing and debugging, JDBC,

Text Books:

1. Hanna, The Complete Reference JSP 2.0, Tata McGraw Hill, 2003.
2. Mike McGrath, Java Server Pages, Dreamtech Press, 2009.
3. Visual Basic 2008 Programming, Black Book, Dreamtech Press, 2009.

Reference Books:

1. E. Balagurusamy, Programming with JAVA, Tata McGraw Hill, 1998.
2. Christian Nagel, Professional C# and .NET 4, Wrox, 2010.
3. Karli Watson, Beginning Microsoft Visual C#, Wrox, 2010.



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IC Physical Design	
Course Code: EC 574	Credits: 3
No. of Lectures (Hrs/Week): 3	Mid Sem Exam Hours: 2
Total No. Of lectures: 45	End sem Exam Hours: 3

UNIT 1: VLSI Physical Design Automation:

VLSI Design Cycle, New Trends in VLSI Design Cycle, Physical Design Cycle, New Trends in Physical Design Cycle, Design Styles, Full-Custom, Standard Cell, Gate Arrays, Field Programmable Gate Arrays, Sea of Gates, Comparison of Different Design Styles, System Packaging Styles: Die Packaging and Attachment Styles, Package and Die Attachment Styles.

UNIT 2: Fabrication Process and its Impact on Physical Design:

Scaling Methods and effect of these methods on Physical Design Process, Parasitic Effects, Interconnect Delay, Noise and Crosstalk, Interconnect Size and Complexity, Other Issues in Interconnect, Power Dissipation, Yield and Fabrication Costs, Innovations and Issues in Devices, Aggressive projections for the Process and solution for Interconnect Issues.

UNIT 3: Basic and Partitioning Algorithms for IC Physical Design:

Complexity Issues and NP-hardness, Graph Algorithms: Graph Search Algorithms Spanning Tree Algorithms, Shortest Path Algorithms, Steiner Tree Algorithms, Classification of Partitioning Algorithms, Kernighan-Lin Algorithm, Fiduccia-Mattheyses Algorithm, Simulated Annealing, Simulated Evolution, performance driven partitioning.

UNIT 4: Floor planning and Pin Assignment Algorithms:

Classification of Floorplanning Algorithms, Constraint Based Floorplanning, Rectangular Dualization, Simulated Evolution Algorithms, Timing Driven Floorplanning, Design Style Specific Pin Assignment Problems, Classification of Pin Assignment Algorithms, General Pin Assignment, Channel Pin Assignment.

UNIT 5: Placement and Routing Algorithms:

Classification of Placement Algorithms, Simulation Based Placement Algorithms, Force Directed Placement, Sequence-Pair Technique, Breuer's Algorithm, Terminal Propagation Algorithm, Maze Routing Algorithms, Lee's Algorithm, Soukup's Algorithm, Hadlock's Algorithm, Performance drive algorithms.

Text Books:

- [1] Sadiq M. Sait, Habib Youssef: VLSI physical design Automation: theory and practices
- [2] Naveed A. Sherwani: Algorithm for VLSI physical design automation by

References:

- [1] Sung Ku Lim: Practical problems in VLSI physical Design,
- [2] R. Jacob Baker: CMOS Circuit Design Layout, and Simulation, Second Edition.



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INTEGRATED CIRCUIT PHYSICAL DESIGN			
Course Code:	EC574	Credits:	3
No. of Lectures (Hrs/Week):	3	Mid Sem Exam Hours:	2
Total No. of Lectures:	45	End Sem Exam Hours:	3

Unit I: The Well

Substrate, Parasitic Diode, N-well as a Resistor, N-well patterning and layout, Design Rules, Resistance calculation, N-well Resistor, N-well/Substrate Diode, Carrier Concentrations, Fermi Energy Level, Depletion Layer Capacitance, Storage or Diffusion Capacitance, RC Delay through the N-well, Distributed RC Delay, Distributed RC Rise Time, Twin Well Processes.

Unit II: The Metal Layers

Bonding Pad and layout, Metal-to-Substrate capacitance, Passivation, Design and Layout of Metal Layers, Metall and Vial, Parasitic Associated with Metal Layers, Intrinsic Propagation Delay, Current-Carrying Limitations, Design Rules for Metal Layers, Contact Resistance, Crosstalk and Ground Bounce, Crosstalk, Ground Bounce, DC Problems, AC Problems.

Unit III: The Active and Poly Layers

Layout Using Active and Poly Layers, P- and N-Select Layers, Poly Layer, Self-Aligned Gate, Poly Wire, Silicide Block, Connecting Wires to Poly and Active, Connecting P-Substrate to Ground, N-Well Resistor layout, NMOS and PMOS Device layout, Standard Cell Frame, Design Rules, Electrostatic Discharge (ESD) Protection, Diodes layout.

Unit IV: Resistors, Capacitors, MOSFETs

Resistors, Temperature Coefficient, Voltage Coefficient, Unit Elements, Guard Rings, Interdigitated Layout, Common-Centroid Layout, Dummy Elements, Poly-Poly Capacitor layout, Parasitic, MOSFETs: Lateral Diffusion, Oxide Encroachment, Source/Drain Depletion Capacitance, Source/Drain Parasitic Resistance, Long-Length MOSFETs layout, Large-Width MOSFETs layout, MOSFET Capacitances.

Unit V: MOSFET Operation

Accumulation, Depletion, Strong Inversion, Threshold Voltage, Characteristics of MOSFETs, MOSFET Operation: Triode and Saturation, Cgs Calculation, Long-Channel MOSFET Models, Model Parameters Related to the Drain Current, Modeling of the Source and Drain Implants Short-Channel MOSFETs Hot Carriers, Lightly Doped Drain, MOSFET Scaling, Short-Channel Effects, Oxide Breakdown, Drain-Induced Barrier Lowering, Gate-Induced Drain Leakage.

Text Books:

- [1] R. Jacob Baker: CMOS Circuit Design, Layout, and Simulation, Second Edition.
- [2] Christopher Saint, Judy Saint: IC Layout Basics: A Practical Guide

References:

- [1] Dan Clein: CMOS IC Layout : Concepts, Methodologies, and Tools,.
- [2] Alan Hastings, Roy Alan Hastings: The Art of Analog Layout



Expert System Design Lab			
Course Code:	CS683	Credits:	3
No. of Lectures (Hrs/Week):	3	Mid Sem Exam Hours:	2
Total No. of Lectures:	45	End Sem Exam Hours:	3

1. WAP using clips to insert fact and rules in knowledgebase.
2. WAP in CLIPS to use of a structured frame, the use of variables and to modify an existing frame.
3. WAP in CLIPS to show the use of the printout command.
4. WAP in clips to addition, subtraction, divide and multiplication of numbers.
5. WAP in CLIPS to use of read and test.
6. WAP in clips to find factorial of a given number.
7. WAP in clips to find maximum number from a set of values.
8. WAP in CLIPS to show the fuzzy facts.
9. WAP in FuzzyCLIPS using CF rules.
10. Write a program in FuzzyCLIPS which defines 4 fuzzy sets in the same "universe of discourse" called Level, with values from 0 to 1000. "Low" is a Z curve with value 1 at 0 and 0 at 300. "Medium" is defined by the 4 points below. "High" is a PI curve with value 0 at 400, 1 at 600, 0 at 800. "Veryhigh" is an S curve with value 0 at 700 and 1 at 900.

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Design Lab 1

EC 584

1. Study and analysis of Network Simulator-2 software
 - Location of different Protocols.
 - Simulate a Network.
 - Modify a C++ code in NS2
 - Use a Trace File
2. To implement a scenario using NS-2
3. Study and analysis of QualNet software
 - Location of different Protocols.
 - Simulate a Network.
 - Create the results for analysis.
4. To implement a scenario using QualNet software
5. Designing a Wi-Fi network Using QualNet
6. Study and analysis of Matlab Simulink Tool box
7. To implementation wireless communication system using MATLAB Simulink
8. To implement a scenario for Time Division Multiple Access system.
9. To implement a scenario for Frequency Division Multiple Access system.
10. Study and analysis of Fuzzy /ANN/GA Tool box

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Design Lab II

EC 681

Implementation any ten practical

1. Implementation of Direct Sequence Spread Spectrum using Matlab.
2. Implementation of Orthogonal Frequency division multiple access using Matlab.
3. Study of sampling and aliasing effect in communication system using Matlab.
4. Implementation of advanced modulation techniques using Matlab.
5. Design and Implementation of Analog Transmitter and Receiver.
6. Design and Implementation of Digital Transmitter and Receiver.
7. To implement a model in Matlab for evaluation of channel performance.
8. Design and implementation of teletraffic theory (Erlang B Model)
9. Design and implementation of teletraffic theory (Erlang C Model)
10. Implementation of one latest research paper.
11. Design and implementation of routing protocol
12. Design and implementation of aloha Protocol
13. Design and implementation of error correction code



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COURSE STURCTURE

Of

4 YEARS DEGREE B.TECH. (Information Technology)

Department of Computer Science & Engineering



SCHOOL
OF

INFORMATION AND COMMUNICATION TECHNOLOGY

GAUTAM BUDDHA UNIVERSITY
GAUTAM BUDH NAGAR, GREATER NOIDA
2016-2017

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Gautam Buddha University
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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

4-Years Degree B. TECH. (Information Technology)

I-YEAR (I-SEMESTER)

(Effective from session: 2016-17)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CBCS	CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL					
			L	T	P	CT	TA								
THEORY															
1	CY101	Engineering Chemistry	3	1	0	10	15	25	50	100	FC-C1	4			
2	MA101	Engineering Mathematics – I	3	1	0	10	15	25	50	100	FC-C2	4			
3	ES 101	Environmental Studies	2	1	0	10	15	25	50	100	AECC1	3			
4	CS101	Computer Programming – I	2	0	0	10	15	25	50	100	FC-C3	2			
5	EC101	Basic Electronics	2	1	0	10	15	25	50	100	FC-C4	3			
6	EN101	English Proficiency	2	0	0	10	15	25	50	100	AECC2	2			
7	BS101	Human Values & Buddhist Ethics	2	0	0	10	15	25	50	100	AECC3	2			
PRACTICAL															
8	CY103	Engineering Chemistry Lab	0	0	2	50			50	100	FC-C5	1			
9	CS 181	Computer Programming Lab I	0	0	2	50			50	100	FC-C6	1			
10	CE103	Engineering Graphics	0	0	3	50			50	100	FC-C7	1			
11	EC181	Basic Electronics Lab	0	0	2	50			50	100	FC-C8	1			
12	GP	General Proficiency												Non Credit	
SEMESTER TOTAL			16	4	9	375		175	550	1100		25			
TOTAL CONTACT HOURS			29												

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)		
S.No.	COURSE CODE	SUBJECT
1	EN101	English Proficiency
2	ES101	Environmental Studies
3	BS101	Human Values & Buddhist Ethics

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I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING CHEMISTRY		Course Code: CY101	Credits : 4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.) 3

Unit I: Water

Introduction, Specification for water, Impurities in water, Hardness of water, Numerical problems based on Hardness, Analysis of water: alkalinity, Numerical problems based on alkalinity Dissolved Oxygen, Boiler feed water, boiler problems-scale, sludge, priming and foaming, caustic embitterment and corrosion, their causes and prevention, Water softening processes: External treatment(Lime – Soda process, Numerical problems based on Lime-soda Process, Zeolite process, Ion exchange Process) and Internal treatment (Colloidal conditioning, carbonate conditioning, calgon conditioning and phosphate conditioning), Domestic water treatment: sedimentation, coagulation, Filtration, Disinfection, chlorination, break point chlorination, Ozonization.

Unit II: Corrosion and its Control

Introduction, Types of corrosion- Dry, Wet, Galvanic , Pitting, Water line and Stress corrosion, Mechanism of corrosion- Dry or Chemical, Wet or Electrochemical, Pilling-Bedworth rule, Galvanic series, Factors influencing corrosion, Corrosion control- Modification of environment, corrosion inhibitor and Metallic coatings.

Unit III: Fuel

Classification, Characteristics of fuel, Characteristic of good fuel, Calorific Value, Determination of Calorific Value by bomb calorimeter, Analysis of coal –Proximate and Ultimate analysis, Numerical problems based on Proximate and Ultimate analysis, Carbonization-Types of Carbonization of coal, Manufacture of Metallurgical coke by Otto Hoffman process, Conversion of Coal into Liquid Fuels by Fischer-tropsch process and Bergius Process, Liquid Fuels- Petroleum-Refining of crude oil, Cracking of heavy oil residues – thermal and catalytic cracking, Cracking of heavy oil residues – thermal and catalytic cracking, Gaseous Fuels - Natural gas, Water gas, Producer gas, Coal gas.

Unit III: Polymers

Introduction, Classification(based on origin, structure, intermolecular forces, tacticity, type of monomer, response to temperature, conductance and synthesis), Polymerization- Condensation(step growth), Addition (chain growth), Conducting polymer and Biopolymers, Introduction to polymeric composites, Types of composite materials.

Unit IV: Phase Rule

The Phase Rule, Explanation of terms, Advantages and limitations of Phase Rule, Phase rule for one component system (The water system).

Unit V: Lubricants

Introduction, Functions, Classification of Lubricants, Mechanism of Lubrication, Properties- Viscosity and viscosity index, Flash and fire point, Aniline point, Neutralization number, Saponification Number and Iodine Number

Unit VI: Insulators

Introduction, Thermal insulators-Organic and Inorganic insulators and Electrical Insulators.

Books (Text Books & Reference Books):

- [1] J.C. Kuriacose & J. Rajaram, Chemistry in Engineering & Technology ,Vol I & II, By Tata McGraw-Hill Education.
- [2] Dr S.S. Dara, S.S. Umare, Engineering Chemistry , S. Chand & Company Ltd.
- [3] Jain & Jain, Engineering Chemistry, Dhanpat Rai Publications.
- [4] V. R. Gowarikar, V.Viswanatha, Jayadev Sreedhar, Polymer Science, New Age International.
- [5] G. T. Austin, Shreve's Chemical Process Industries Mc-Graw-Hill.



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING MATHEMATICS - I		Course Code: MA101	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I: Water

Introduction, Specification for water, Impurities in water, Hardness of water, Numerical problems based on Hardness, Analysis of water: alkalinity, Numerical problems based on alkalinity Dissolved Oxygen, Boiler feed water, boiler problems-scale, sludge, priming and foaming, caustic embitterment and corrosion, their causes and prevention, Water softening processes: External treatment(Lime – Soda process, Numerical problems based on Lime-soda Process, Zeolite process, Ion exchange Process) and Internal treatment (Colloidal conditioning, carbonate conditioning, calgon conditioning and phosphate conditioning), Domestic water treatment: sedimentation, coagulation, Filtration, Disinfection, chlorination, break point chlorination, Ozonization.

Unit II: Corrosion and its Control

Introduction, Types of corrosion- Dry, Wet, Galvanic ; Pitting, Water line and Stress corrosion, Mechanism of corrosion- Dry or Chemical, Wet or Electrochemical, Pilling-Bedworth rule, Galvanic series, Factors influencing corrosion, Corrosion control- Modification of environment, corrosion inhibitor and Metallic coatings.

Unit III: Fuel

Classification, Characteristics of fuel, Characteristic of good fuel, Calorific Value, Determination of Calorific Value by bomb calorimeter, Analysis of coal –Proximate and Ultimate analysis, Numerical problems based on Proximate and Ultimate analysis, Carbonization-Types of Carbonization of coal, Manufacture of Metallurgical coke by Otto Hoffman process, Conversion of Coal into Liquid Fuels by Fischer-tropsch process and Bergius Process, Liquid Fuels- Petroleum-Refining of crude oil, Cracking of heavy oil residues – thermal and catalytic cracking, Cracking of heavy oil residues – thermal and catalytic cracking, Gaseous Fuels - Natural gas, Water gas, Producer gas, Coal gas.

Unit III: Polymers

Introduction, Classification(based on origin, structure, intermolecular forces, tacticity, type of monomer, response to temperature, conductance and synthesis), Polymerization- Condensation(step growth), Addition (chain growth), Conducting polymer and Biopolymers, Introduction to polymeric composites, Types of composite materials.

Unit IV: Phase Rule

The Phase Rule, Explanation of terms, Advantages and limitations of Phase Rule, Phase rule for one component system (The water system).

Unit V: Lubricants

Introduction, Functions, Classification of Lubricants, Mechanism of Lubrication, Properties- Viscosity and viscosity index, Flash and fire point, Aniline point, Neutralization number, Saponification Number and Iodine Number

Unit VI: Insulators

Introduction, Thermal insulators-Organic and Inorganic insulators and Electrical Insulators.

Books (Text Books & Reference Books):

- [1] J.C. Kuriacose & J. Rajaram, Chemistry in Engineering & Technology, Vol I & II, By Tata McGraw-Hill Education.
- [2] Dr S.S. Dara, S.S. Umare, Engineering Chemistry, S. Chand & Company Ltd.
- [3] Jain & Jain, Engineering Chemistry, Dhanpat Rai Publications.
- [4] V. R. Gowarikar, V. Viswanatha, Jayadev Sreedhar, Polymer Science, New Age International.
- [5] G. T. Austin, Shreve's Chemical Process Industries Mc-Graw-Hill.



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I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

ENVIRONMENTAL STUDIES		Course Code: ES101	Credits: 3
No. of Lectures (Hrs./Week):3	No. of Lectures (Sem.):45	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I: Multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness.

Unit II: Natural Resources

Renewable and non-renewable resources:

- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forest and tribal people.
- Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Natural resources and associated problems; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

Unit III: Ecosystems

- Concept of an ecosystem;
- Structure and function of an ecosystem
- Producers, consumers and decomposers
- Energy flow in the ecosystem
- Ecological succession
- Food chains, food webs and ecological pyramids.
- Introduction, types, characteristic features, structure and function of the ecosystem: Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit IV: Biodiversity and its conservation

- Introduction – Definition, genetic, species and ecosystem diversity.
- Biogeographical classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts.
- Endangered and endemic species of India.
- Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.

Unit 5: Environmental Pollution

Definition, Causes, effects and control measures of :-

Air pollution; Water pollution; Soil pollution; Marine pollution; Noise pollution; Thermal pollution; Nuclear hazards

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Unit 6: Social Issues and the Environment

- From Unsustainable to Sustainable development.
- Environmental ethics: issues and possible solutions.
- Consumerism and waste products.
- Environment Protection and Control of Pollution Act.
- Environment and human health.

Books Recommended:

- [1] Howad, Environmental Engineering, McGraw Hill.
- [2] Emil T. Chanlett, Environmental Protection, McGraw Hill.
- [3] A.K. Dey, Environmental Chemistry, Wiley Eastern Ltd.
- [4] Cumingham, Saigo, Environmental Science, TMH.
- [5] Manuel C. Mmoller, Ecology Concepts and Application, TMH.



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I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

COMPUTER PROGRAMING – I		Course Code: CS101	Credits:2
No. of Lectures (Hrs./Week):2	No. of Lectures (Sem.):30	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I: Introduction to Computer

Definition, characteristic, generation of computers, basic components of a computer system, memory, input, output and storage units, hard copy devices, high level language and low level language, software, system software, application software, hardware, firmware, compiler, interpreter and assembler.

Unit II: Introduction to Programming Concept

Introduction to algorithm and flow chart; representation of algorithm using flow chart symbol, pseudocode, basic algorithm design, characteristics of good algorithm, development of algorithm.

Unit III: Introduction to C Programming Language

Declaring variables, preprocessor statements, arithmetic operators, programming style, keyboard input, relational operators, introduction, feature of C language, concepts, uses, basic program structure, simple data types, variables, constants, operators, comments, control flow statement :if, while, for, do-while, switch .

Unit IV:

User defined data types, arrays, declaration and operations on arrays, structure, member accessing, structure and union, array of structures, functions, declaration and use of functions, parameter passing, dynamic memory allocation.

Unit V: Fundamentals of Pointers

Declaration and usages of pointers, operations that can be performed on computers, use of pointers in programming exercises, parameter passing in pointers, call by value, call by references, Introduction to LINUX: LINUX structure, directory, LINUX commands.

Text Books:

- [1] Herbert Shield, C Programming.
- [2] E. Balagurusamy, Programming in ANSI C by, Tata McGraw Hill.

Reference Books:

- [3] Brian, W Kernighan, C Programming Language 2nd Edition, Pearson Education.
- [4] Alan R Feuer ,C. Puzzle Book: Puzzles For The C. Programming Language, Prentice Hall- Gale.
- [5] Peter Van Der Linden Dorling Kindersley, Expert C Programming: Deep C Secrets (s), India.
- [6] Morgan Rachel, Introduction To UNIX System, Tata McGraw Hill Education.
- [7] Hutchison R.C, Programming Using the C Language McGraw Hill Book Company, New York.



I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

BASIC ELECTRONICS		Course Code: EC101	Credits:3
No. of Lectures (Hrs./Week):3	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I:

Passive Components: Resistances, Capacitors and Inductors, Component Specifications, Applications, Response to dc and sinusoidal voltage/current excitations. **Semiconductor Theory:** Metals, Insulators and Semiconductor materials, energy band diagram, Intrinsic and Extrinsic Semiconductors, Doping, Fermi level, Fermi level of P-type and N-type materials, Mobility, Drift Current and Diffusion Current. Current conduction in Semiconductors, Generation and Recombination of Charges

Unit II: Semiconductor Diodes

Theory of P-N Junction, Ideal & Practical diode, Concept of AC and DC Resistances, V-I Characteristics, Diode Equivalent Circuits, Transition and Diffusion Capacitance, Reverse Recovery Time, Zener and Avalanche breakdown, Tunnel Diodes, Varactor Diode, Light Emitting Diode

Unit III: Diode Applications and Wave Shaping Circuits

Load line analysis, series and parallel combinations, Half wave & Full wave Rectifiers, Clippers & Clampers.

Unit IV: Transistors

Bipolar Junction Transistor- Construction, Operation, Transistor Configurations, Input and Output Characteristics, AC and DC Load line, operating point, Effect of shifting the operating point. Biasing, Thermal Runaway, Effect of temperature on the characteristics, Early effect, introduction to JFET and MOSFET

Unit V: Logic Gates and Operational Amplifiers

Binary number, Digital systems, Boolean algebra, logic gates, logic functions, realization of logic gates by electronic devices, Positive and negative logic, representation of binary numbers, half adder, full adder, flip-flops, Op-Amp, Practical Op-Amp, Open loop and closed loop configurations, Applications of Op-Amps as inverting and non-inverting amplifier

Text Books:

- [1] Boyelasted an Nashlsky: Electronics Devices and circuit Theory, TMH.
- [2] Gayakwad :Op-Amps and Linear Inegrated Circuits , PHI.

Reference Books:

- [3] Millman & Halkias :Integrated Electronics ,TMH.
- [4] Morris Mano: Digital Design ,PHI.
- [5] Malvino :Electronics Principles,TMH.



I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

ENGLISH PROFICIENCY		Course Code: EN101	Credits: 2
No. of Lectures (Hrs./Week): 2	No. of Lectures (Sem.):30	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I: Functional Grammar

Form and Functions, Sentences: Simple, Complex, and Compound, Sub-Verb Agreement and Concord, Vocabulary Building: Affixations, Conversions, Idioms and Phrases, Words in Context.

Unit II: Language Skills (LSRW)

Listening Skills: Activity based, Speaking Skills: Activity based, Introduction to IPA, Use of Dictionary, Word stress, Reading Skills: Skimming and Scanning, Reading Comprehension, Writing Skills: Paragraph, Précis and Compositions, Note Making and Note Taking, Logical Ordering of Ideas and Contents, Figures of Speech

Unit III: Learning through thematic Texts

- *My Visions for India*: Dr. Abdul Kalam
- *From In an Antique Land*: Amitav Ghosh
- *The Gift of Magi* O' Henry
- *Master and Man* Leo N. Tolstoy.
- *If* Rudyard Kipling
- *The Solitary Reaper* William Wordsworth

Text Books:

- [1] Pointon & Clark, *Word for Word*, Oxford University Press
- [2] Carter, Ronald; McCarthy, Michael (2006); *Cambridge Grammar of English: A Comprehensive Guide*. Cambridge University Press.

Reference Books:

- [3] Roach, J. Hartman and J. Setter (eds); *An English Pronouncing Dictionary*, London: Dent, 17th edn, PCambridge: CUP, 2006.
- [4] Redman, Stuart; 2011 English Vocabulary I Use: Pre-intermediate and intermediate. Cambridge: CUP Cambridge Phrasal Verbs Dictionary Second edition, Cambridge University Press



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SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

HUMAN VALUES AND BUDDHIST ETHICS			
No. of Lectures (Hrs./Week): 2	No. of Lectures (Sem.):30	Course Code: BS101 Mid Sem. Exam (Hrs.):1.5	Credits: 2 End Sem. Exam (Hrs.):3

Unit I:

Life of Gautam Buddha, Origin of Buddhism, Human Values and Buddhist Ethics, Buddhist Literature (Pāli Canonical Literature)

Unit II:

Basic Tenets of Buddhism: Cattāri-Ariya-Saccāni (The Four Noble Truths), Ariyo-Aṭṭhaṅgiko-Maggo (The Eightfold Path or The Middle Path), Brahma-Vihāra-Bhāvanā (Four Sublime States), Pañcasīla (The Five Precepts)

Unit III:

Socially Engaged Buddhism, Social Values of Buddhism, Relevance of Buddhism

Unit IV:

Buddhist View on Environmental Crisis, Buddhist View on Human Rights, Buddhist Economic Theory

Suggested Readings:

- [1] Ambedkar, Bhim Rao, The Buddha and His Dhamma, Nagpur: Buddha Bhoomi Prakashan, 1997.
- [2] Bapat, P. V., 2500 Years of Buddhism, Delhi: Publications Division, Ministry of Information and Broadcasting, Government of India, 1997.
- [3] Bhikkhu Dr. Beligalle Dhammajoti, Buddhism & Modern World, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2011.
- [4] Bhikshu Dharmarakshita, Pāli Sāhitya Kā Itihās, Varanasi: Gyanamandala Limited, 1988.
- [5] Bhikshu Dharmarakshita, Sukhī Gṛihastha Ke Liye Buddha Upadesh, New Delhi: Samyaka Prakashana, 2011.
- [6] Buddhist Dictionary - Manual of Buddhist Terms and Doctrines (Ed.) Nyanaponika, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2012.
- [7] Chan Khoon San, Buddhism Course, Kuala Lumpur: Majujaya Indah Sdn. Bhd., 2012.
- [8] Dhammiki, Buddha Ka Nitishashtra, New Delhi: Samyaka Prakashana, 2012.
- [9] Dhammiki, Buddha Ka Samajadarshana, New Delhi: Samyaka Prakashana, 2012.
- [10] K.Sri Dhammananda, Gems of Buddhist Wisdom, Malaysia: Buddhist Missionary Society, 1996.
- [11] K.Sri Dhammananda, Meditation the Only Way, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2006. K.Sri Dhammananda, What Buddhists Believe, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2006. Keown, D., The Nature of Buddhist Ethics, London: Macmillan, 1992.
- [12] Law, Bimala Churn, A History of Pāli Literature, Delhi: Indological Book House, 1983.
- [13] Misra, G.S.P., Development of Buddhist Ethics, New Delhi: Munshi Ram Manohar Lal Private Limited, 1984.
- [14] Nārada Thera, A Manual of Buddhism, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2005.
- [15] Narada, The Buddha and His Teachings, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2005.
- [16] Narasu, P.Lakshmi, The Essence of Buddhism, Madras: Asian Educational Services, 1993.
- [17] Paul Carus, The Gospel of Buddha, Nagpur: Kashinath Meshram, Buddha Bhoomi Prakashan, 1997.
- [18] Pyinnyāthi, The Triple Gem and The Way to Social Harmony, Taipei: The Corporate Body of the Buddha Educational Foundation, 2002.
- [19] Rahula, Walpola, What The Buddha Taught, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2003.
- [20] Samdhong Rinpoche, The Social Philosophy of Buddhism, Varanasi: The Central Institute of Higher Tibetan Studies, 1972.
- [21] Sankrityana, Rahula, Buddha Darshana, Allahabad: Kitab Mahal, 1992.
- [22] Sarao, K.T.S. & Arvind Kumar Singh (Eds.), A Text Book of the History of Theravada Buddhism, Delhi: Department of Buddhist Studies, Delhi University, 2006.
- [23] Sarao, K.T.S., Origin and Nature of Ancient Indian Buddhism, New Delhi: Munshiram Manoharlal, 2009.
- [24] Sayagyi U Ko Lay, Guide to Tipitaka, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2002.
- [25] Shakya, Gyanaditya, Buddha Dharma Darshana Mein Brahma-Vihāra-Bhāvanā, Ahmadabad: Reliable Publishing House, 2013.
- [26] Shakya, Rajendra Prasad, Buddha Darshan, Madhya Pradesh Hindi Academy, Bhopal, 2001.
- [27] Singh, Anand, Business Ethics and Indian Value System, Himalayana Publication, Delhi, 2010.
- [28] The Dhammapadam (Ed. & Tr.) K. Sri Dhammananda, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2006.
- [29] Thera Piyadassi, The Buddha's Ancient Path, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2003. Upadhyaya, Bharat Singh, Pāli Sāhitya Kā Itihās, Prayag: Hindi Sahitya Sammelan, 2005.
- [30] Upadhyaya, Baladeva, Buddha Dharma Darshan Mimamsa, Varanasi: Chaukhamba Vidya Bhawan, 1999.

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SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING CHEMISTRY LAB		Course Code: CY103	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.):2

List of Experiments:

Suggested list of Experiments, but not limited to:

Note: Out of fifteen experiments, ten experiments are to be performed

1. To determine the total hardness of the water sample
2. To determine the alkalinity of the water sample
3. To determine the total residual chlorine in the given water sample.
4. To determine the of dissolved Oxygen in given sample of water
5. To determine the total iron (Fe^{+2} and Fe^{+3} ion) in the given mixture solution by KMnO_4 .
6. To determine the Ferrous (Fe^{+2}) and Ferric ions (Fe^{+3}) in the given mixture solution by $\text{K}_2\text{Cr}_2\text{O}_7$ using external indicator method.
7. To determine the Ferrous (Fe^{+2}) and Ferric ions (Fe^{+3}) in the given mixture solution by $\text{K}_2\text{Cr}_2\text{O}_7$ using internal indicator method.
8. To determine the Saponification value of an oil
9. To determine the Iodine value of a given lubricating oil
10. To determine the Acid value of an oil
11. Determine the amount of Cu by iodometric titration
12. To find the normality of an acid solution by conductometrically
13. To determine the molarity of HCl by pH-metrically
14. Preparation of PMMA
15. Preparation of urea-formaldehyde resin

Reference Books:

- [1] O.P. Vermani & A.K. Narula Applied Chemistry: Theory and Practice, New Age International Publishers.
- [2] G.H. Jeffery, J. Bassett, J. Mendham & R.C. Denney, Vogel's Textbook of Quantitative Chemical Analysis, John Wiley & Sons Inc.
- [3] S.K. Bhasin and Sudha Rani, Laboratory Manual on Engineering Chemistry, Dhanpat Rai Publications.



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

COMPUTER PROGRAMMING LAB - I		Course Code: CS181	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.):2

NOTE: Suggested list of experiments but not limited to these only.
List of Experiments:

- Write a C program to reverse a given number, find the sum of digits of the number.
- Write a C program to concatenate two strings.
- Write a C program to take marks of a student as input and print the his/her grade bases on following criteria using if – else statements
 Marks < 40 FAIL
 40<= Marks < 59 GOOD
 59<= Marks < 80 Excellent
 80 <= Marks Outstanding
- Perform experiment 3 using switch case statement.
- Write a C program to compute the length of a string using while loop.
- Write a C program to convert all the lowercase letter to uppercase letter and all uppercase letters to lower case letter given a string as input.
- Write a C program to compute the roots of a quadratic equation.
- Write a C program to check whether a given number is prime or not, also check whether it is divisible by a number k or not.
- Write a C program to check whether a given year is leap year or not.
- Write a C program to take two matrixes as input and print the sum of two matrixes.
- Write a C program to display the address of a variable using pointer.
- Write a C program to compute the length of a string using pointer.
- Create a structure called STUDENT having name, registration number, class, session as its field. Compute the size of structure STUDENT.
- Write a C program to check weather a given string is palindrome or not.
- Write a C program to generate following patterns.

```

          1
        2   2
      3   3   3
    4   4   4   4
  
```

```

          A
        B   B
      C   C   C
    D   D   D   D
  
```



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I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING GRAPHICS		Course Code:EC103	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.):2

Note: All drawing exercises should be performed on AutoCAD

Unit 1: Engineering Drawing and its importance: Types of lines and their meaning in context to Engineering Drawing: Dimensioning and various method of dimensioning. Various types of projections: First and Third angle systems of orthographic projections; Projection of Points in different quadrants.

Unit II: Projections of Straight Lines: Parallel to one or both reference planes; Contained by one or both planes; Perpendicular to one of the planes; Inclined to one plane but parallel to the other planes; Inclined to both the planes; True length of a line and its inclination with reference planes; Traces of a line.

Unit III: Projection of Planes: parallel to one reference plane; Inclines to one plane but perpendicular to the other; Inclined to both reference planes.

Unit IV: Projections of polyhedral Solids and Solids of Revolution: in simple positions with axis perpendicular to a plane; With axis parallel to both planes; With axis parallel to one plane and inclined to the other; Projections of sections of prisms; Pyramids; Cylinders and Cones; True shape and section.

Unit V: Development of surface of various simple solids such as cubes; Cylinders; Prisms; Pyramids; etc.; and their Orthographic views. Intersection of solids.

Unit VI: Isometric projections: Isometric scale; Isometric views of plane figures: Prisms; Pyramids and Cylinders.

Books

- [1] D.M. Kulkarni; A.P. Rastogi; A.K. Sarkar, Engineering Graphics with AutoCAD; PHI Learning Pri. Ltd.
- [2] T. Jeyapoovan, Engineering Graphics using AutoCAD; Vikas Publishing House.

Reference Books:

- [3] N.D. Bhatt, Introduction to Engineering Drawing; Charotar Publishing House.
- [4] Pohit, Machine Drawing with AutoCAD; Pearson Education.
- [5] James D. Bethune, Engineering Graphics with AutoCAD; Prentice Hall.
- [6] Alan Kalameja, AutoCAD Tutor for Engineering Graphics; Autodesk Pr.



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I-YEAR (I-SEMESTER)
(Effective from session: 2016-17)

BASIC ELECTRONIC LAB		Course Code: EC181	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.):2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Study of Multimeter and Function Generator /Counter.
2. Study of Cathode-Ray Oscilloscope.
3. To calculate the Equivalent Resistance of the Series and parallel resistive network.
4. To calculate the Equivalent Capacitance of the Series and parallel capacitive network.
5. To Plot the V-I Characteristics of P-N Junction Diode in forward bias and reverse bias.
6. To study the working of a P-N Junction Diode as a switch.
7. To plot the V-I Characteristics of a Zener Diode.
8. To plot the input and output waveforms of clipper circuits.
9. Study the Half wave rectifier.
10. Study of Full wave Bridge Rectifier.
11. Study of Centre Tapped Full Wave Rectifier.
12. To plot the input and output characteristic of transistor's Common Base configuration.
13. To plot the input and output characteristic of transistor's Common Emitter configuration.
14. To plot the input and output characteristic of transistor's Common Collector configuration.
15. To verify the truth table of various logicgates.



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I-YEAR (II-SEMESTER)
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S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CREDIT S	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL	CBCS			
			L	T	P	CT	TA							
THEORY														
1	PH102	Engineering Physics	3	1	0	10	15	25	50	100	FC-C9	4		
2	MA102	Engineering Mathematics – II	3	1	0	10	15	25	50	100	FC-C10	4		
3	ME 101	Engineering Mechanics	2	1	0	10	15	25	50	100	FC-C11	3		
4	CS102	Computer Programming – II	2	0	0	10	15	25	50	100	FC-C12	2		
5	EE102	Electrical Technology	2	1	0	10	15	25	50	100	FC-C13	3		
6	EN102	Professional Communication	2	0	0	10	15	25	50	100	AECC4	2		
7		Open Elective 1	2	0	0	10	15	25	50	100	OE1	2		
PRACTICAL														
8	PH104	Engineering Physics Lab	0	0	2	50			50	100	FC-C14	1		
9	CS182	Computer Programming Lab - II	0	0	2	50			50	100	FC-C15	1		
10	EE104	Electrical Technology Lab	0	0	2	50			50	100	FC-C16	1		
11	ME102	Engineering Workshop	0	0	3	50			50	100	FC-C17	2		
12	GP	General Proficiency											Non Credit	
SEMESTER TOTAL			16	4	9	375		175	550	1100		25		
TOTAL CONTACT HOURS			29											

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)	
1	EN102 Professional Communication

OPEN ELECTIVE (OE1)	
1	SS102 History of Science & Technology
2	BSC201 Introduction to Buddhist Mediation: Theories & Practices
3	BSCU30 Buddhist Art & Architecture



I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING PHYSICS		Course Code: PH102	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I: Electromagnetic (EM) theory

Vector algebra and co-ordinate systems, Gauss' law, Stokes' theorem, Maxwell's equations: EM wave equations in differential and integral forms, transverse nature and speed of EM waves, EM energy density, Poynting vector.

Unit II: Interference

Coherent sources, Conditions for interference; Division of wavefront: Young's double-slit experiment, Fresnel's bi-prism; Newton's rings method; Division of amplitude: Uniform and wedge-shaped films; Michelson's interferometer.

Unit III: Diffraction

Difference between interference and diffraction; Fresnel and Fraunhofer diffractions; Fraunhofer diffraction by single slit and double slit; Resolving power of prism and grating.

Unit IV: Polarization

Unpolarized, partially; and completely polarized lights; Polarization by reflection; Double refraction by uni-axial crystals; Polaroids; Half wave and full wave plates.

Unit V: Relativity

Special theory of relativity; Length contraction and time dilation; Twin paradox; Doppler's effect; Mass and energy equivalence; Massless particles.

Unit VI: Quantum theory of EM waves

Photo-electric effect: The origin of Quantum theory of light, X-rays, X-ray diffraction (Bragg's law) and applications, Compton Effect; Dual nature of light; De-Broglie waves; Davisson-Germer Experiment; Phase and group velocities; Uncertainty principle;

Quantum mechanical wave-function; Schrodinger wave equation; Boundary conditions; particle in a box; Tunnel effect (finite potential well).

Unit VII: Solid state physics

Brief discussion of solids, crystals, and bonds; Band theory of solids; Semiconductor devices.

Unit VIII: Nanotechnology

Properties of nanoparticles; carbon nanotubes; applications; SEM and AFM techniques.

Text Books:

- [1] D. J. Griffiths, Introduction to Electrodynamics, PHI Learning Pvt Ltd.
- [2] H. K. Malik & A. K. Singh, Engineering Physics, Tata McGraw Hill Education Pvt Ltd.

Reference Books:

- [3] Arthur Beiser, Concepts of Modern Physics, Tata McGraw-Hill Edition.
- [4] K. K. Chattopadhyay & A. N. Banerjee, Introduction to Nanoscience and Nanotechnology, PHI Learning Pvt Ltd.



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I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING MATHEMATICS – II		Course Code: MA102	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I:

Matrices, Algebra of Matrices, Elementary row and column operations and reduced echelon forms, Normal Form, Rank of a matrix, Consistency of linear system of equations and their solutions.

Unit II:

Finite dimensional vector spaces over reals, Subspace, Linear Dependence and Independence of vectors, Basis, Dimension. Characteristic equation and characteristic polynomial, eigenvalues and eigenvectors, Cayley-Hamilton theorem, diagonalisation.

Unit III:

Algebra of Complex numbers, Polar form of complex numbers, Functions of complex variables, Limit, Continuity and Differentiability of Complex functions.

Unit IV:

Analytic function, C-R equation, Harmonic functions, Line Integral in complex form, Cauchy's integral theorem, Morera's Theorem, Cauchy's integral formula: Cauchy's Integral formula for derivatives of analytic functions, Liouville's theorem, Fundamental Theorem of algebra.

Unit V:

Taylor's and Laurent's Series, Singularities, Zeroes and Poles, Residue, Residue theorem, Evaluation of real integrals, Conformal mapping.

Textbook:

- [1] E. Kreyszig, Advanced Engineering Mathematics, John Wiley and Sons.

Books

- [2] R. K. Jain & S.R.K Iyengar, Advanced Engineering Mathematics, Narosa Publications.
[3] J. W. Brown & R. V. Churchill, Complex Variables and Applications, McGraw-Hill Higher Education.



I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING MECHANICS		Course Code: ME101	Credits:3
No. of Lectures (Hrs./Week):3	No. of Lectures (Sem.):45	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I:

Statics: Introduction to Engineering Mechanics, Units and Dimensions, Basic Mechanics, Laws of Mechanics, Representation of a Vector.

Static of particles: Forces, system of forces, Resultant of forces, Equilibrium of Particles, Principle of Transmissibility of Forces, parallel forces, System of forces, moment, moment of force about line, Equilibrium of three forces in a plane, Varignon's theorem of moments, Couples

Unit II:

Rigid Body Equilibrium: Free body diagram, condition of equilibrium of rigid bodies in two dimensions, Types of bams, loads, supports, determination of support reactions, Lame's theorem.

Unit III:

Structure: Structure of equilibrium: Trusses, Methods of joints and section.

Unit IV:

Centriod and Moment of Inertia:Centroid and center of mass: Centroids of composite plane figures and curves, Pappus and Guldinus theorem, Centre of gravity, moment of inertia, parallel axis theorem, perpendicular axis theorem, mass moment of inertia.

Unit V:

Friction: Classification of friction, Laws of friction, Coefficient of friction, Limiting friction, Angle of repose, Wedge friction, Belt Friction.

Unit VI:

Kinematics of particles: Position, velocity, Acceleration, Curvilinear motion, Relative Motion.
Kinetics of particle:Equation of motion of rigid body in plane, D' Alembert's principle.

Text Books:

[1]Stephan Timoshenko and D. Young, Engineering Mechanics, Tata McGraw Hill.

Reference Books:

[2]Ferdinand Singer, Engineering Mechanics, McGraw Hill.

[3]S.S. Bhavikatti, K.G. Rajashekarappa, Engineering Mechanics, New Age International.



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SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

COMPUTER PROGRAMING - II		Course Code: CS102	Credits:2
No. of Lectures (Hrs./Week): 2	No. of Lectures (Sem.):30	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I: Object-Oriented Programming

Concept of object-oriented programming (OOP), benefits of OOP, application of OOP, Java history, Java features, Java streaming, Java and Internet, Java contribution to Internet: Java applets, security, portability; Java environment, Java library, Java program structure, Java program, Java Virtual Machine (JVM) architecture, Just In Time compiler (JIT), data type, variables and arrays, operators, control statements, object-oriented paradigms; abstraction, encapsulation, inheritance, polymorphism, Java class and OOP implementation

Unit II: Data Type, Operators and Control Statement

Data types, Java key words, identifiers, constants, variables, declaration and scope of the variable, symbolic constant, type casting, arithmetic operator, relational operator, logical operator, assignment operator, increment and decrement operator, conditional operator, bitwise operator, ?: operator, arithmetic expressions, expressions, type conversions in expressions, mathematical functions, more data types: arrays, strings, vectors, wrappers classes, program control statements: decision making and branching: if, if....else, else....if, else if ladder, switch, decision making and looping: while, do....while, for.

Unit III: Classes, Objects and Methods

Java class libraries, class fundamentals, object, methods, adding variables, add methods, creating objects, accessing class members, constructors, methods overloading, static members, nesting of methods, inheritance: extending a class, overriding methods, final variables and methods, final classes, finalizer methods, abstract methods and classes, visibility control, exception handling fundamental.

Unit IV: Interfaces and Packages

Interfaces, extending interfaces, implementing interfaces, interfaces references, accessing interface variable, creating queue interface, variable in interfaces, packages, finding a packages and classpath, package and member access, Java API package, system package, naming conventions, creating package, accessing a package, adding a class to a package, hiding classes,

Unit V: Multithreading and Applet Programming

Multithreading programming: creating threads, thread class and runnable interface extending the thread class, stopping and blocking a thread, life cycle of a thread, thread methods, thread exceptions, thread priority, synchronization, thread communication using notify(), wait(), and notify all(), applet programming : applet basic, applets architecture, a complete applet skeleton, building applets code, applets life cycle, creating a executable applet, designing a web page, applets tag, passing parameters to applets, applets and HTML.

Text Books:

- [1] E. Balagurusamy, Programming with JAVA, Tata McGraw Hill.
- [2] Herbert Schildt, JAVA Beginner's guide, Tata McGraw Hill.

Reference Books:

- [3] Deitel & Deitel, Java How to Program, Prentice-Hall.
- [4] The Complete Reference JAVA 2, Herbert Schildt, 5th and 7th Edition, Tata McGraw Hill.
- [5] Ken Arnold, James Gosling, Addison, The Java Programming Language, Wesley.

I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

ELECTRICAL TECHNOLOGY		Course Code: EE102	Credits:3
No. of Lectures (Hrs./Week):3	No. of Lectures (Sem.):45	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Module I: Elements and Circuits

Types of electrical elements & sources, Kirchhoff's laws, Node voltage and mesh current methods, Delta-star and star-delta conversion and Network theorems.

Module II: Single-phase AC Circuits

Average and effective values of sinusoidal quantities, form, crest, and ripple factor, solution of R.L.C series circuits, the j operator, complex representation of impedances, phasor diagram, power factor, power in complex notation, solution of parallel and series circuits.

Module III: Three-phase AC Circuits

Three phase voltages, line and phase quantities, balanced supply voltage and balanced load, problem of low power factor and methods of improvement.

Module IV: Magnetic Circuits and Transformer

Magnetic Circuits: B-H curve, solution of magnetic circuits, hysteresis and eddy current losses. Transformer: Construction, EMF equation, ratings, equivalent circuit, phasor diagram, regulation and efficiency calculations, open and short circuit tests.

Module V: Electrical Machines

Construction, principle, characteristics of DC machines, applications of DC machines.

Text Books:

- [1] D.P. Kothari & I.J. Nagrath, Basic Electrical Engineering, TMH.
- [2] T.K. Nagsarkar & M.S. Sukhija, Basic Electrical Engineering, TMH.

Reference Books:

- [3] V.N. Mittle & A. Mittal, Basic Electrical Engineering, TMH.
- [4] Vincent D. Toro, Electrical Engineering Fundamental, Pearson Education.
- [5] Hughes, Electrical & Electronics Technology, Pearson Education.
- [6] M.S. Naidu & S. Kamakshaiah, Introduction to Electrical Engineering, TMH.
- [7] J.J. Cathey & S. A. Nasar, Basic Electrical Engineering, TMH.



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I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

PROFESSIONAL COMMUNICATION		Course Code:EN102	Credits: 2
No. of Lectures (Hrs./Week): 2	No. of Lectures (Sem.): 30	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3



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I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING PHYSICS LAB		Course Code:PH104	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 15	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.):2

List of Experiments:

1. Measurement of basic constants: Length, Weight & Time.
2. To study Newton's Law (1st, 2nd and 3rd Law).
3. Study of current balance/ force acting on a current carrying conductor.
4. To study the magnetic field variation of paired coils in a Helmholtz arrangement
5. To study Interference and diffraction of light by slits.
6. To study the interference of light by Fresnel's Biprism.
7. To determine the Cauchy's constant using Prism and spectrometer
8. To find wavelength of white light by using Plane Transmission Diffraction Grating
9. To study the Polarization of light and verify Malus's Law
10. Study of Electron Diffraction (Dual Nature of Electron)
11. Study of Photoelectric effect and calculation of Planck's Constant
12. Study of Coupled Pendulum
13. To determine the wavelength of light by Newton's Rings.
14. To determine the energy band gap of a given semiconductor material using Four-Probe method.
15. To find the e/m of electron by Thomson's method.
16. To determine the fill factor of Solar Cell.
17. To calculate the wavelength of sodium light using Fresnel's Biprism.
18. To determine specific rotation of sugar using half shade Polarimeter.



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I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

COMPUTER PROGRAMMING LAB - II		Course Code: CS182	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 15	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Write a separate Java Code to implement each of the following:
Class, Command Line Argument, how to enter value through keyboard
2. Write a separate Java Code to implement each of the following data types:
Variable, Constant, Arrays, Strings, Vectors, Wrappers Classes, Type Casting
3. Write a separate Java Code to implement each of the following operators:
Arithmetic operator, Relational operator, Logical operator, Assignment operator, Increment & Decrement operator, Conditional operator, Bitwise operator, ?: operator
4. Write a separate Java Code to implement each of the following control statements:
Decision statement, Loops statement and Branch statements
5. Write a separate Java Code to implement each of the following sorting:
Bubble Sort, Selection Sort, Insertion Sort, Merge Sort
6. Write a separate Java Code to implement each of the following:
Class, Object, Constructors, Method, Method Overloading and Method Overriding
7. Write a separate Java Code to implement each of the following:
Final variable, final class, final method, abstract class, abstract method and concrete method
8. Write a separate Java Code to implement each of the following OOPs concepts:
Abstraction, Polymorphism, Encapsulation, Inheritance
9. Write a separate Java Code to implement each of the following:
Exception handling with Try, Catch, Throw, Throws, Finally
Multiple catch statement with the following exceptions:
ArithmeticException, ArrayOutOfBoundsException and ArrayStoreException
10. Write a separate Java Code to implement each of the following: Visibility Controls: Private, Public and Protected
11. Write a separate Java Code to implement each of the following: Interface, extending and implementing interface.



12. Write a separate Java Code to implement each of the following:
Multithreading: Create thread with thread class and runnable interface, thread priorities, synchronization
13. Write a separate Java Code to implement each of the following:
Packages : Create package A with following methods and import this package A into another Java program to show the result of methods of package A.
(i) First method: Factorial number with the help of recursion;
(ii) Second method: Fibonacci Series
(iii) Third Method: Generate first 10 prime numbers and show the sum of first 10 prime numbers.
14. Write Java Code to generate the following output on applet with the help of two dimensional array and show the result with the help of HTML file.
- 7 14 21 28 35 42 49 56 63 70 Sum = 385
5 10 15 20 25 30 35 40 45 50 Sum = 275
3 6 9 12 15 18 21 24 27 30 Sum = 165
15. Write a Java Code to design the following web page with the help of applet and HTML.

**School of Information and Communication Technology
GAUTAM BUDDHA UNIVERSITY
GREATER NOIDA**

- Student Name:
- Enrollment Number:
- Programme Name:
- Semester
- Course Name:
- E-mail ID:
- Mobile Number:
- Blood Group:



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I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

ELECTRICAL TECHNOLOGY LAB		Course Code:EE104	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 15	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

List of Experiments:

1. Study of C.R.O
2. Study and working of tube light, electric iron and ceiling fan.
3. Study of DC motor.
4. Basic study of house wiring model and various components used in house wiring.
5. Prove Ohm's law and find the mathematical relationship between voltage (V), current (I) and resistance (R).
6. To verify KVL, KCL
7. To verify Thevenin's and Norton's Theorem
8. To study and verify Superposition Theorem
9. To study and verify Maximum Power Transfer Theorem.
10. To understand working of a 1- ϕ , transformer and to determine its transformation ratio.
11. To perform O.C and S.C. test on a single phase transformer.
12. Speed control of a DC shunt motor.



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I-YEAR (II-SEMESTER)
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ENGINEERING WORKSHOP		Course Code:ME102	Credits: 2
No. of Lab (Hrs./Week): 3	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.):3

List of Experiments:

Note: Any 10 experiments should be performed

1. To study different types of measuring tools used in metrology and determine least counts of vernier calipers, micrometers and vernier height gauges.
2. To study different types of machine tools (lathe, sharper or planer or slotter).
3. To study different types of machine tools (milling, drilling and grinding).
4. To prepare a job on a lathe involving facing and step turning.
5. To study different types of fitting tools and marking tools used in fitting shop.
6. To prepare layout on a metal sheet by making and prepare rectangular tray, pipe shaped components e.g. funnel.
7. To prepare lap and butt joint using arc welding process.
8. To prepare lap weld joint using gas welding/ MIG/TIG process.
9. To study various types of carpentry tools and prepare simple types of at least two wooden joints.
10. To prepare a chisel in a smithy shop.
11. To prepare simple engineering components/ shapes or forging process.
12. To prepare mold and core assembly, to put metal in the mold and fettle the casting.
13. To prepare horizontal surface/ vertical surface/ curved surface/ slots or V-grooves on a shaper/ planner.
14. To prepare a job involving side and face milling on a milling machine.
15. To prepare a slot in a job using shaper/ milling machine.



I-YEAR (II-SEMESTER)
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* * OPEN ELECTIVE I

HISTORY OF SCIENCE AND TECHNOLOGY		Course Code:SS102	Credits:2
No. of Lectures (Hrs./Week): 2	No. of Lectures (Sem.):30	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3



I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

**OPEN ELECTIVE I

INTRODUCTION TO BUDDHIST MEDITATION: THEORIES AND PRACTICES		Course Code:BSC201	Credits: 2
No. of Lectures (Hrs./Week): 2	No. of Lectures (Sem.):30	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

1. General Overviews of Art and Architecture
2. Nineteenth-Century Pioneers of Buddhist Archaeology
3. Nineteenth-Century Archaeological "Rediscovery" of Buddhism
4. Archaeology of the Buddha
5. The Buddhist Stūpa: Origin and Development of Stupa architecture
6. The Buddhist Griha or Shrine
7. The Buddhist Vihāra or Monastery
8. Types of Cetiya-gahās and their architectural development
9. Buddhist Monasteries and Caves
10. Different Schools of Art with special reference to Gandhara, Mathura and Amaravati.
11. Art, Architecture & Sculpture of the Mauryan period
12. Kushanas: Growth of Art, Architecture & Literature
13. Guptas: Art, Architecture, Painting, Literature and Science
14. Expansion of Indian Culture in South-East Asia

Books:

- [1] Banerjee, J.N., *Hindu Iconography*, Calcutta.
 - [2] Bhattacharyya, B., *Indian Buddhist Iconography*, Calcutta: 1968.
 - [3] Brown, P., *Indian Architecture*, Vol. I, Calcutta: 1943.
 - [4] Dutt, S., *Buddhist Monks and Monasteries of India*, London: 1962.
 - [5] Goetz, Herman, *India: Five Thousand Years of Indian Art*, London: 1959.
 - [6] Mitchell, George, *The Penguin Guide to the Monuments of India*, Vol. I, London: 1989.
 - [7] Mitra, D., *Buddhist Monuments*, Calcutta: 1971.
 - [8] Rowland, B., *The Art and Architecture of India*, London: 1956.
- Sackel, Dietrich, *The Art of Buddhism*, London: 1964.



I-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

** OPEN ELECTIVE I

BUDDHIST ART AND ARCHITECTURE		Course Code: BSCU305	Credits: 2
No. of Lectures (Hrs./Week): 2	No. of Lectures (Sem.): 30	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

15. General Overviews of Art and Architecture
16. Nineteenth-Century Pioneers of Buddhist Archaeology
17. Nineteenth-Century Archaeological "Rediscovery" of Buddhism
18. Archaeology of the Buddha
19. The Buddhist Stūpa: Origin and Development of Stupa architecture
20. The Buddhist Griha or Shrine
21. The Buddhist Vihāra or Monastery
22. Types of Cetiya-gāhas and their architectural development
23. Buddhist Monasteries and Caves
24. Different Schools of Art with special reference to Gandhara, Mathura and Amaravati.
25. Art, Architecture & Sculpture of the Mauryan period
26. Kushanas: Growth of Art, Architecture & Literature
27. Guptas: Art, Architecture, Painting, Literature and Science
28. Expansion of Indian Culture in South-East Asia

Text Books:

- [9] Banerjee, J.N., *Hindu Iconography*, Calcutta.
- [10] Bhattacharyya, B., *Indian Buddhist Iconography*, Calcutta: 1968.
- [11] Brown, P., *Indian Architecture*, Vol. I, Calcutta: 1943.
- [12] Dutt, S., *Buddhist Monks and Monasteries of India*, London: 1962.
- [13] Goetz, Herman, *India: Five Thousand Years of Indian Art*, London: 1959.
- [14] Mitchell, George, *The Penguin Guide to the Monuments of India*, Vol. I, London: 1989.
- [15] Mitra, D., *Buddhist Monuments*, Calcutta: 1971.
- [16] Rowland, B., *The Art and Architecture of India*, London: 1956.
- [17] Sackel, Dietrich, *The Art of Buddhism*, London: 1964.



II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME												CBCS	CREDITS
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL						
L	T	P	CT	TA												
THEORY																
1	MA201	Engineering Mathematics III	3	1	0	10	15	25	50	100		FCC18	4			
2	IT203	Animation and Computer Graphics	3	1	0	10	15	25	50	100		C19	4			
3	IT205	Operating Systems	3	1	0	10	15	25	50	100		C20	4			
4	IT207	Data Structures	3	1	0	10	15	25	50	100		C21	4			
5	IT209	System Design & Analysis Techniques	3	1	0	10	15	25	50	100		C22	4			
PRACTICAL																
6	IT281	Animation & Computer Graphics Lab	0	0	2	20	30	0	50	100		C23	1			
7	IT283	Operating Systems Lab	0	0	2	20	30	0	50	100		C24	1			
8	IT285	Data Structures Lab	0	0	2	20	30	0	50	100		C25	1			
9	IT287	Web Technologies Lab I	0	0	2	20	30	0	50	100		SEC 1	1			
10	GP	General Proficiency											Non Credit			
SEMESTER TOTAL			15	5	8	325	125	125	450	900			24			
TOTAL CONTACT HOURS			28					28hrs.								

SKILL ENHANCEMENT COURSE (SEC)		
1	IT 285	Web Technologies Lab I

II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

ENGINEERING MATHEMATICS III		Course Code:MA201	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit I

Definition of differential equation (linear/nonlinear) with examples, order and degree of the differential equation, types of solutions of differential equations, methods of solution, variables separable method, exact differential equations, integrating factors of first order differential equation of the type $M(x, y)dx + N(x, y)dy = 0$, Bernoulli equations, Riccati differential equation, Picard's existence and uniqueness theorem for $dy/dx = f(x, y)$ (without proof)

Unit II

Linear differential equations of nth order with constant coefficients, solutions of homogeneous and non-homogeneous linear differential equations, complementary functions and particular integrals, Operator Method, simultaneous linear differential equations, Euler -Cauchy linear differential equations, method of variation of parameters, applications to engineering problems (Motion of a particle in resisting medium, simple harmonic motion, electric circuit problem).

Unit III

Existence theorem for Laplace transform, Laplace transform of derivatives and integrals, Inverse Laplace transform, Unit step function, Dirac delta function, Laplace transform of periodic functions, Convolution theorem, Application to solve linear and simultaneous differential equations.

Unit IV

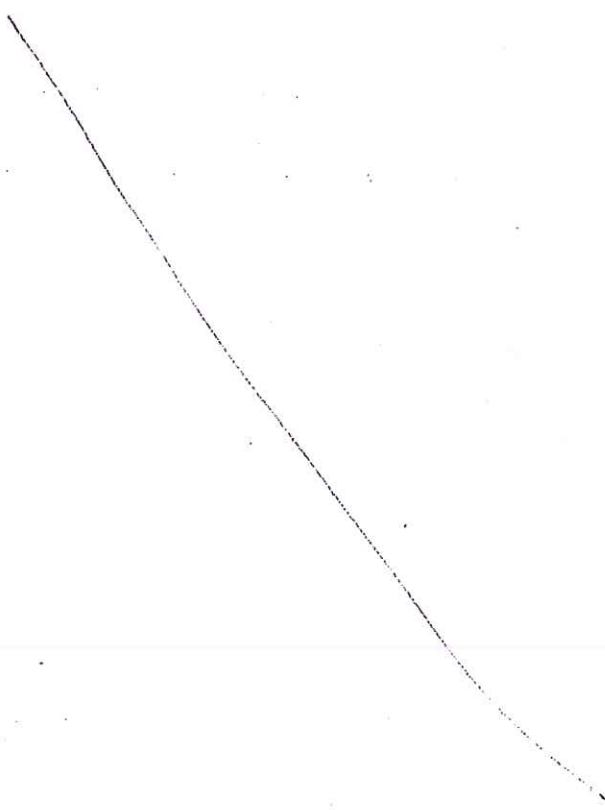
Periodic functions, Trigonometric series, Fourier series of period 2π , Euler's formulae, Functions having arbitrary period, Change of interval, Even and odd functions, Half range sine and cosine Fourier series,

Unit V

PDEs and its Applications: Linear partial differential equations with constant coefficients. Classifications of 2nd order PDE. Method of separation of variables for solving partial differential equations, its applications to solve Heat conduction equation, Wave equation, steady state heat equation (Laplace equation) through Fourier series.

Textbook:

[1] R. K. Jain & S.R.K Iyengar, Advanced Engineering Mathematics, Narosa Publications.



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II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

ANIMATION & COMPUTER GRAPHICS		Course Code: IT203	Credits:4
No. of Lectures (Hrs./Week):3+1	No. of Lectures (Sem.):60	Mid Sem: Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I INTRODUCTION

Application areas of Computer Graphics, overview of graphics systems, video-display devices, raster-scan systems, random scan systems, graphics monitors and work stations and input devices, Output primitives : Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary-fill and flood-fill algorithms

UNIT II 2-D GEOMETRICAL TRANSFORMS

Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems, 2-D viewing : The viewing pipeline, viewing coordinate reference frame, window to view-port coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm

UNIT III REPRESENTATION AND TRANSFORMATION

3-D object representation Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces, basic illumination models, polygon rendering methods, 3-D Geometric transformations: Translation, rotation, scaling, reflection and shear transformations, composite transformations, 3-D viewing: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping

UNIT IV VISIBLE SURFACE DETECTION METHODS

Classification, back-face detection, depth-buffer, scan-line, depth sorting, BSP-tree methods, area sub-division and octree methods. Tools of Multimedia: Paint and Draw Applications, Graphic effects and techniques, Image File Format, Anti-aliasing, Morphing, Multimedia Authoring tools, professional development tools.

UNIT V COMPUTER ANIMATION

Introduction and Principles of Animations, Power of Motion, Animation Techniques, Animation File Format, Making animation for Rolling Ball, making animation for a Bouncing Ball, Animation for the web, GIF, Plugins and Players, Animation tools for World Wide Web. Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

Text Books:

[1] Donald Hearn and M. Pauline Baker "Computer Graphics C version", Pearson Education.

References Books:

[2] Foley, VanDam, Feiner and Hughes, "Computer Graphics Principles & practice", II edition in C, Pearson Education.



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II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

Operating Systems		Course Code:IT205	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I INTRODUCTION TO OPERATING SYSTEM

Importance of operating systems, basic concepts and terminology about operating system, memory management, processor management, device management, information management functions.

UNIT II PROCESS MANAGEMENT

Elementary concept of process, job scheduler, process scheduling, operation on process, threads, overview, scheduling criteria, scheduling algorithms, algorithm evaluation process synchronization, synchronization hardware, semaphores, classical problem of synchronization, monitors and atomic transaction deadlocks: system model, deadlock characterization, deadlocks prevention, deadlocks avoidance, deadlocks detection, recovery from deadlock.

UNIT III MEMORY & STORAGE MANAGEMENT

Basic Memory Management: Definition, Logical and Physical address map, Memory allocation: Contiguous Memory allocation, partition, Fragmentation, Compaction, Paging, Segmentation.

Virtual Memory: Basics of virtual memory, Hardware and control structures-Locality of reference, Page fault, Demand paging, page replacement policies: First In First Out (FIFO), second chance (SC), Not recently used (NRU) and Least recently used (LRU).

UNIT IV UNIX/LINUX OPERATING SYSTEM: Development Of Unix/Linux, Role & Function Of Kernel; System Calls, Elementary Linux command & Shell Programming, Directory Structure, System Administration, Case study: Linux, Windows Operating System

UNIT V SECURITY & PROTECTION: Security Environment, Design Principles of Security, User authentication, Protection Mechanism: Protection Domain, Access Control List

Text Books:

- [1]. Galvin, Wiley, Operating Systems Concepts, 8th edition, 2009.
- [2]. James L Peterson, Operating Systems Concept, John Wiley & Sons Inc, the 6th edition, 2007.

Reference Books:

- [3]. Deitel H. M., An Introduction to Operating Systems, Addison-Wesley, 1990.
- [4]. Stallings William, Operating Systems, PHI, New Delhi, 1997.
- [5]. S. Tanenbaum Modern Operating Systems, Pearson Education, 3rd edition, 2007.
- [6]. Nutt, Operating System, Pearson Education, 2009.
- [7]. S. Tanenbaum, Distributed Operating Systems, Prentice Hall, 2nd edition, 2007.

II-YEAR (II-SEMESTER)
(Effective from session: 2016-17)

DATA STRUCTURES		Course Code:IT207	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End-Sem. Exam (Hrs.):3

UNIT I INTRODUCTION TO DATA STRUCTURES: Abstract data types, sequences as value definitions, data types in C, pointers in C, data structures and C, arrays in C, array as ADT, one dimensional array, Implementing one dimensional array, array as parameters, two dimensional array, structures in C, implementing structures, Unions in C, implementation of unions, structure parameters, allocation of storage and scope of variables, recursive definition and processes: factorial function, fibonacci sequence, recursion in C, efficiency of recursion, hashing: hash function, open hashing, closed hashing: linear probing, quadratic probing, double hashing, rehashing, extendible hashing.

UNIT II STACK, QUEUE AND LINKED LIST: Stack definition and examples, primitive operations, example -representing stacks in C, push and pop operation implementation, queue as ADT, C Implementation of queues, insert operation, priority queue, array implementation of priority queue, inserting and removing nodes from a list-linked implementation of stack, queue and priority queue, other list structures, circular lists: stack and queue as circular list - primitive operations on circular lists, header nodes, doubly linked lists, addition of long positive integers on circular and doubly linked list.

UNIT III TREES: Binary trees: operations on binary trees, applications of binary trees, binary tree representation, node representation of binary trees, implicit array representation of binary tree, binary tree traversal in C, threaded binary tree, representing list as binary tree, finding the Kth element, deleting an element, trees and their applications: C representation of trees, tree traversals, evaluating an expression tree, constructing tree.

UNIT IV SORTING AND SEARCHING: General background of sorting: efficiency considerations, notations, efficiency of sorting, exchange sorts: bubble sort; quick sort; selection sort; binary tree sort; heap sort, heap as a priority queue, sorting using a heap, heap sort procedure, insertion sorts: simple insertion, shell sort, address calculation sort, merge sort, radix sort, sequential search: indexed sequential search, binary search, interpolation search.

UNIT V GRAPHS: Application of graph, C representation of graphs, transitive closure, Warshall's algorithm, shortest path algorithm, linked representation of graphs, Dijkstra's algorithm, graph traversal, traversal methods for graphs, spanning forests, undirected graph and their traversals, depth first traversal, application of depth first traversal, efficiency of depth first traversal, breadth first traversal, minimum spanning tree, Kruskal's algorithm, round robin algorithm.

Text Books:

[1]. Aaron M. Tenenbaum, Yeedidiah Langsam, Moshe J. Augenstein, 'Data structures using C', Pearson Education, 2004 / PHI.

References Books:

[2]. E. Balagurusamy, 'Programming in Ansi C', 2nd Edition, TMH, 2003.

[3]. Robert L. Kruse, Bruce P. Leung Clovis L.Tondo, 'Data Structures and Program Design in C' Pearson Education, 2000 / PHI.

II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

SYSTEM DESIGN AND ANALYSIS TECHNIQUES		Course Code: IT209	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I DATA AND INFORMATION

Types of information: operational, tactical, strategic and statutory, why do we need information systems, management structure, requirements of information at different levels of management, functional allocation of management, requirements of information for various functions, qualities of information, small case study.

UNIT II SYSTEMS ANALYSIS AND DESIGN LIFE CYCLE

Requirements determination, requirements specifications, feasibility analysis, final specifications, hardware and software study, system design, system implementation, system evaluation, system modification, role of systems analyst, attributes of a systems analyst, tools used in system analysis

UNIT III INFORMATION GATHERING

Strategies, methods, case study, documenting study, system requirements specification, from narratives of requirements to classification of requirements as strategic, tactical, operational and statutory.

UNIT IV FEASIBILITY ANALYSIS

Deciding project goals, examining alternative solutions, cost benefit analysis, quantifications of costs and benefits, payback period, system proposal preparation for managements, parts and documentation of a proposal, tools for prototype creation.

UNIT V TOOLS FOR SYSTEMS ANALYSTS

Data flow diagrams, case study for use of DFD, good conventions, leveling of DFDs, leveling rules, logical and physical DFDs, software tools to create DFDs, decision tables for complex logical specifications, specification oriented design vs procedure oriented design

Text Books:

- [1]. Elias M. Awad., System Analysis and Design.
- [2]. Perry Edwards, System Analysis and Design.

Reference Books:

- [3]. James A. Senn, Analysis and Design of Information Systems.



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II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

ANIMATION & COMPUTER GRAPHICS LAB		Course Code: IT281	Credits:1
No. of Lab (Hrs./Week):1	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.):3

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Procedure to create an animation to represent the growing moon.
2. Procedure to create an animation to indicate a ball bouncing on steps.
3. Procedure to simulate movement of a cloud.
4. Procedure to draw the fan blades and to give proper animation.
5. Procedure to display the background given (filename: tulip.jpg) through your name.
6. Procedure to display the background given (filename: garden.jpg) through your name using mask.
7. Procedure to create an animation with the following features.
WELCOME (Letters should appear one by one .The fill color of the text should change to a different colour after the display of the full word.)
8. Procedure to simulate a ball hitting another ball.
9. Procedure to design a visiting card containing at least one graphic and text information.
10. Procedure to take a photographic image. Give a title for the image. Put the border. Write your names. Write the name of institution and place.
11. Procedure to prepare a cover page for the book in your subject area. Plan your own design.
12. Procedure to extract the flower only from given photographic image and organize it on a background. Selecting your own background for organization.
13. Procedure to change a circle into a square using flash.
14. Procedure to display the background given (FILENAME: GARDEN.JPG) through your name using.



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II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

Operating Systems Lab		Course Code:IT283	Credits:1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.):10	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.):2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Program for file handling.
2. Program for Dining Philosophers Problem.
3. Program for Producer – Consumer Problem concept.
4. Program for First Come First Serve Algorithm.
5. Program for Shortest Job First Scheduling Algorithm.
6. Program for Round Robin Scheduling Method.
7. Program for Priority Scheduling Algorithm.
8. Implement the concept of Fragmentation and Defragmentation.
9. Design and develop an Android App.



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II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

DATA STRUCTURES LAB		Course Code:IT285	Credits:1
No. of Lab (Hrs./Week):2	No. of Lab Sessions (Sem.):10	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.):2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Run time analysis of Fibonacci Series
2. Study and Application of various data Structure
3. Study and Implementation of Array Based Program
 - a. Searching (Linear Search, Binary Search)
 - b. Sorting (Bubble, Insertion, Selection, Quick, Merge etc)
 - c. Merging
4. Implementation of Link List
 - a. Creation of Singly link list, Doubly Linked list
 - b. Concatenation of Link list
 - c. Insertion and Deletion of node in link list
 - d. Splitting the link list into two link list
5. Implementation of STACK and QUEUE with the help of
 - a. Array
 - b. Link List
6. Implementation of Binary Tree, Binary Search Tree, Height Balance Tree
7. Write a program to simulate various traversing Technique
8. Representation and Implementation of Graph
 - a. Depth First Search
 - b. Breadth First Search
 - c. Prims Algorithm
 - d. Kruskal's Algorithms
9. Implementation of Hash Table.



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II-YEAR (III-SEMESTER)
(Effective from session: 2016-17)

WEB TECHNOLOGIES LAB I		Course Code: IT287	Credits:1
No. of Lab (Hrs/Week):2	No. of Lab Sessions (Sem.):10	Mid Sem. Exam (Hrs):0	End Sem. Exam (Hrs):2

In this lab programs related to XML and HTML.



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II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

S.No	COURSE CODE	SUBJECT	EVALUATION SCHEME										CBCS	CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL					
			L	T	P	CT	TA								
THEORY															
1.	EC230	Digital Communication & Coding	3	1	0	10	15	25	50	100	C26	4			
2.	CS202	Software Engineering	3	1	0	10	15	25	50	100	C27	4			
3.	CS204	Discrete Structure	3	1	0	10	15	25	50	100	FC-C28	4			
4.	CS206	Data Base Management System	3	1	0	10	15	25	50	100	C29	4*			
5.	EC221	Fundamentals Digital Electronic Circuits	3	1	0	10	15	25	50	100	FC-C30	4			
PRACTICAL															
6.	EC273	Digital Electronics Circuits Lab	0	0	2	20	30	0	50	100	FC-C31	1			
7.	CS282	Software Engineering Lab	0	0	2	20	30	0	50	100	C32	1			
8.	CS284	Database Management System Lab	0	0	2	20	30	0	50	100	C33	1			
9.	IT282	Web Technologies Lab II	0	0	2	20	30	0	50	100	SEC2	1			
10.	GP	General Proficiency										Non Credit			
SEMESTER TOTAL CREDITS			15	5	8	325	125	450	900			24			
TOTAL CONTACT HOURS			28									28hrs.			

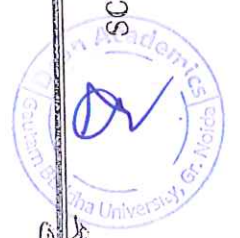
SKILL ENHANCEMENT COURSE (SEC)	
1	IT 282 Web Technologies Lab II

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II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

DIGITAL COMMUNICATION AND CODING		Course Code: EC230	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

Unit I: Signals and their classification, Fourier Transforms and their properties, Modulation Theorem, Convolution Theorems, Frequency Spectrum, Autocorrelation Cross correlation and their Properties, Energy Spectral Density, Power Spectral Density, Condition of Distortionless Transmission.

Modulation, Needs of Modulation, Types of modulation: AM, FM and PM (equations of modulated wave, modulation index, bandwidth requirements, effect of noise)

Unit II: Sampling of Signal, Sampling Theorem for Low Pass and Band Pass Signals, Aliasing, Pulse Modulation: PAM, PM and PWM, Time Division Multiplexing, Channel Bandwidth for PAM-TDM Signal, Types of Sampling: Instantaneous, Natural and Flat Top, Aperture Effect

Unit II: Pulse Code Modulation: Quantization: Uniform and Non-Uniform, Quantization Error, Signal-to-Noise Ratio in PCM, Companding: A-Law and μ -Law, Data Rate and Bandwidth of Multiplexed PCM Signal, Digital Hierarchy (T_0 , T_1 , T_2 , T_3 and T_4), Inter-symbol Interference, Differential PCM, Delta Modulation, Adaptive Delta Modulation, Slope Overload Error, Granular Noise. Line Coding: Unipolar RZ and NRZ, Bipolar RZ and NRZ, AMI, Split Phase etc. Properties for the selection of Line Codes, HDB Signaling, B8ZS Signaling, Inter-symbol Interference, Nyquist Criteria for Zero ISI, Differential Coding, Regenerative Repeaters, Eye Diagram.

Unit III: Digital Modulation Techniques:- Analysis, Generation and Detection, Spectrum and Bandwidth of Amplitude Shift Keying, Binary Phase Shift Keying, Differential Phase Shift Keying, Quadrature Phase Shift Keying, M-ary PSK, Binary Frequency Shift Keying, M-ary FSK, Quadrature Amplitude Modulation, Probability of error, bit error rate, Matched Filters.

Unit IV: Information, Amount of Information, Unit of Information, Average Information or Entropy, Information Rate, Joint and Conditional Entropy, Discrete Memoryless Channel-Channel representation, channel matrix, properties of channel matrix, Special channels-(Lossless, Deterministic, Noiseless, Binary Symmetric Channel, Binary Channel, Binary Erasure Channel), Mutual Information and Channel Capacity, Mutual Information and Channel Capacity for Special Channels. Coding to increase Average Information per Bit, Shannon's Theorem & Its Application, Capacity of Gaussian Channel, Shannon Hartley Theorem, Bandwidth & S/N Trade off.

Unit V: Source Coding Techniques: Shannon Fano and Huffman Coding Algorithms and Coding Efficiency, Fixed Length Codes, Variable Length Codes, Distinct Code, Prefix-free Codes, Uniquely Decodable Codes, Error Control Coding: Linear Block Codes, Systematic Linear Blocks Codes, Parity Check Matrix, Syndrome Testing, Cyclic code, Hamming Code, Error Detection and Correction Codes, Convolution Codes: State Diagram, Tree Diagram and Trellis Diagram, Maximum Likelihood Decoding, Viterbi decoding.

Text Books:

- [1] Taub & Schilling: Principles of Communication system, TMH.
- [2] Lathi B.P.: Modern Analog and Digital Communication systems, Oxford Uni. Press.

References:

- [1] Haykin Simon: Digital Communication, Wiley Publication.
- [2] B. Sklar: Digital Communication, Pearson Education
- [3] Proakis: Digital communication, McGraw Hill
- [4] Schaum's Outline series: Analog and Digital Communication.

- [5] Tomasi: Advanced Electronics Communication Systems, 6th Edition, PHI
- [6] Singh and Sapre: Communication System, TMH
- [7] Couch: Digital and Analog Communication, Pearson Education.



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II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

SOFTWARE ENGINEERING		Course Code: CS202	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I SOFTWARE ENGINEERING

Introduction to software engineering: definitions, role of software engineering, planning a software project, defining the problem, developing a solution strategy, planning the development process, software engineering process paradigms, principles of software engineering, software engineering activities.

UNIT II REQUIREMENT ANALYSIS AND DESIGN

Software Requirement Specification (SRS): Introduction, need of SRS, significance, characteristics of SRS, Structure of SRS, IEEE standards for SRS design, functional and non-functional requirements, Requirement gathering and analysis, requirement engineering and management.

UNIT III SOFTWARE DESIGN PROCESS

Software Design: Introduction, design process activities: architectural design, Abstract specification, Interface design, component design, data structure design, algorithm design modular approach, top-down design, bottom-up design, design methods: data-flow model: data flow diagram, entity-relation-attribute model: E-R diagram, structural model: structure charts, context diagrams, objectmodels: use case modeling, use case diagrams, sequence diagrams, cohesion and coupling.

UNIT IV SOFTWARE LIFE CYCLE MODELS

Software Development Life Cycle (SDLC), SDLC models, waterfall model and its variations, prototype model, iterative enhancement model, spiral model, RAD model, comparison of these models, software development teams, software development environments, validation and traceability, maintenance, prototyping requirements, Software project management.

UNIT V SOFTWARE TESTING AND MAINTENANCE

Testing Methods: unit testing, integration testing, system testing, acceptance testing, testing techniques: white box testing, black box testing, thread testing, regression testing, alpha testing, beta testing, static testing, dynamic testing, Evolution of software products, economics of maintenance, category of software maintenance, Role of product development life cycle, deployment model, adaptive maintenance, corrective maintenance, perfective maintenance, enhancement request, proactive defect prevention, problem reporting, problem resolution, software maintenance from customers' perspective, maintenance standard: IEEE-1219, ISO-12207.

Text Books:

- [1] Pankaj Jalote, An Integrated Approach to Software Engineering, Narosa Publishing House, New Delhi 1997.
- [2] Ian Sommerville, Software Engineering, Pearson Education, 2009.

Reference Books:

- [3] Pressman Roger S., Software Engineering: Practitioner's Approach, McGraw-Hill Inc., 2004.
- [4] Nasib S. Gill, Software Engineering: Software Reliability, Testing and Quality Assurance, Khanna Book Publishing Co (P) Ltd., 2002.



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

DISCRETE STRUCTURE		Course Code: CS204	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I MATHEMATICAL LOGIC

Statements and notations, connectives, well formed formulas, truth tables, tautology, equivalence implication, normal forms, predicates: predicative logic, free & bound variables, rules of inference, consistency, proof of contradiction, automatic theorem proving.

UNIT II SET THEORY

Properties of binary relations, equivalence, compatibility and partial ordering relations, hasse diagram. functions: inverse function comports of functions, recursive functions, lattice and its properties, pigeon hole principles and its application, algebraic structures: algebraic systems examples and general properties, semi groups and monads, groups sub groups' homomorphism, isomorphism.

UNIT III ELEMENTARY COMBINATORICS

Basis of counting, combinations & permutations, with repetitions, constrained repetitions, binomial coefficients, binomial multinomial theorems, the principles of inclusion – exclusion.

UNIT IV RECURRENCE RELATION

Generating functions, function of sequences calculating coefficient of generating function, recurrence relations, solving recurrence relation by substitution and generating funds, characteristics roots solution of in homogeneous recurrence relation.

UNIT V GRAPH THEORY

Representation of graph, DFS, BFS, spanning trees, planar graphs. graph theory and applications, basic concepts isomorphism and sub graphs, multi graphs and euler circuits, hamiltonian graphs, chromatic numbers

Text Books:

- [1].Ralph. P.Grimaldi, Discrete and Combinational Mathematics- An Applied Introduction-5th Edition, Pearson Education
- [2]. Trembly J.P. & ManoharP. Discrete Mathematical Structures with applications to computer science, TMH
- [3].Kenneth H. Rosen, Discrete Mathematics and its Applications, Fifth Edition,TMH.

Reference Books:

- [4].Thomas Koshy, Discrete Mathematics with Applications, , Elsevier
- [5]. Bernand Kolman, Roberty C. Busby, Sham Cutter Ross,Discrete Mathematical Structures, Pearson Education/PHI.
- [6]. Garry Haggard and others, Discrete Mathematics for Computer science, , Thomson.
- [7] J.L. Mott, A. Kandel, T.P. Baker,Discrete Mathematics for Computer Scientists & Mathematicians, Prentice Hall.



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II-YEAR (IV-SEMESTER)

(Effective from session: 2016-17)

DATABASE MANAGEMENT SYSTEM		Course Code: CS206	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I DATA BASE SYSTEM

Data base system vs. file system, view of data, data abstraction, instances and schemas, data models, ER model, relational model, database languages, DDL, DML, database access for applications programs, data base users and administrator, transaction management, data base system structure, storage manager, query processor, history of data base systems, data base design and ER diagrams, beyond ER design entities, attributes and entity sets, relationships and relationship sets, additional features of ER model, concept design with the ER model, and conceptual design for large enterprises.

UNIT II RELATIONAL MODEL

Introduction to the relational model, integrity constraint over relations, enforcing integrity constraints, querying relational data, and logical data base design/destroying /altering tables and views. relational algebra and calculus: relational algebra, selection and projection set operations, renaming, joins, division, relational calculus, tuple relational calculus, domain relational calculus, expressive power of algebra and calculus.

UNIT III BASIC SQL QUERY

Examples of basic SQL queries, nested queries, correlated nested queries set, comparison operators, aggregative operators, NULL values, comparison using null values, logical connectivity's, AND, OR and NOTR, impact on SQL constructs, outer joins, disallowing NULL values, complex integrity constraints in SQL triggers and active data bases.

UNIT IV SCHEMA REFINEMENT

Problems caused by redundancy, decompositions, problem related to decomposition, reasoning about FDS, FIRST, SECOND, THIRD normal form, BCNF, forth normal form, lossless join decomposition, dependency preserving decomposition, schema refinement in data base design, multi valued dependencies.

UNIT V OVERVIEW OF TRANSACTION MANAGEMENT

\CID properties, transactions and schedules, concurrent execution of transaction, lock based concurrency control, performance locking, and transaction support in SQL, crash recovery, concurrency control, Serializability and recoverability, lock management, lock conversions, dealing with dead locks, specialized locking techniques, concurrency without locking, crash recovery: ARIES, log, other recovery related structures, the write, ahead log protocol, check pointing, recovering from a system crash, media recovery, other approaches and interaction with concurrency control.

Text Books:

- [1] Elmasri Navrate, Data Base Management System, Pearson Education, 2008.
- [2] Raghurama Krishnan, Johannes Gehrke, Data Base Management Systems, TMH, 3rd edition, 2008.

References Books:

- [3] C. J. Date, Introduction to Database Systems, Pearson Education, 2009.
- [4] Silberschatz, Korth, Database System Concepts, McGraw hill, 5th edition, 2005.
- [5] Rob, Coronel & Thomson, Database Systems Design: Implementation and Management, 2009.



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II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

FUNDAMENTALS OF DIGITAL ELECTRONICS CIRCUITS		Course Code: EC221	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I

Number systems & codes, Binary arithmetic Boolean algebra and switching function. Minimization of switching function, concept of prime implicant etc. Karnaugh's map method, Quine & McCluskey's method, cases with don't care terms and multiple outputs switching function. Logic gates, NAND, NOR realization of switching function; half-adder half-subtractor full-adders full-subtractor circuits. Series & parallel addition and BCD adders, look-ahead carry generator.

UNIT II

Linear wave shaping circuits, Bistable, monostable & astable multivibrators, Schmitt trigger circuits. Introduction to D/A converters. Various types of Analog to Digital & Digital to Analog converters sample & hold circuits and V-F converters.

UNIT III

Logic families: RTL, DTL, all types of TTL circuits, ECL, 12 L and PMOS, NMOS & CMOS logic etc. Gated flip-flops and gated multivibrators etc; Interfacing between TTL to MOS, vice-versa.

UNIT IV

Introduction to shift registers / ring counters synchronous & asynchronous counters and designing of combinational circuits like code converters & counters etc.

UNIT V

Semiconductor memories & designing with ROM and PLA: Decoders Encoders multiplexers & demultiplexers.

Text Books:

- [1] Tocci, "Digital Systems Principles & Applications".
- [2] M. Mano, "Digital Logic & Computer Design", (PHI).
- [3] Dr. A K Gautam, Digital Electronics, Khanna Publication

Reference Books:

- [1] John F. Wakerly, Digital Design: Principles & Practices, Pearson Education.2003
- [2] Richard F.Tinder, Engineering Digital Design, 2/e, Harcourt India Private Ltd., 2001
- [3] William I. Fletcher, An Engineering Approach to Digital Design, Pearson Education
- [4] William H.Gothmann, Digital Electronics: An Introduction to Theory and Practice, Eastern Economy Edition, Prentice-Hall of India Private Limited, New Delhi. 2001.
- [5] Jacob Millman & Herbert Taub,Pulse,Digitaland Switching Waveforms,13th Reprint,Tata McGraw Hill Publishing Company Ltd., 1999



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II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

DIGITAL ELECTRONIC CIRCUITS LAB		Course Code:EC273	Credits:1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.):2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. To verify the De-Morgan's theorems using NAND/NOR gates.
2. To design the full adder and half adder using AND, OR and X- OR gates.
3. To implement the logic circuits using decoder.
4. To implement the logic circuits using multiplexer.
5. To design parity generator and checker circuits.
6. To design and implement RS FLIP FLOP using basic latches.
7. Realization and testing of basic logic gates using discrete components.
8. Realization and testing of CMOS IC characteristics.
9. Realization and testing of TTL IC characteristics.
10. Realization and testing of RAM circuit using IC 7489.
11. Realization and testing of Interfacing of CMOS- TTL and TTL- CMOS ICS.



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II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

SOFTWARE ENGINEERING LAB		Course Code: CS282	Credits:1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 10	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments

1. Introduction and project definition.
2. Software process overview with configuration management tool.
3. Design the software requirements by using Requisite Pro.
4. Introduction to UML and use case diagrams with the help of Rational Rose.
5. System modeling and design of DFD and ER diagram.
6. Design of Flow of events and activity diagram by using Rational Rose.
7. OO analysis and discovering classes with the help of Requisite Pro.
8. Design the Interaction diagrams, sequence and collaboration diagrams with the help of software engineering tool.
9. Software architecture and object-oriented design by using Rational Rose.
10. Draw the traceability matrix with the help of designing the requirements and feature matrix



II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

DATABASE MANAGEMENT SYSTEM LAB		Course Code: CS284	Credits:1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 10	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Introduction to MySQL, an exercise of data types in MySQL & Data Definition Language Commands
2. Exercise on Data Manipulation Language and Transaction Control Commands
3. Exercise on Types of Data Constraints
4. Exercise on JOINS (Single-Table) Using Normalization
5. Exercise on JOINS (Multiple-Table) Using Normalization
6. Exercise on GROUP BY/ORDER BY Clause and Date Arithmetic
7. Exercise on different Functions (Aggregate, Math and String)
8. Exercise on different types of sub queries
9. Procedures
10. View
11. Triggers



II-YEAR (IV-SEMESTER)
(Effective from session: 2016-17)

WEB TECHNOLOGIES LAB II		Course Code: IT282	Credits:1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 12	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

NOTE: Suggested list of experiments but not limited to these only.

Note: Experiments of this lab will be based on Implementation through .NET/PHP.

List of Experiments

1. WAP to demonstrate the string handling.
2. WAP to demonstrate array handling.
3. WAP to demonstrate the form handling.
4. WAP to demonstrate the file handling and uploading.
5. WAP to demonstrate the exception handling.
6. WAP to demonstrate the cookie handling and session handling.
7. WAP to demonstrate the E-mail sending.
8. WAP to demonstrate the database connectivity (MS-Access, Sql Server, MySQL).
9. WAP to demonstrate the use of filter in PHP.
10. WAP to demonstrate the OOPs concepts.
11. WAP to create a login page and authenticate login credentials with backend.
12. Design a web page using PHP and host it to hosting server (may be used hostinger server).



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III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CBCS	CREDITS
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL				
			L	T	P	CT	TA							
THEORY														
1	CS301	Theory of Automata	3	1	0	10	15	25	50	100	C34	4		
2	IT303	Computer Networks	3	1	0	10	15	25	50	100	C35	4		
3	IT305	Compiler Design	3	1	0	10	15	25	50	100	C36	4		
4	IT307	Computer Programming III	3	1	0	10	15	25	50	100	C37	4		
5		Open Elective 2	3	1	0	10	15	25	50	100	OE2	4		
PRACTICAL														
6	IT383	Computer Networks Lab	0	0	2	20	30	0	50	100	C38	1		
7	IT385	Compiler Design Lab	0	0	2	20	30	0	50	100	C39	1		
8	IT387	Computer Programming III Lab	0	0	2	20	30	0	50	100	C40	1		
9	IT389	Web Technologies Lab III	0	0	2	20	30	0	50	100	SEC3	1		
10	GP	General Proficiency												Non Credit
SEMESTER TOTAL CREDITS			15	5	8	325		125	450	900		24		
TOTAL CONTACT HOURS			28										28hrs.	

OPEN ELECTIVE (OE2)		
1	IT311	Industrial Economics and Management
2	SW505	Introduction to Social Work
3	LB411	Right to Information and Public Accountability
4	IT309	IT Forensics

SKILL ENHANCEMENT COURSE (SEC)		
1	IT389	Web Technologies Lab III



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III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

THEORY of AUTOMATA		Course Code: CS301	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I AUTOMATA

Introduction; alphabets, strings and languages; automata and grammars, deterministic finite automata (DFA)-formal definition, simplified notation: state transition graph, transition table, language of DFA, Nondeterministic finite Automata (NFA), NFA with epsilon transition, language of NFA, equivalence of NFA and DFA, minimization of finite automata, distinguishing one string from other, Myhill-Nerode Theorem

UNIT II REGULAR EXPRESSIONS AND LANGUAGES

Regular expression (RE), definition, operators of regular expression and their precedence, algebraic laws for regular expressions, Kleene's theorem, regular expression to FA, DFA to regular expression, arden theorem, non regular languages, pumping lemma for regular languages. application of pumping lemma, closure properties of regular languages, decision properties of regular languages, FA with output: moore and mealy machine, equivalence of moore and mealy machine, applications and limitation of FA.

UNIT III CONTEXT-FREE GRAMMAR AND LANGUAGES

Context Free Grammar (CFG) and Context Free Languages (CFL): definition, examples, derivation, derivation trees, ambiguity in grammar, inherent ambiguity, ambiguous to unambiguous CFG, useless symbols, simplification of CFGs, normal forms for CFGs: CNF and GNF, closure properties of CFLs, decision properties of CFLs: emptiness, finiteness and membership, pumping lemma for CFLs.

UNIT IV PUSH DOWN AUTOMATA

Push Down Automata (PDA): description and definition, instantaneous description, language of PDA, acceptance by final state, acceptance by empty stack, deterministic PDA, equivalence of PDA and CFG, CFG to PDA and PDA to CFG, two stack PDA

UNIT V TURING MACHINES (TM)

Basic model, definition and representation, instantaneous description, language acceptance by TM, variants of turing machine, TM as computer of integer functions, universal TM, church's thesis recursive and recursively enumerable languages, halting problem, introduction to undecidability, undecidable problems about TMs. Post Correspondence Problem (PCP), modified PCP, introduction to recursive function theory.

Text Books:

1. Hopcroft, Ullman, "Introduction to Automata Theory, Languages and Computation", Pearson Education
2. K.L.P. Mishra and N.Chandrasekaran, "Theory of Computer Science : Automata, Languages and Computation", PHI

References Books:

3. Martin J. C., "Introduction to Languages and Theory of Computations", TMH
4. Papadimitriou, C. and Lewis, C.L., "Elements of the Theory of Computation", PHI

III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

COMPUTER NETWORKS		Course Code:IT303	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I INTRODUCTION AND PHYSICAL LAYER

Key concepts of computer network, transmission media, network devices, network topology, topology design issues, types of network: LAN, MAN, WAN, PAN, ISDN systems and ATM network, OSI-reference model, open system standards, characteristics of network, TCP/IP model, protocols and standards, encoding technique.

UNIT II SWITCHING AND DATA LINK LAYER

Circuit switching, packet switching, message switching, hybrid switching, and ATM switching, multiplexing techniques: TDMA, FDMA, WDMA, CDMA, data link layer: LLC & MAC level protocols and design issues, issues IEEE 802 LAN Standards, framing, CRC, error control, flow control, HDLC, ALOHA and performance issues. Frames relay networks and performance parameters.

UNIT III NETWORK LAYER

Network layer design issues, overview of IPv4 and IPv6, addressing: class full and classless, static and dynamic, subnet and super net, auto configuration through DHCP, routing protocols: RIP, DVR, LSR, OSFP, BGP, congestion control algorithm, subnet concept, virtual LAN, ICMP, multicasting, mobile IP.

UNIT IV TRANSPORT LAYER

Port addressing schemes, connectionless and connection oriented services: TCP and UDP, wireless TCP, Congestion control, queue management, NAT, PAT, socket format at transport level, socket interface and programming.

UNIT V APPLICATION LAYER

Client server architecture, domain name services, application services: HTTP, TELNET, RLOGIN, FTP, CBR, NFS, SMTP, POP, IMAP, MIME, voice and video over IP, social issues- privacy, freedom of speech, copy right.

Text Books:

- [1]. S. Tanenbaum, Computer Networks, 4th edition, Prentice Hall, 2008
- [2]. Forouzan, B.A., Data Communication and Networking, Tata McGraw-Hill.

References Books:

- [3]. W. Stallings, Data and Computer Communications, 8th edition, Prentice Hall, 2007
- [4]. Douglas E. Comer TCP/IP Principles, Protocols and Architecture, Pearson Education
- [5]. F. Haball, Data Communication, Computer network & open systems - Computer Networks : An Engineering approach - S. Keshav
- [6]. Kurose, J.F. & Ross, K.W., Computer Networking: A Top-Down Approach Featuring the Internet, Addison Wesley.

III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

Compiler Design		Course Code: IT305	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I INTRODUCTION TO COMPILER

Phases of Compilation – Lexical Analysis, Regular Grammar and regular expression for common programming language features, pass and Phases of translation, interpretation, bootstrapping, data structures in compilation – LEX lexical analyzer generator.

UNIT II PARSING TECHNIQUE

Context free grammars, Top down parsing – Backtracking, LL (1), recursive descent parsing, Predictive parsing, Preprocessing steps required for predictive parsing.

Bottom up parsing: Shift Reduce parsing, LR and LALR parsing, Error recovery in parsing , handling ambiguous grammar..

UNIT III SYNTAX-DIRECTED TRANSLATION

Semantic analysis : Intermediate forms of source Programs – abstract syntax tree, polish notation and three address codes, Syntax directed translation, Conversion of popular Programming languages language Constructs into Intermediate code forms, Type checker.

Symbol Tables: Symbol table format, organization for block structures languages, hashing, tree structures representation of scope information. Block structures and non-block structure storage allocation: static, Runtime stack and heap storage allocation, storage allocation for arrays.

UNIT IV SYMBOL TABLES

Code optimization: Consideration for Optimization, Scope of Optimization, local optimization, loop optimization, frequency reduction, folding, DAG representation.

Data flow analysis: Flow graph, data flow equation, global optimization, redundant sub expression elimination, Induction variable elements, Live variable analysis, Copy propagation.

UNIT V CODE GENERATION

Object code generation: Object code forms, machine dependent code optimization, register allocation and assignment generic code generation algorithms, DAG for register allocation.

Text Books:

- [1]. Aho, Sethi & Ullman, "Compilers: Principles, Techniques and Tools", Pearson Education
- [2]. V Raghvan, " Principles of Compiler Design", TMH

Reference Books:

- [3]. Kenneth Loudon, " Compiler Construction", Cengage Learning.
- [4]. Charles Fischer and Ricard LeBlanc, " Crafting a Compiler with C", Pearson

III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

COMPUTER PROGRAMMING III		Course Code:IT307	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I JAVA BASICS REVIEW

Java history, Java features, Java streaming, Java and Internet, Java contribution to Internet: Java applets, security, portability; Java environment, Java library, Java program structure, Java Virtual Machine (JVM) architecture, Just In Time compiler (JIT), data type, variables and arrays, operators, control statements, object-oriented paradigms: abstraction, encapsulation, inheritance, polymorphism; Java class and OOP implementation, packages and interfaces, multithreading.

UNIT II DISTRIBUTED COMPUTING

Collection framework, custom sockets, Remote Method Invocation (RMI), activation, object serialization, distributed garbage collection, RMI-IIOP (Internet Inter ORB (Object Request Broker) Protocol), interface definition language, JINI, Common Object Request Broker Architecture (CORBA), Java Data Base Connectivity (JDBC), Servlets.

UNIT III JAVA BEANS AND SWING

Bean concepts, bean writing process, bean to build application: packaging beans in Java Archive (JAR) file, composing beans in a builder environment; naming patterns for bean properties and events, bean property types, files events in bean box, bean customization, persistence, application, origin of swing, swing and Abstract Window Toolkit (AWT), deployment using swing, advanced swing techniques, JAR file handling, exploring swings, advanced swing.

UNIT IV JAVA ENTERPRISE APPLICATIONS

Java Native Interface (JNI) technology, Java Servlet, Java Server Pages (JSP), JDBC, session beans, entity beans, Enterprise Java Beans (EJB), programming and deploying EJB, Java transactions, Java 2 Enterprise Editions (J2EE), J2EE design pattern, J2EE architecture, J2EE components and containers, J2EE services, Unified Modeling Language (UML), Extensible Markup Language (XML).

UNIT V STRUTS, HIBERNATE AND SPRING

Struts 2 frameworks, working with struts 2 actions, adding workflow with interceptors, data transfer, struts tags, user interface tags, integration with spring and hibernate, exploring the validation framework, internationalization, hibernate, hibernate architecture, hibernate configuration, creating persistent classes, mapping inheritance with Java classes, working with collections, persistent objects, scalar queries and hibernate query language, hibernate caching, hibernate transactions and locking, hibernate and XDOCLET, hibernate and eclipse, spring, basic bean wiring, advanced bean wiring, spring and EJB, spring with JDBC.

Books:

1. Core JAVA: Advance Features, Hortsman, Cornell, Pearson Education, 2009.
2. Programming with JAVA, E. Balagurusawamy, Tata McGraw Hill, 1998.

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Reference Books:

3. JAVA Beginner's guide, Herbert Schildt, Tata McGraw Hill, 2007.
4. Java How to Program, Deitel & Deitel, Prentice-Hall, 1999.
5. The Complete Reference JAVA 2, Herbert Schildt, 7th Edition, Tata McGraw Hill, 2009.
6. The Complete Reference J2EE, James Keogh, Tata McGraw Hill, 2002
7. The Complete Reference Struts, James Holmes, Tata McGraw Hill, 2007.
8. Swings: A Beginners' Guide, Herbert Schildt, Tata McGraw Hill, 2006.
9. Hibernate: A Developer's Notebook, James Elliott, O'Reily Media Inc, 2004.
10. The JAVA Handbook, Patrick Naughton, Michael Morrison, Osborne/McGraw-Hill, 1996.
11. The Java Programming Language, Ken Arnold, James Gosling, Addison-Wesley, 1996.
12. Professional Java Development with the Spring Framework, Rod Johnson, Jorgen Hoeller, Alef Arendsen, Thomas Risberg, Colin Sampaleanu, Wrox, 2005.



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III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

COMPUTER NETWORKS LAB		Course Code:IT385	Credits:1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 10	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.): 2

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Introduction to transmission media(CAT5, OFC, COAXIAL CABLE Wireless)
2. Introduces network interfaces(Wired and Wireless)
3. Configure and installing a Ethernet(10/100)
4. Performance evaluation of Ethernet(10/100)
5. Topology design(Ring, Bus)
6. Generation of data packet and measurement(CBR, VBR, Poison)
7. Router configuration
8. Switch configuration
9. Server configuration
10. Congestion control of network
11. QoS of network
12. Protocols and the configuration
13. Wireless systems
14. S3curity (WEP, WPA).



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III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

Compiler Design LAB		Course Code:IT383	Credits:1
No. of Lectures (Hrs./Week): 2	No. of Lab Sessions (Sem.): 15	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.):3

NOTE: Suggested list of experiments but not limited to these only.

List of Experiments:

1. Define LEX and YACC tools in detail.
2. Write a program to check whether a string belongs to the grammar or not.
3. Write a program to generate a parse tree.
4. WAP to convert regular expression into NFA.
5. WAP to generate tokens for a given grammar.
6. Write a program to find leading terminals.
7. Write a program to find trailing terminals.
8. Write a program to compute FIRST of non-terminals.
9. Write a program to compute FOLLOW of non-terminals.
10. Write a program to check whether a grammar is left recursive and remove left recursion.
11. Write a program to remove left factoring.
12. Write a program to check whether a grammar is Operator precedent.
13. Write a Program to implement Push Down Automata.
14. Write a program to implement Thomson's construct

III-YEAR (V-SEMESTER)
(Effective From session: 2017-18)

COMPUTER PROGRAMMING III LAB		Course Code: IT385	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 15	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

NOTE: Suggested list of experiments but not limited to these only.

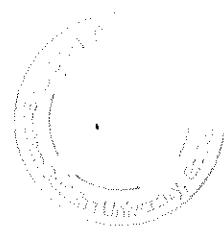
Program /Experiments List

1. To implement spell checker using dictionary.
2. Write a java exception handling program to demonstrate checked exceptions.
3. Write a program to design a digital and analog clock using java swing/applet.
4. Write a Java program that reads a file and displays a file and displays the file on the screen, with a line number before each line.
5. Write a java networking program to demonstrate client server interaction.
6. Write a java program to implement server interface using RMI.
7. Write a java program to implement insert and delete queries using JDBC.
8. Write a program to connect to URL and display Response header data and N-line requested data.
9. Write a JDBC program to connect the database and verify the username and password from the database.
10. To implement a calculator with functionality using java swing/applet.
11. Write a java applet using swings which displays JLabel, Jcheckbox, Jtogglebutton and Jscrollpane.
12. Write a java program for create a menuing model used in swings. The File menu should include new, open close, Edit menu should include copy and paste, and choice menu should include toggle, choice1, choice2 and choice3.
13. Implement a Notepad using java swing /applet.
14. Implement any game /puzzle using java.
15. Student mini project in java (Max 4 student in group).



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III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

**OPEN ELECTIVE 2

INDUSTRIAL ECONOMICS AND MANAGEMENT		Course Code: IT311	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

Unit I: Analysis of Public Projects

Benefit/ Cost analysis, quantification of project, cost and benefits, benefit/ cost applications, Cost –effectiveness analysis.

Unit II: Introduction to Management

Theories of management: Traditional behavioral, contingency and systems approach, organization as a system.

Unit III: Motivation and Productivity

Theories of motivation, leadership styles and managerial grid. Co-ordination, monitoring and control in organizations, Techniques of control, Japanese management techniques.

Unit IV: Micro Economics

Basic concept of Micro Economics, Concept of demand, supply & price, the law pertaining to demand, supply & price indifference curve analysis, price effect, income effect & substitution effect.

Unit V: Money and Banking

Balance of payment disequilibrium in balance of payment, Functions of money, Value of money, Functions of bank: commercial banks & central banking in India. Monetary & fiscal policy: a brief introduction case study pertaining to macro economics, A brief description of Indian Financial system.

Text Books:

- [1] White, Engineering Economics, Wiley.
- [2] Riggs, J. L. Bedworth D. B. & Randhawa, S. U., Engineering Economics, McGraw Hill.

Reference Books:

- [3] Schemerhorn, Introduction to Management, John Wiley.
- [4] Draft, Principles of Management, Cengage Learning Publishers.
- [5] Peter Drucker, Harper & Row, The Practice of Management, HarperBusiness.
- [6] Bernadette Andreosso & David Jacobson, Industrial Economics and Organization: A European Perspective, McGraw Hill.
- [7] Peter Jochumzen, Essentials of Macroeconomics, bookboon.com.
- [8] Ken Heather, The Economics of Industries and Firms, Pearson.
- [9] Bruce Allen, Neil Doherty, Keith Weigelt Managerial Economics; Edwin Mansfield, W W Norton & Co Inc.

III-YEAR (V-SEMESTER)
(Effective from session: 2016-17) ****OPEN ELECTIVE 2**

INTRODUCTION TO SOCIAL WORK		Course Code: SW505	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

Unit I: Introduction

Conceptual Framework of Social Work, Definition, Meaning, Scope, Goals and Values, Ethics in Social Work, Principles, and Methods of Social Work Practice.

Unit II: Basic Concepts

Social Welfare, Social Service, Social Reform, Social Development, Social Defence, Social Security, Social Justice, Fundamental Rights Directive Principles and Human Right, Social Work and Human Rights.

Unit III: History of Social Work

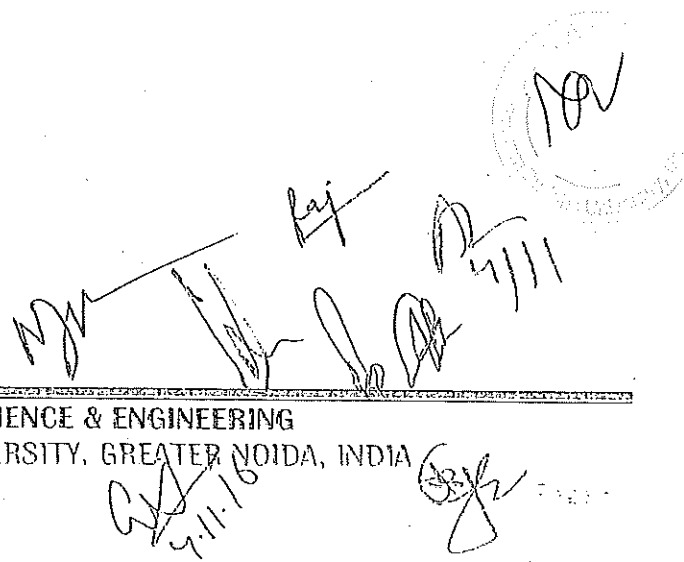
History and development of Social Work in UK, USA, History of Social Work in India; Social Reform Movements in 19th and 20th Century, Gandhian Ideology, Sarvodaya, Antyodaya.

Unit IV: Contemporary ideologies for social change

Neo-liberalism and globalization, post modernism, feminism, Resurgence of civil society, Ideology of Non-Government organization.

Unit V: Social Work Profession

Attributes of a profession, Attributes of a professional social worker, Social Work education in India. Interface between Professional and, Voluntary Social Work. Professional ethics, Professional Organizations- National/International, Goals/Functions of Social Work: remedial, ameliorative, and rehabilitative, supportive, preventive, developmental and promotional, System and Integrated Approach to Social Work Practice. Evidence based practice.



III-YEAR (V-SEMESTER)
(Effective from session: 2016-17)

**OPEN ELECTIVE 2

RIGHT TO INFORMATION AND PUBLIC ACCOUNTABILITY		Course Code: LB411	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

1. Evolution of the RTI Act 2005 in India, The Official Secrets Act 1923, Movement for right to freedom of information, role of Mazdoor Kisan Shakti Sanghata (MKSS) and other civil society organizations.
2. Freedom of Information- International perspective and the Indian context, the Freedom of Information Act- 2002, Constitutional basis of RTI, the Right to Information as a Fundamental Right
3. RTI and Judiciary
4. Right to Information: Preamble, scope and limitations of the Act, definition of Public Authority, obligations of Public Authorities, role of Public Information Officers: PIOs and APIOs
5. Request for obtaining information, disposal of requests, the time limits for disposal of information requests, the fees and costs to be charged for providing information
6. Exemptions from disclosure of Information, partial disclosure and "Third Party" information, denial of third party information, Severability, channels of appeal, action in "Good Faith", Information Commissions.
7. Right to Information conflict with Right to Privacy, RTI and protection of individual privacy.
8. RTI and Civil society: Concept of civil society, role of civil society organizations.
9. RTI and Good Governance: Concept of Good Governance, principles of good governance, Right to Information Act as an anti- corruption tool.
10. RTI and strengthening participatory democracy: Accountability and good governance, Transparency and Good Governance, Social justice and good governance, Right to Information and Media, public accountability and Lokpal.
11. RTI as a tool for Social Audit of Public Service Delivery: Social Audit in India; RTI and Public Service Delivery.
12. RTI and Panchayati Raj Institutions in Uttar Pradesh, disclosure of information at the Gram Panchayat, Kshetra Panchayat and Jila Panchayat level.

Recommended Readings:

- [1] C.P Bhargwal, Good Governance in India (New Delhi: Sundeep Pub, 2003).
- [2] J. N. Barowalia, Commentary on the Right to Information Act (New Delhi: Jain Book Depot, 2010).
- [3] K. K. Jain, Right to Information (New Delhi: Regal Publication, 2010).
- [4] K.M Srivastava, Right to Information: A Global Perspective (New Delhi: Lancer Publisher 2009).
- [5] P. K. Das, Handbook on Right to Information Act, 2005 (New Delhi: Universal Publication, 2005).
- [6] P.K. Saini & R.K Gupta, Right to Information Act, 2005 (New Delhi: Deep and Deep Publication).
- [7] Rajveer S. Dhaka, Right to Information and Good Governance (New Delhi: South Asia Book, 2010).
- [8] S. K Kataria, Right to Information lessons and Implications (New Delhi: National Publication, 2010).
- [9] S. L. Goel, Right to information and Good Governance (New Delhi: Deep and Deep publication 2007).
- [10] S. P. Sathe, Right to Information (New Delhi: LexisNexis: Butterworth, 2006).
- [11] Sudhir Naib, The Right to Information Act-2005 (New Delhi: OUP, 2011).

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IT Forensics		Course Code: IT309	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I

Overview of Biometrics, Biometric Identification, Biometric Verification, Biometric Enrollment, Biometric System Security. Authentication and Biometrics: Secure Authentication Protocols, Access Control Security Services, Matching Biometric Samples, Verification by humans. Common biometrics: Finger Print Recognition, Face Recognition, Speaker Recognition, Iris Recognition, Hand Geometry, Signature Verification

UNIT II

Introduction to Information Hiding: Technical Steganography, Linguistic Steganography, Copy Right Enforcement, Wisdom from Cryptography Principles of Steganography: Framework for Secret Communication, Security of Steganography System, Information Hiding in Noisy Data , Adaptive versus non-Adaptive Algorithms, Active and Malicious Attackers, Information hiding in Written Text.

UNIT III

A Survey of Steganographic Techniques: Substitution systems and Bit Plane Tools, Transform Domain Techniques: - Spread Spectrum and Information hiding, Statistical Steganography, Distortion Techniques, Cover Generation Techniques. Steganalysis: Looking for Signatures: - Extracting hidden Information, Disabling Hidden Information.

UNIT IV

Watermarking and Copyright Protection: Basic Watermarking, Watermarking Applications, Requirements and Algorithmic Design Issues, Evaluation and Benchmarking of Watermarking system. Transform Methods: Fourier Transformation, Fast Fourier Transformation, Discrete Cosine Transformation, Mellin-Fourier Transformation, Wavelets, Split Images in Perceptual Bands. Applications of Transformation in Steganography.

UNIT V

Computer Forensics, Rules of evidence, Evidence dynamics, Evidence collection, Data recovery, Preservation of digital evidence, surveillance tools for future warfare,

Text Books:

- [1]. Katzendbisser, Petitcolas, " Information Hiding Techniques for Steganography and Digital Watermarking", Artech House.
- [2]. Peter Wayner, "Disappearing Cryptography: Information Hiding, Steganography and Watermarking 2/e", Elsevier

Reference Books:

- [3]. Bolle, Connell et. al., "Guide to Biometrics", Springer
- [4]. John Vecca, "Computer Forensics: Crime scene Investigation", Firewall Media 5. Christopher L.T. Brown, "Computer Evidence: Collection and Preservation", Firewall Media

III-YEAR (VI-SEMESTER)
(Effective from session: 2016-17)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME												CBCS	CREDITS
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL						
L	T	P	CT	TA												
THEORY																
1	IT300	Artificial Intelligence	3	1	0	10	15	25	25	50	100		C41	4		
2	IT 302	Algorithm Design & Analysis	3	1	0	10	15	25	25	50	100		C42	4		
3	IT304	Computer Organization	3	1	0	10	15	25	25	50	100		C43	4		
4	IT306	Information & Network Security	3	1	0	10	15	25	25	50	100		C44	4		
5	IT308	Information Retrieval & Management	3	1	0	10	15	25	25	50	100		C45	4		
PRACTICAL																
6	IT382	Algorithm Design & Analysis Lab	0	0	2	20	30	0	0	50	100		C46	1		
7	IT384	Artificial Intelligence Lab	0	0	2	20	30	0	0	50	100		C47	1		
8	IT386	Information & Network Security Lab	0	0	2	20	30	0	0	50	100		C48	1		
9	IT388	Seminar	0	0	2	20	30	0	0	50	100		DP1	1		
10	GP	General Proficiency												Non Credit		
SEMESTER TOTAL CREDITS			15	5	8	325	125	450	900					24		
TOTAL CONTACT HOURS			28			28hrs.										

III-YEAR (VI-SEMESTER)
(Effective From session: 2016-17)

ARTIFICIAL INTELLIGENCE		Course Code: IT300	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I INTRODUCTION TO ARTIFICIAL INTELLIGENCE

Basic concept of artificial intelligence (AI), history of AI, AI and consciousness, weak and strong AI, physical symbol system hypothesis, comparison of computer and human skills, practical systems based on AI, development of logic, components of AI.

UNIT II PROBLEM SOLVING THROUGH AI

Defining problem as state space search, analyzing the problem, representing the problems from AI viewpoint, production system, developing production rules, characteristics of production system, algorithm for problem solving using AI technique.

UNIT III SEARCH TECHNIQUES

Use of search in AI problem solution, blind search techniques, heuristic search techniques, concept of heuristic knowledge, designing of the heuristic function, types of heuristic search techniques: generate and test, best first search, problem reduction using AND – OR graph, local search technique, branch and bound search, memory bounded search technique, local beam search, properties of heuristic search techniques, overestimation and underestimation of heuristic function, hill climbing search, simulated annealing search, constraint satisfaction, means ends analysis.

UNIT IV INTRODUCTION TO LOGIC

Introduction, propositional calculus, syntax of propositional calculus, semantics of propositional calculus, well formed formula, properties of statements, inferencing of propositional logic, predicate logic, syntax of predicate logic, semantics of predicate logic, representation of facts First Order Predicate Logic (FOPL), inferencing in predicate logic, concept of resolution, resolution algorithm, skolemization, Types of resolution, unit resolution, binary resolution.

UNIT V PROLOG and LISP

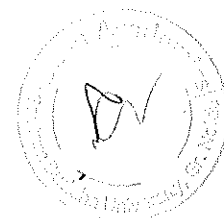
Basic concept of programming languages related to artificial intelligence problems, concept of programming in Logic, basic prolog constructs, atoms, defining the rules, writing small programs in prolog, concept of list processing, basic LISP constructs, writing functions in LISP, some simple programs of LISP.

Text books:

- [1] Elanie Reich, Artificial Intelligence, Tata mcgraw Hill publishing house, 2008.
- [2] Peterson, Artificial intelligence, TataMcGraw Hill, 2008.

Reference books:

- [3] Russel and Norvig, Artificial intelligence, Pearson Printice Hall Publication, 2006.
- [4] Winston, Artificial Intelligence, PHI publication, 2006.



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III-YEAR (VI-SEMESTER)
(Effective From session: 2016-17)

Algorithm Design & Analysis		Course Code:IT302	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I BASIC CONCEPTS OF ALGORITHMS

Introduction, notion of algorithm, fundamentals of algorithmic solving, important problem types, fundamentals of the analysis framework, asymptotic notations and basic efficiency classes.

UNIT II MATHEMATICAL ASPECTS AND ANALYSIS OF ALGORITHMS

Mathematical analysis of non-recursive algorithm, mathematical analysis of recursive algorithm, example: fibonacci numbers, empirical analysis of algorithms, algorithm visualization.

Unit III ANALYSIS OF SORTING AND SEARCHING ALGORITHMS

Brute force, selection sort and bubble sort, sequential search and brute-force string matching, divide and conquer, merge sort, quick sort, binary search, binary tree, traversal and related properties, decrease and conquer, insertion sort, depth first search and breadth first search.

UNIT IV ALGORITHMIC TECHNIQUES

Transform and conquer, presorting, balanced search trees, avl trees, heaps and heap sort, dynamic programming, Warshall's and Floyd's algorithm, optimal binary search trees, greedy techniques, Prim's algorithm, Kruskal's algorithm, Dijkstra's algorithm, Huffman trees.

UNIT V ALGORITHM DESIGN METHODS

Backtracking, n-Queen's problem, Hamiltonian circuit problem, subset-sum problem, branch and bound, assignment problem, knapsack problem, traveling salesman problem.

Text Books:

- [1]. Anany Levitin, "Introduction to the Design and Analysis of Algorithm", Pearson Education Asia, 2003.

References Books:

- [2]. T.H. Cormen, C.E. Leiserson, R.L. Rivest and C. Stein, "Introduction to Algorithms", PHI Pvt.Ltd., 2001
- [3]. Sara Baase and Allen Van Gelder, "Computer Algorithms - Introduction to Design and Analysis", Pearson Education Asia, 2003.
- [4]. A.V.Aho, J.E. Hopcroft and J.D.Ullman, "The Design and Analysis of Computer Algorithms", Pearson Education Asia, 2003.

III-YEAR (VI-SEMESTER)
(Effective From session: 2016-17)

COMPUTER ORGANISATION		Course Code:IT304	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I COMPUTER ARITHMETIC AND NUMBER SYSTEM

Number representation; number system, fixed and floating point number representation, arithmetic algorithms (addition, subtraction, booth multiplication).

UNIT II REGISTER TRANSFER AND MICROOPERATION

Register transfer language, bus and memory transfers, bus architecture, bus arbitration, arithmetic logic, shift microoperation, arithmetic logic shift unit, design of fast address.

UNIT II PROCESSOR DESIGN

Processor organization: general register organization, stack organization, addressing mode, instruction format, data transfer & manipulations, program control, reduced instruction set computer.

UNIT IV INPUT-OUTPUT ORGANIZATION

I/O interface, synchronous and asynchronous data transfer, strobe, handshaking schemes, modes of transfer, interrupts & interrupt handling, direct memory access, input-output processor.

UNIT V MEMORY ORGANIZATION

Memory hierarchy, main memory (RAM and ROM Chips), organization of 2^d and $2^{1/2}$ d, auxiliary memory, cache memory, virtual memory, memory management hardware.

Books:

- [1]. Patterson, Computer Organisation and Design, Elsevier Pub. 2009
- [2]. William Stalling, "Computer Organization", PHI

Reference Books:

- [3]. Vravice, Hamacher & Zaky, "Computer Organization", TMH
- [4]. Mano, "Computer System Architecture", PHI
- [5]. John P Hays, "Computer Organization", McGraw Hill
- [6]. Tannenbaum, "Structured Computer Organization", PHI
- [7]. P Pal chaudhry, 'Computer Organization & Design', PHI



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III-YEAR (VI-SEMESTER)
(Effective From session: 2016-17)

Information & Network Security		Course Code:IT306	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I: Introduction to Information Security: Definition of information, security, need of information security, CIA triad, principles of information security, Information Security Life, Risk management, Physical security; Asset definition, types of assets, asset classification, Security goals, attacks, services and mechanisms, cryptography: Classical encryption techniques-substitution ciphers and transposition ciphers.

UNIT II: Cryptography: Stream and block ciphers. Shannon's theory of confusion and diffusion, feistel structure, Data encryption standard (DES), Idea of differential cryptanalysis, Triple DES, Introduction to group, field, finite field of the form $GF(p)$, modular arithmetic, prime and relative prime numbers, Extended Euclidean Algorithm, Advanced Encryption Standard (AES) encryption and decryption Fermat's and Euler's theorem, Primarily testing, Principals of public key crypto systems, RSA & DHKE algorithm.

UNIT III: Message Authentication: Authentication requirements, authentication code & functions, message authentication code, hash functions, security of hash functions, Secure hash algorithm(SHA) Digital Signatures: Digital signature standards(DSS), Key Management and distribution: Symmetric key distribution, Public key distribution, X.509 Certificates, Public key Infrastructure.

UNIT IV: Network Security: Authentication Applications: Kerberos, Electronic mail security: pretty good privacy (PGP), S/MIME. IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management. Secure Socket Layer, Secure electronic, transaction (SET) System Security: Intrusion & Intrusion detection, Viruses and related threats, firewalls.

UNIT V: Information Security Standards & Laws: Policy, Types of policies, Need of an Information Security Policy., Standards, Procedures, Guidelines; Information Security Management System (ISMS) & its implementation process, ISO 27001 Standard. Cyber-crime, Types of cyber-crimes, IT ACT 2000, Evidence Act 1872-Admissibility of electronic evidence in the court of law,

Text Books:

- [1] William Stallings, "Cryptography and Network Security: Principles and Practice", Pearson Education.
- [2] Behrouz A. Frouzan: Cryptography and Network Security, Tata McGraw Hill.

Reference Books:

- [1] Merkow, "Information Security Principles & Practices"
- [2] Christof Paar & Jan Pelzel, Understanding Cryptography, Springer.
- [3] Bare Act Information Technology ACT 2000.
- [4] C K Shyamala, N Harini, Dr. T.R. Padmnabhan Cryptography and Security, Wiley.
- [5] Bruce Schneier, "Applied Cryptography". John Wiley & Sons.
- [6] Bernard Menezes, "Network Security and Cryptography", Cengage Learning.
- [7] Atul Kahate, "Cryptography and Network Security", Tata McGraw Hill.
- [8] Thomas R. Peltier, Justin Peltier, John Blackley, Information Security Fundamentals.



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III-YEAR (VI-SEMESTER)
(Effective From session: 2016-17)

Information Retrieval & Management		Course Code:IT308	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I: Basic Concepts of IR, Data Retrieval & Information Retrieval, IR system block diagram. Automatic Text Analysis, Luhn's ideas, Conflation Algorithm, Indexing and Index Term Weighing, Probabilistic Indexing, Automatic Classification. Measures of Association, Different Matching Coefficient, Classification Methods, Cluster Hypothesis. Clustering Algorithms, Single Pass Algorithm, Single Link Algorithm, Rochhio's Algorithm and Dendograms

UNIT II: File Structures, Inverted file, Suffix trees & suffix arrays, Signature files, Ring Structure, IR Models, Basic concepts, Boolean Model, Vector Model, and Fuzzy Set Model. Search Strategies, Boolean search, serial search, and clusterbased retrieval, Matching Function. Performance Evaluation- Precision and recall, alternative measures reference collection (TREC Collection), Libraries & Bibliographical system- Online IR system, OPACs, Digital libraries - Architecture issues, document models, representation & access, Prototypes, projects & interfaces, standards.

UNIT III: Taxonomy and Ontology: Creating domain specific ontology, Ontology life cycle Distributed and Parallel IR: Relationships between documents, Identify appropriate networked collections, multiple distributed collections simultaneously, Parallel IR - MIMD Architectures, Distributed IR Collection Partitioning, Source Selection, Query Processing.

UNIT IV: Multimedia IR models & languages- data modeling, Techniques to represent audio and visual document, query languages Indexing & searching- generic multimedia indexing approach, Query databases of multimedia documents, Display the results of multimedia searches, onedimensional time series, two dimensional color images, automatic feature extraction.

UNIT V : Searching the Web, Challenges, Characterizing the Web, Search Engines, Browsing, Meta searchers, Web crawlers, robot exclusion, Web data mining, Metacrawler, Collaborative filtering, Web agents (web shopping, bargain finder), Economic, ethical, legal and political issues.

Text Books :

- [1]. Yates & Neto, "Modern Information Retrieval", Pearson Education, ISBN 81-297-0274-6
- [2]. I. Witten, A. Moffat, and T. Bell, "Managing Gigabytes" 4. D. Grossman and O. Frieder "Information Retrieval: Algorithms and Heuristics"

Reference Books :

- [3]. Mark leven, "Introduction to search engines and web navigation", John Wiley and sons Inc., ISBN 9780-170-52684-2.
- [4]. V. S. Subrahmanian, Satish K. Tripathi "Multimedia information System", Kulwer Academic Publisher
- [5]. Chabane Djeraba, "Multimedia mining A highway to intelligent multimedia"

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III-YEAR (VI-SEMESTER)
(Effective from session: 2016-17)

Algorithm Design & Analysis Lab		Course Code:IT382	Credits:1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.):15	Mid Sem. Exam (Hrs.):0	End Sem. Exam (Hrs.):2

NOTE: Suggested list of experiments but not limited to these only.
List of Experiments:

1. Implement the minimum cost spanning tree algorithm.
2. Implement the single source shortest path algorithm.
3. Implement the algorithm for optimal binary search tree.
4. Implement the algorithm for Job sequencing with deadlines.
5. Implement the algorithm for sum of subsets problem.
6. Implement the algorithm for travelling sales person problem.
7. Implement the algorithm for knapsack problem.
8. Implement the algorithm for n-queen problem.
9. Implement the algorithm for graph coloring.
10. Implement the algorithm for all pair shortest path.
11. Implement all types of sorting techniques and analyze time complexity.
12. Implement matrix multiplication.



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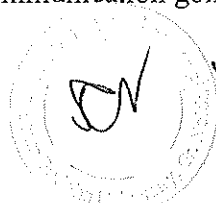
III-YEAR (VI-SEMESTER)
(Effective from session: 2016-17)

Concepts of Artificial Intelligence Lab		Course Code:IT384	Credits:1
No. of Lab (Hrs/Week):2	No. of Lab Sessions (Sem.): 15	Mid Sem. Exam (Hrs):0	End Sem. Exam (Hrs): 2

NOTE: Suggested list of experiments but not limited to these only.

Experiments based on the Programming Languages such as PROLOG & LISP and

1. Write a prolog program to find the maximum of two numbers.
2. Write a prolog program to calculate the factorial of a given number. Write a prolog program to calculate the nth Fibonacci number.
3. Write a prolog program, insert_nth(item, n, into_list, result) that asserts that result is the list into_list with item inserted as the n'th element into every list at all levels.
 - a) Write a Prolog program to remove the Nth item from a list.
 - b) Write a Prolog program, remove-nth (Before, after) that asserts the after list is the before list with the removal of every n'th item from every list at all levels.
 - c) Write a Prolog program to implement append for two lists.
5. Write a Prolog program to implement palindrome (List).
 - a) ☐ Write a Prolog program to implement max(X,Y,Max) so that Max is the greater of two numbers X and Y.
 - b) Write a Prolog program to implement maxlist(List,Max) so that Max is the greatest number in the list of numbers List.
 - c) Write a Prolog program to implement sumlist(List,Sum) so that Sum is the sum of a given list of numbers List.
6. Write a Prolog program to implement two predicates evenlength(List) and oddlength(List) so that they are true if their argument is a list of even or odd length respectively.
 - a) ☐ Write a Prolog program to implement reverse (List,ReversedList) that reverses lists. ☐
 - b) Write a Prolog program to implement maxlist (List,Max) so that Max is the greatest number in the list of numbers List using cut predicate.
7.
 - a) Create an agent in Jade that responds with the statistics of number of active agents in a system and the related information about those agents.
 - b) Write a program in Jade to exchange arguments between two agents.
 - c) Create four agents in Jade where each agent requests information from the remaining agents on a given topic.
 - d) Create an agent in Jade that reports about any communication going around other agents.



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Date: 9-11-16

III-YEAR (VI-SEMESTER)
(Effective from session: 2016-17)

Information & Network Security LAB		Course Code: IT386	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 10	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

NOTE: Suggested list of experiments but not limited to these only.

The following programs should be implemented preferably on 'UNIX' platform using 'C' language (for 1-5) and other standard utilities available with 'UNIX' systems (for 6-8) :-

1. Implement the encryption and decryption of 8-bit data using 'Simplified DES Algorithm'
2. Implement 'Linear Congruential Algorithm' to generate 5 pseudo-random numbers in 'C'.
3. Implement Rabin-Miller Primality Testing Algorithm in 'C'.
4. Implement the Euclid Algorithm to generate the GCD of an array of 10 integers in 'C'.
5. Implement RSA algorithm for encryption and decryption in 'C'.
6. Configure a mail agent to support Digital Certificates, send a mail and verify the correctness of this system using the configured parameters.
7. Configure SSH (Secure Shell) and send/receive a file on this connection to verify the correctness of this system using the configured parameters.
8. Configure a firewall to block the following for 5 minutes and verify the correctness of this system using the configured parameters:

(a) Two neighborhood IP addresses on your LAN.

9. Make an information security policy for the organization/institute



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IV-YEAR (VII-SEMESTER)

(Effective from session: 2016-17)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL	CBCS			
			L	T	P	CT	TA							
THEORY														
1		Generic Elective 1	3	1	0	10	15	25	50	100	GE 1	4		
2	IT401	Ad-Hoc & Sensor Networks	3	1	0	10	15	25	50	100	C49	4		
3	IT403	Cloud Computing	3	1	0	10	15	25	50	100	C50	4		
4		Elective 1	2	1	0	10	15	25	50	100	DSE1	3		
5		Elective 2	2	1	0	10	15	25	50	100	DSE2	3		
PRACTICAL														
6	IT481	Software/Project Development Lab	0	0	2	20	30	0	50	100	C51	4		
7	IT483	Simulation Lab	0	0	2	20	30	0	50	100	C52	1		
8	IT493	Industrial Training	0	0	2	20	30	0	50	100	DP2	1		
9	IT495	Minor Project	0	0	6	20	30	0	50	100	DP3	3		
	GP	General Proficiency										Non Credit		
SEMESTER TOTAL CREDITS			13	5	10	325		125	450	900		24		
TOTAL CONTACT HOURS			28										28 hrs.	

ELECTIVE 1		SUBJECT
S. No.	COURS E CODE	
1	EC455	Advanced Communication Systems
2	IT405	Bio-Informatics
3	IT407	Distributed Databases
4	IT411	Data Warehousing and Data Mining

ELECTIVE 2		SUBJECT
S. No.	C. CODE	
1	IT411	Fuzzy & Soft Computing Techniques
2	IT413	Service Oriented Architecture
3	CS405	Formal Methods
4	CS441	Software project management
GENERIC ELECTIVE 1		
1	MA406	Operation Research Techniques
2	MA507	Optimization Techniques
3	MA417	Number Theory
4	IT409	Digital Commerce

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Ad-Hoc & Sensor Networks		Course Code:IT401	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

UNIT I INTRODUCTION : Fundamentals of Wireless Communication Technology – The Electromagnetic Spectrum – Radio propagation Mechanisms – Characteristics of the Wireless Channel – mobile ad hoc networks (MANETs) and wireless sensor networks (WSNs) :concepts and architectures. Applications of Ad Hoc and Sensor networks. Design Challenges in Ad hoc and Sensor Networks.

UNIT II MAC PROTOCOLS FOR AD HOC WIRELESS NETWORKS

Issues in designing a MAC Protocol- Classification of MAC Protocols- Contention based protocols- Contention based protocols with Reservation Mechanisms- Contention based protocols with Scheduling Mechanisms – Multi channel MAC-IEEE 802.11

UNIT III ROUTING PROTOCOLS AND TRANSPORT LAYER IN AD HOC WIRELESS NETWORKS Issues in designing a routing and Transport Layer protocol for Ad hoc networks- proactive routing, reactive routing (on-demand), hybrid routing- Classification of Transport Layer solutions-TCP over Ad hoc wireless Networks.

UNIT IV WIRELESS SENSOR NETWORKS (WSNS) AND MAC PROTOCOLS : Single node architecture: hardware and software components of a sensor node – WSN Network architecture: typical network architectures-data relaying and aggregation strategies -MAC layer protocols: self-organizing, Hybrid TDMA/FDMA and CSMA based MAC- IEEE 802.15.4.

UNIT V WSN ROUTING, LOCALIZATION & QOS: Issues in WSN routing – OLSR- Localization – Indoor and Sensor Network Localization-absolute and relative localization, triangulation- QoS in WSN-Energy Efficient Design-Synchronization-Transport Layer issues.

TEXT BOOKS:

[1]. C. Siva Ram Murthy, and B. S. Manoj, "Ad Hoc Wireless Networks: Architectures and Protocols ", Prentice Hall Professional Technical Reference, 2008.

REFERENCES BOOKS:

- [2]. Carlos De Moraes Cordeiro, Dharna Prakash Agrawal "Ad Hoc & Sensor Networks: Theory and Applications", World Scientific Publishing Company, 2006.
- [3]. Feng Zhao and Leonides Guibas, "Wireless Sensor Networks", Elsevier Publication – 2002.
- [4]. Holger Karl and Andreas Willig "Protocols and Architectures for Wireless Sensor Networks", Wiley, 2005
- [5]. Kazem Sohraby, Daniel Minoli, & Taieb Znati, "Wireless Sensor Networks-Technology, Protocols, and Applications", John Wiley, 2007.

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Cloud Computing		Course Code: IT403	Credits:4
No. of Lectures (Hrs./Week):4	No. of Lectures (Sem.):60	Mid Sem. Exam (Hrs.):1.5	End Sem. Exam (Hrs.):3

Unit 1: Introduction to Cloud Computing: Definition, Characteristics, Components, Cloud provider, SAAS, PAAS, IAAS and Others, Organizational scenarios of clouds, Administering & Monitoring cloud services, benefits and limitations, Deploy application over cloud, Comparison among SAAS, PAAS, IAAS Cloud computing platforms: Infrastructure as service: Amazon EC2, Platform as Service: Google App Engine, Microsoft Azure, Utility Computing, Elastic Computing

Unit 2: Introduction to Cloud Technologies: Study of Hypervisors Compare SOAP and REST Webservices, AJAX and mashups-Web services: SOAP and REST, SOAP versus REST, AJAX: asynchronous 'rich' interfaces, Mashups: user interface services Virtualization Technology: Virtual machine technology, virtualization applications in enterprises, Pitfalls of virtualization Multitenant software: Multi-entity support, Multi-schema approach, Multi-tenance using cloud data stores, Data access control for enterprise applications,

Unit 3: Data in the cloud: Relational databases, Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo. Map-Reduce and extensions: Parallel computing, The map-Reduce model, Parallel efficiency of Map-Reduce, Relational operations using Map-Reduce, Enterprise batch processing using Map-Reduce, Introduction to cloud development, Example/Application of Mapreduce, Features and comparisons among GFS,HDFS etc, Map-Reduce model Cloud security fundamentals, Vulnerability assessment tool for cloud, Privacy and Security in cloud Cloud computing security architecture: Architectural Considerations- General Issues, Trusted Cloud computing, Secure Execution Environments and Communications, Micro-architectures; Identity Management and Access control- Identity management, Access control, Autonomic Security
Cloud computing security challenges: Virtualization security management- virtual threats, VM Security Recommendations, VM-Specific Security techniques, Secure Execution Environments and Communications in cloud

Unit 4: Issues in cloud computing, Implementing real time application over cloud platform Issues in Intercloud environments, QOS Issues in Cloud, Dependability, data migration, streaming in Cloud. Quality of Service (QoS) monitoring in a Cloud computing environment. Cloud Middleware. Mobile Cloud Computing. Inter Cloud issues. A grid of clouds, Sky computing, load balancing, resource optimization, resource dynamic reconfiguration, Monitoring in Cloud

Unit 5: Cloud computing platforms, Installing cloud platforms and performance evaluation Features and functions of cloud platforms: Xen Cloud Platform, Eucalyptus, OpenNebula, Nimbus, TPlatform, Apache Virtual Computing Lab (VCL), Enomaly Elastic Computing Platform

Text Books:

- [1] Judith Hurwitz, R.Bloor, M.Kanfinan, F.Halper, Cloud Computing for Dummies by (Wiley India Edition)

Reference Books:

- [2]. Gautam Shroff, Enterprise Cloud Computing by, Cambridge
[3]. Ronald Krutz and Russell Dean Vines, Cloud Security by, Wiley-India

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Software/Project Development Lab		Course Code: IT481	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 10	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

In this lab the students will make small software applications/projects.

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Simulation Lab		Course Code: IT483	Credits: 1
No. of Lab (Hrs./Week): 2	No. of Lab Sessions (Sem.): 10	Mid Sem. Exam (Hrs.): 0	End Sem. Exam (Hrs.): 2

List of Experiments:

Note: Experiments of this lab will be based on Implementation & Design using MATLAB & Qualnet.

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****ELECTIVE E 1**

Advanced Communication Systems		Course Code: EC445	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

1. Introduction: Electromagnetic Spectrum, Need of Communication systems, Types of communication systems, Advantages and drawbacks of wireless and wired communication system.

2. Digital Communication Systems:

Baseband modulation and demodulation: Detection of binary signals in Gaussian noise, ISI, Equalization, Carrier and symbol synchronization, Signal design for band limited channels. Band pass modulation and demodulation: Modulation techniques, Coherent and Non coherent detection, Error performance for binary system, Symbol error performance, Communication link Analysis: Link budget analysis, Simple link analysis, System trade-offs. Modulation and coding trade-offs.

3. Satellite communication systems

Origin of Satellite Communications, Historical Back-ground, Basic Concepts of Satellite Communications, Frequency allocations for Satellite Services, Applications, Future Trends of Satellite Communications. INTELSAT Series, INSAT, VSAT, Mobile satellite services: GSM, GPS, INMARSAT, LEO, MEO, Satellite Navigational System. Direct Broadcast satellites (DBS)- Direct to home Broadcast (DTH), Digital audio broadcast (DAB)- Worldspace services, Business TV(BTV), GRAMSAT, Specialized services – E – mail, Video conferencing, Internet

4. Optical Communication Systems: Optical fibre-step index, graded index, material, preparation, measurement of propagation, properties, jointing, connectors and couplers. Fibre optic communication systems. System model. Optical channel-space, fibre optic, sources-lasers, LEDs. Fibre laser for optical communication through guided media.

Modulation techniques—direct modulation and indirect modulation—injection modulation, A/O, E/O modulation techniques. Optical detection—PIN diodes and APDs. Optical communication systems

5. Advanced Communication networks: Mobile Communication system, Wireless Communication, Optical communication Networks, Hybrid communication systems, Spread Spectrum.

Text Books:

- [1]. Bernard Sklar, Digital Communication.
- [2]. Simon Haykin, Digital Communication.

Reference Books:

- [3]. Satellite Communication by D.C.Aggarwal
- [4]. Optical Communication by John M Senior .

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****ELECTIVE 1**

BIO-INFORMATICS		Course Code: IT405	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I: Bioinformatics objectives and overviews, Interdisciplinary nature of Bioinformatics, Data integration, Data analysis, Major Bioinformatics databases and tools. Metadata: Summary & reference systems, finding new type of data online.

Molecular Biology and Bioinformatics: Systems approach in biology, Central dogma of molecular biology, problems in molecular approach and the bioinformatics approach, overview of the bioinformatics applications.

UNIT II: Basic chemistry of nucleic acids, Structure of DNA, Structure of RNA, DNA Replication, Transcription-Translation, Genes- the functional elements in DNA, Analyzing DNA, DNA sequencing. Proteins: Amino acids, Protein structure, Secondary, Tertiary and Quaternary structure, Protein folding and function, Nucleic acid-Protein interaction.

UNIT III: Perl Basics, Perl applications for bioinformatics- Bioperl, Linux Operating System, mounting/unmounting files, tar, gzip / gunzip, telnet, ftp, developing applications on Linux OS, Understanding and Using Biological Databases, Overview of Java, CORBA, XML, Web deployment concepts.

UNIT IV: Genome, Genomic sequencing, expressed sequence tags, gene expression, transcription factor binding sites and single nucleotide polymorphism. Computational representations of molecular biological data storage techniques: databases (flat, relational and object oriented), and controlled vocabularies, general data retrieval techniques: indices, Boolean search, fuzzy search and neighboring, application to biological data warehouses.

UNIT V: Macromolecular structures, chemical compounds, generic variability and its connection to clinical data. Representation of patterns and relationships: sequence alignment algorithms, regular expressions, hierarchies and graphical models, Phylogenetics. BLAST.

Text Books:

- [1]. D E Krane & M L Raymer, "Fundamental concepts of Bioinformatics", Perason Education.
- [2]. Rastogi, Mendiratta, Rastogi, "Bioinformatics Methods & applications, Genomics, Proteomics & Drug Discovery" PHI, New Delhi

Reference Books:

- [3]. Shubha Gopal et.al. "Bioinformatics: with fundamentals of genomics and proteomics", Mc Graw Hill.
- [4]. O'Reilly, "Developing Bio informatics computer skills", CBS
- [5]. Forsdyke, "Evolutionary Bioinformatics",

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**ELECTIVE 1

Distributed Databases		Course Code: IT407	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I : Transaction and schedules, Concurrent Execution of transaction, Conflict and View Serializability, Testing for Serializability, Concepts in Recoverable and Cascadeless schedules.

UNIT II : Lock based protocols, time stamp based protocols, Multiple Granularity and Multiversion Techniques, Enforcing serializability by Locks, Locking system with multiple lock modes, architecture for Locking scheduler.

UNIT III : Distributed Transactions Management, Data Distribution, Fragmentation and Replication Techniques, Distributed Commit, Distributed Locking schemes, Long duration transactions, Multiversion Concurrency protocol.

UNIT IV : Issues of Recovery and atomicity in Distributed Databases, Traditional recovery techniques, Log based recovery, Recovery with Concurrent Transactions, Recovery in Message passing systems, Checkpoints, Algorithms for recovery line, Concepts in Orphan and Inconsistent Messages.

UNIT V : Distributed Query Processing, Multiway Joins, Semi joins, Cost based query optimization for distributed database, Updating replicated data, protocols for Distributed Deadlock Detection, Eager and Lazy Replication Techniques.

Text Books:

- [1]. Silberschatz, Korth and Sudarshan, Database System Concepts, Mc Graw Hill
- [2]. Ramakrishna and Gehrke, Database Management System, Mc Graw Hill

References Books:

- [3]. Garcia-Molina, Ullman, Widom, Database System Implementation, Pearson Education
- [4]. Ceei and Pelagatti, Distributed Database, TMH
- [5]. Singhal and Shrivatri, Advance Concepts in Operating Systems, MC Graw Hill



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Data Warehousing and Data Mining		Course Code: IT411	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

Unit-1: Data warehousing Definition, usage and trends. DBMS vs. data warehouse, Data marts, Metadata, Multidimensional data mode, Data cubes, Schemas for Multidimensional Database: stars, snowflakes and fact constellations.

Unit-2: Data warehouse process & architecture, OLTP vs. OLAP, ROLAP vs. MOLAP, types of OLAP, servers, 3-Tier data warehouse architecture, distributed and virtual data warehouses, data warehouse manager.

Unit-3: Data warehouse implementation, computation of data cubes, modelling OLAP data, OLAP queries manager, data warehouse back end tools, complex aggregation at multiple granularities, tuning and testing of data warehouse.

Unit-4: Data mining definition & task, KDD versus data mining, data mining techniques, tools and applications. Data mining query languages, data specification, specifying knowledge, hierarchy specification, pattern presentation & visualization specification, data mining languages and standardization of data mining.

Unit-5: Data mining techniques: Association rules, Clustering techniques, Decision tree knowledge discovery through Neural Networks & Genetic Algorithm, Rough Sets, and Support Vector Machines and Fuzzy techniques. Mining complex data objects, Spatial databases, Multimedia databases, Time series and Sequence data; mining Text Databases and mining Word Wide Web.

TEXT BOOKS:

- [1] Sam Anahory & Dennis Murray, Data Warehousing In the Real World, Pearson, 1997
- [2] Jiawei Han & Micheline Kamber, Data Mining- Concepts & Techniques, Morgan Kaufmann, 2001.
- [3] Arun Pujar, Data Mining Techniques, University Press; Hyderabad, 2001.,

REFERENCE BOOKS:

- [4] Pieter Adriaans & Dolf Zantinge, Data Mining, Pearson, 1997.
- [5] Alex Berson, Data Warehousing, Data Mining and OLTP, Mc Graw Hill, 1997. □
- [6] Mallach, Data warehousing System, Mc Graw Hill, 2000.
- [7] W.H. Inman, Building the Data Warehouse, John Wiley & Sons, 1996.
- [8] W.H Inhman, C.Klelly, Developing the Data Warehouses, John Wiley & Sons.
- [9] W.H.Inman, C.L.Gassey, Managing the Data Warehouses, John Wiley & Sons.

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**ELECTIVE 2

Fuzzy & Soft Computing Techniques		Course Code: IT413	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I Fuzzy logic: Introduction to fuzzy logic, classical and fuzzy sets, overview of fuzzy sets, membership function, fuzzy rule generation, operations on fuzzy sets: compliment, intersection, union, combinations on operations, aggregation operation.

UNIT II Fuzzy arithmetic: Fuzzy numbers, linguistic variables, arithmetic operations on intervals & numbers, uncertainty based information, information and uncertainty, no specificity of fuzzy and crisp sets, fuzziness of fuzzy sets.

UNIT III Neural network: Overview of biological neurons, computational neuron, mathematical model of neurons, ANN architecture, single layer and multilayer architectures, activation function, threshold value, self-learning and forced learning algorithms, feed forward and feedback architectures.

UNIT IV Learning fundamentals: Learning paradigms, supervised and unsupervised learning, reinforced learning, ANN training, algorithms perceptions, training rules, delta, back propagation algorithm, multilayer perception model, Hopfield networks, associative memories, applications of artificial neural networks,

UNIT V Genetic algorithms: History of genetic algorithm, terminology of genetic algorithm, biological background, creation of offspring, working principles of genetic algorithms, fitness function, reproduction: Roulette wheel selection, Boltzmann selection, cross over mutation, inversion, deletion, and duplication, generation cycle.

Text Books:

- [1] Peteus J. Braspenning, Artificial Neural Networks: An introduction to ANN Theory and Practice, PHI publication, 2005.
- [2] Paul P. Wang, Fuzzy Logic: A spectrum of Theoretical and Practical issues, Pearson publication 2004.

Reference Books:

- [3] Lotfi, Asker Zadeh, George J. Kilr, Bo yuan , Fuzzy Sets, Fuzzy logic, and Fuzzy Systems: Selected Papers- 2005.
- [4] Foundations of Fuzzy logic and Soft Computing: 12th International Fuzzy conference proceeding, 2005.
- [5] Neural Networks Theory, Particia Melin, Oxford University press, 2003.
- [6] Oscar Castillo, Neural Networks Theory and Application, Wiley Eastern publication.

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****ELECTIVE**

Service Oriented Architecture		Course Code: IT415	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

2

UNIT I : Roots of SOA – Characteristics of SOA - Comparing SOA to client-server and distributed internet architectures – Anatomy of SOA- How components in an SOA interrelate -Principles of service Orientation.

UNIT II: Web services – Service descriptions – Messaging with SOAP –Message exchange Patterns – Coordination –Atomic Transactions – Business activities – Orchestration Choreography - Service layer abstraction – Application Service Layer – Business Service Layer – Orchestration Service Layer

UNIT III: Service oriented analysis – Business-centric SOA – Deriving business services- service modeling -Service Oriented Design – WSDL basics – SOAP basics – SOA composition guidelines – Entity-centric business service design – Application service design – Taskcentric business service design

UNIT IV: SOA platform basics – SOA support in J2EE – Java API for XML-based web services (JAX-WS) – Javaarchitecture for XML binding (JAXB) – Java API for XML Registries (JAXR) - Java API for XML basedRPC (JAX-RPC)- Web Services Interoperability Technologies (WSIT) - SOA support in .NET – Common Language Runtime - ASP.NET web forms – ASP.NET web services – Web Services Enhancements (WSE).

UNIT V: WS-BPEL basics – WS-Coordination overview - WS-Choreography, WS-Policy, WSSecurity

Text Books:

- [1]. Thomas Erl, "Service-Oriented Architecture: Concepts, Technology, andDesign", Pearson Education, 2005.
- [2]. Newcomer, Lomow"Understanding SOA with Web Services", Pearson Education, 2005.

References Books:

- [3]. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services, AnArchitect's Guide",Pearson Education, 2005.
- [4]. Dan Woods and Thomas Mattem," Enterprise SOA Designing IT for BusinessInnovation" O'REILLY, First Edition, 2006
- [5]. Kambhampaty Service Oriented Architecture for Enterprise and cloud applications , Wiley



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**ELECTIVE 2

Formal Methods		Course Code: C405	Credits: 3
No. of Lectures (Hrs/Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs): 1.5	End Sem. Exam (Hrs): 3

UNIT I INTRODUCTION

formal methods development and need, problems in natural language specifications, formal versus informal programming, advantages of formal methods, requirements of formal system, types, prepositional logic, predicate logic, relationships and functions.

UNIT II FORMALSPECIFICATIONSTYLE

Model-oriented, specifications, concurrency-based specifications, example specification languages.

UNIT III VDM

Introduction to VDM, basic types, quote types, compound types, optional types, functions, operations, additional constructs, modules.

UNIT IV THE Z NOTATION

Interchange language, user-defined identifiers, datatypes, basictypes, compound types, schemas, additional constructs.

UNIT V FORMAL SEMANTICS AND TOOLS

Operational semantics, denotational semantics, axiomatic semantics proof editors, proof analyzer, symbolic simulators, translators, test generation tools.

Text Books:

- [1] Andrew Harry, "Formal Methods: Fact File VDM and Z", John Wiley and Sons, 1996.

Reference Books

- [2] Jim Woodcock, Jim Davies, "Using Z Specification, Refinement and Proof", Prentice Hall International, 1996.



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**ELECTIVE 2

SOFTWARE PROJECT MANAGEMENT		Course Code: CS441	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT-I: Introduction and Software Project Planning

Fundamentals of Software Project Management (SPM), Need Identification, Vision and Scope document, Project Management Cycle, SPM Objectives, Management Spectrum, SPM Framework, Software Project Planning, Planning Objectives, Project Plan, Types of project plan, Structure of a Software Project Management Plan, Software project estimation, Estimation methods, Estimation models, Decision process.

UNIT-II: Project Organization and Scheduling

Project Elements, Work Breakdown Structure (WBS), Types of WBS, Functions, Activities and Tasks, Project Life Cycle and Product Life Cycle, Ways to Organize Personnel, Project schedule, Scheduling Objectives, Building the project schedule, Scheduling terminology and techniques, Network Diagrams: PERT, CPM, Bar Charts: Milestone Charts, Gantt Charts.

UNIT-III: Project Monitoring and Control

Dimensions of Project Monitoring & Control, Earned Value Analysis, Earned Value Indicators: Budgeted Cost for Work Scheduled (BCWS), Cost Variance (CV), Schedule Variance (SV), Cost Performance Index (CPI), Schedule Performance Index (SPI), Interpretation of Earned Value Indicators, Error Tracking, Software Reviews, Types of Review: Inspections, Desk checks, Walkthroughs, Code Reviews, Pair Programming.

UNIT-IV: Software Quality Assurance and Testing

Testing Objectives, Testing Principles, Test Plans, Test Cases, Types of Testing, Levels of Testing, Test Strategies, Program Correctness, Program Verification & validation, Testing Automation & Testing Tools, Concept of Software Quality, Software Quality Attributes, Software Quality Metrics and Indicators, The SEI Capability Maturity Model (CMM), SQA Activities, Formal SQA Approaches: Proof of correctness, Statistical quality assurance, Cleanroom process.

UNIT-V: Project Management and Project Management Tools

Software Configuration Management: Software Configuration Items and tasks, Baselines, Plan for Change, Change Control, Change Requests Management, Version Control, Risk Management: Risks and risk types, Risk Breakdown Structure (RBS), Risk Management Process: Risk identification, Risk analysis, Risk planning, Risk monitoring, Cost Benefit Analysis, Software Project Management Tools: CASE Tools, Planning and Scheduling Tools, MS-Project.

Text Books:

- [1]. M. Cotterell, Software Project Management, Tata McGraw-Hill Publication.
- [2]. Royce, Software Project Management, Pearson Education

Reference Books:

- [3]. Kieron Conway, Software Project Management, Dreamtech Press
- [4]. S. A. Kelkar, Software Project Management, PHI Publication.
- [5]. Harold R. Kerzner, Project Management "A Systems Approach to Planning, Scheduling, and Controlling" Wiley.

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**GENERIC ELECTIVE E 1

OPERATION RESEARCH TECHNIQUES		Course Code: MA406	Credits: 4
No. of Lectures (Hrs/Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs): 1.5	End Sem. Exam (Hrs): 3



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**GENERIC ELECTIVE 1

OPTIMIZATION TECHNIQUES		Course Code: MA507	Credits: 4
No. of Lectures (Hrs/Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs): 1.5	End Sem. Exam (Hrs): 3

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**GENERIC ELECTIVE I

NUMBER THEORY		Course Code: MA417	Credits: 4
No. of Lectures (Hrs/Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs): 1.5	End Sem. Exam (Hrs): 3



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****GENERIC ELECTIVE 1**

DIGITAL COMMERCE		Course Code:IT409	Credits: 4
No. of Lectures (Hrs/Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs): 1.5	End Sem: Exam (Hrs): 3

UNIT I: Electronic Commerce Environment and Opportunities: Background – The Electronic Commerce Environment – Electronic Marketplace Technologies – Modes of Electronic Commerce: Overview – Electronic Data Interchange – Migration to Open EDI –Electronic Commerce with WWW/Internet – Commerce Net Advocacy – Web Commerce going forward.

UNIT II: Approaches to Safe Electronic Commerce: Overview – Secure Transport Protocols – Secure Transactions – Secure Electronic Payment Protocol(SEPP) – Secure Electronic Transaction (SET)-Certificates for Authentication – Security on Web Servers and Enterprise Networks –Electronic cash and Electronic payment schemes: Internet Monetary payment and security requirements – payment and purchase order process -Online Electronic cash.

UNIT III: Internet/Intranet Security Issues and Solutions: The need for Computer Security – Specific Intruder Approaches – Security strategies – Security tools – Encryption – Enterprise Networking and Access to the Internet –Antivirus programs – Security Teams.

UNIT IV: MasterCard/Visa Secure Electronic Transaction: Introduction – Business Requirements – Concepts – Payment processing – E-mail and secure e-mail technologies for electronic commerce. Introduction – The Mean of Distribution – A model for message handling – Working of Email -MIME: Multipurpose Internet Mail Extensions – S/MIME: Secure Multipurpose Internet Mail Extensions – MOSS: Message Object Security Services.

UNIT V: Internet and Website Establishment: Introduction – Technologies for web servers – Internet tools relevant to Commerce – Internet Applications for Commerce – Internet charges –Internet Access and Architecture –Searching the Internet- Case study.

TEXT BOOKS:

[1]. Daniel Minoli and Emma Minoli, "Web Commerce Technology Handbook", Tata McGraw-Hill, 2005.

REFERENCE BOOKS:

[2]. Andrew B. Whinston, Ravi Kalakota, K. Bajaj and D. Nag, "Frontiers of Electronic Commerce", Tata McGraw-Hill, 2004.

[3]. Bruce C. Brown, "How to Use the Internet to Advertise, Promote and Market Your Business or Website with Little or No Money", Atlantic Publishing Company, 2006.

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S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CBCS	CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL					
						L	T					P			CT
THEORY															
1		Generic Elective 2	3	1	0	10	15	25	50	100		GE2	4		
2	IT402	Big Data Analytics	3	1	0	10	15	25	50	100		C53	4		
3	IT404	Internet of Things	2	1	0	10	15	25	50	100		C54	3		
4		Elective 3	2	1	0	10	15	25	50	100		DSE3	3		
PRACTICAL															
5	IT482	Big Data Analytics Lab	0	0	2	20	30	0	50	100		C55	1		
6	IT496	Major Project	0	0	10	20	30	0	50	100		DP4	5		
	GP	General Proficiency												Non Credit	
SEMESTER TOTAL			10	4	12	200	100	100	300	600			20		
TOTAL CONTACT HOURS			26												26 hrs.

ELECTIVE 3		
S. No.	COURSE CODE	SUBJECT
1	IT408	Data Compression
2	IT410	High Speed Networks
3	IT412	Mobile Computing
4	EC430	Mobile Communication

GENERIC ELECTIVE 2		
S. No.	COURSE CODE	SUBJECT
1	MA402	Modeling and Simulation
2	MA416	Probability and Stochastic Process
3	IT416	Graph Theory and Algorithms

IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

Big Data Analytics		Course Code: IT402	Credits: 4
No. of Lectures (Hrs/Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs): 1.5	End Sem. Exam (Hrs): 3

UNIT I: UNDERSTANDING BIG DATA: What is big data, why big data, convergence of key trends, unstructured data, industry examples of big data, web analytics, big data and marketing, fraud and big data, risk and big data, credit risk management, big data and algorithmic trading, big data and healthcare, big data in medicine, advertising and big data, big data technologies, introduction to Hadoop, open source technologies, cloud and big data mobile business intelligence, Crowd sourcing analytics, inter and trans firewall analytics.

UNIT II : NOSQL DATA MANAGEMENT : Introduction to NoSQL , aggregate data models , aggregates , key-value and document data models, relationships, graph databases, schema less databases , materialized views, distribution models , sharding , masterslave replication, peer-peer replication , sharding and replication , consistency , relaxing consistency , version stamps , mapreduce, partitioning and combining , composing map-reduce calculations

UNIT III: BASICS OF HADOOP : Data format , analyzing data with Hadoop , scaling out , Hadoop streaming , Hadoop pipes , design of Hadoop distributed file system (HDFS) , HDFS concepts , Java interface , data flow , Hadoop I/O , data integrity , compression , serialization , Avro file-based data structures

UNIT IV: MAP REDUCE APPLICATIONS : Map Reduce workflows , unit tests with MRUnit , test data and local tests – anatomy of Map Reduce job run , classic Map-reduce , YARN , failures in classic Map-reduce and YARN , job scheduling , shuffle and sort , task execution , MapReduce types , input formats , output formats.

UNIT V: HADOOP RELATED TOOLS: Hbase, data model and implementations, Hbase clients, Hbase examples – praxis. Cassandra , cassandra data model , cassandra examples, cassandra clients , Hadoop integration. Pig, Grunt, pig data model, Pig Latin , developing and testing Pig Latin scripts. Hive , data types and file formats , HiveQL data definition, HiveQL data manipulation – HiveQL queries

Text Books:

- [1]. Michael Minelli, Michelle Chambers, and Ambiga Dhiraj, "Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today's Businesses", Wiley, 2013.
- [2]. Big-Data Black Book, DT Editorial Services, Wiley India

Reference Books:

- [3]. P. J. Sadalage and M. Fowler, "NoSQL Distilled: A Brief Guide to the Emerging World of Polyglot Persistence", Addison-Wesley Professional, 2012.
- [4]. Tom White, "Hadoop: The Definitive Guide", Third Edition, O'Reilley, 2012. 5. Eric Sammer, "Hadoop Operations", O'Reilley, 2012.
- [5]. E. Capriolo, D. Wampler, and J. Rutherglen, "Programming Hive", O'Reilley, 2012. 7. Lars George, "HBase: The Definitive Guide", O'Reilley, 2011.
- [6]. Eben Hewitt, "Cassandra: The Definitive Guide", O'Reilley, 2010.
- [7]. Alan Gates, "Programming Pig", O'Reilley, 2011

IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

Internet of Things		Course Code: IT404	Credits: 3
No. of Lectures (Hrs/Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs): 1.5	End Sem. Exam (Hrs): 3

UNIT I : M2M to IoT-The Vision-Introduction, From M2M to IoT, M2M towards IoT-the global context, A use case example, Differing Characteristics.

UNIT II: M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies. M2M to IoT-An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

UNIT III: M2M and IoT Technology Fundamentals- Devices and gateways, Local and wide area networking, Data management, Business processes in IoT, Everything as a Service(XaaS), M2M and IoT Analytics, Knowledge Management

UNIT IV: IoT Architecture-State of the Art – Introduction, State of the art,Architecture Reference Model- Introduction, Reference Model and architecture, IoT reference Model

UNIT V : IoT Reference Architecture- Introduction, Functional View, Information View, Deployment and Operational View, Other Relevant architectural views. Real-World Design Constraints- Introduction, Technical Design constraints-hardware is popular again, Data representation and visualization, Interaction and remote control.Industrial Automation- Service-oriented architecture-based device integration, SOCRADES: realizing the enterprise integrated Web of Things, IMC-AESOP: from the Web of Things to the Cloud of Things,Commercial Building Automation- Introduction, Case study: phase one-commercial building automation today, Case study: phase two- commercial building automation in the future.

Textbook:

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Kamouskos, David Boyle, "From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1st Edition, Academic Press, 2014.

Reference Books:

1. Vijay Madiseti and Arshdeep Bahga, "Internet of Things (A Hands-on-Approach)", 1st Edition, VPT, 2014.
2. Francis daCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013

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IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

Big Data Analytics LAB		Course Code:IT482	Credits: 1
No. of Lab (Hrs/Week): 2	No. of Lab Sessions (Sem.): 15	Mid Sem. Exam (Hrs): 0	End Sem. Exam (Hrs): 2

THE STUDENTS WILL BE TAUGHT ABOUT THE TOOLS AND APPLICATION OF BIG DATA.

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IV-YEAR (VIII-SEMESTER)
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** ELECTIVE E 3

Data Compression		Course Code: IT408	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

Unit - I:

Compression Techniques: Loss less compression, Lossy Compression, Measures of performance, Modeling and coding, Mathematical Preliminaries for Lossless compression: A brief introduction to information theory, Models: Physical models, Probability models, Markov models, composite source model, Coding: uniquely decodable codes, Prefix codes.

Unit – II:

The Huffman coding algorithm: Minimum variance Huffman codes, Adaptive Huffman coding: Update procedure, Encoding procedure, Decoding procedure. Golomb codes, Rice codes, Tunstall codes, Applications of Huffman coding: Loss less image compression, Text compression, Audio Compression.

Unit-III:

Coding a sequence, Generating a binary code, Comparison of Binary and Huffman coding, Applications: Bi-level image compression-The JBIG standard, JBIG2, Image compression. Dictionary Techniques: Introduction, Static Dictionary: Diagram Coding, Adaptive Dictionary. The LZ77 Approach, The LZ78 Approach, Applications: File Compression-UNIX compress, Image Compression: The Graphics Interchange Format (GIF), Compression over Modems: V.42 bits, Predictive Coding: Prediction with Partial match (ppm): The basic algorithm, The ESCAPE SYMBOL, length of context, The Exclusion Principle, The Burrows-Wheeler Transform: Move-to-front coding, CALIC, JPEG-LS, Multi-resolution Approaches, Facsimile Encoding, Dynamic Markov Compression.

Unit – IV:

Distortion criteria, Models, Scalar Quantization: The Quantization problem, Uniform Quantizer, Adaptive Quantization, Non uniform Quantization.

Unit-V:

Advantages of Vector Quantization over Scalar Quantization, The Linde-Buzo-Gray Algorithm, Tree structured Vector Quantizers. Structured Vector Quantizers.

Text Books:

- [1]. Khalid Sayood, Introduction to Data Compression, Morgan Kaufmann Publishers
- [2]. Drozdek, Elements of Data Compression, Cengage Learning

Reference Books:

- [3]. Data Compression: The Complete Reference 4th Edition by David Salomon, Springer
- [4]. Timothy C. Bell, Text Compression 1st Edition, Prentice Hall.



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IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

** ELECTIVE 3

HIGHSPEED NETWORKS		Course Code: IT410	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I

Frame Relay Networks – Asynchronous transfer mode-ATM Protocol Architecture, ATM logical Connection – ATM Cell – ATM Service Categories – AAL. High Speed LAN's: Fast Ethernet – GigabitEthernet– Fiber Channel – Wireless LAN's, WiFian WiMax Networks applications, requirements – Architecture of 802.11.

UNIT II

Queuing Analysis – Queuing Models – Single Server Queues – Effects of Congestion CongestionControl – Traffic Management – Congestion Control in Packet SwitchingNetworks – FrameRelay Congestion Control.

UNIT III

TCP Flow control – TCP Congestion Control – Retransmission – Timer Management –Exponential RTObacoff – KARN's Algorithm – Window management – Performance ofTCP over ATM. Traffic andCongestion control in ATM – Requirements – Attributes –Traffic Management Frame work, TrafficnControl – ABR traffic Management – ABR ratecontrol, RM cell formats – ABR Capacity allocations –GFR traffic management.

UNIT IV

Integrated Services Architecture – Approach, Components, Services- Queuing Discipline– FQ – PS –BRFQ – GPS – WFQ – Random Early Detection – Differentiated Services.

UNIT V

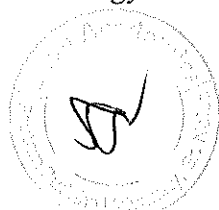
RSVP – Goals & Characteristics, Data Flow, RSVP operations – Protocol Mechanisms– MultiprotocolTransfer Protocol– RTCP. TOTAL Label Switching – Operations, Label Stacking – Protocol details – RTP– Protocol Architecture – Data

Text Books:

- [1]. William Stallings, "High speed networks and internet", Second Edition, Pearson Education, 2002
- [2]. Warland, Pravin Varaiya, "High performance communication networks", Second Edition, JeanHarcourt Asia Pvt. Ltd., , 2001

Reference Books:

- [3]. Irvan Pepelnjk, Jim Guichard, Jeff Aparcar, "MPLS and VPN architecture", Cisco Press, Volume 1 and 2, 2003.
- [4]. Abhijit S. Pandya, Ercan Sea, "ATM Technology for Broad Band Telecommunication Networks", CRC Press, New York, 2004.



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IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

** ELECTIVE ~~III~~ 3

Mobile Computing		Course Code: IT412	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

UNIT I

INTRODUCTION: Introduction to mobile applications – Embedded systems - Market and business drivers for mobile applications – Publishing and delivery of mobile applications – Requirements gathering and validation for mobile applications

UNIT II

BASE DESIGN: Introduction – Basics of embedded systems design – Embedded OS – Design constraints for mobile applications, both hardware and software related – Architecting mobile applications – User interfaces for mobile applications – touch events and gestures – Achieving quality constraints – performance, usability, security, availability and modifiability.

UNIT III

ADVANCED DESIGN: Designing applications with multimedia and web access capabilities – Integration with GPS and social media networking applications – Accessing applications hosted in a cloud computing environment – Design patterns for mobile applications.

UNIT IV

TECHNOLOGY I – ANDROID: Introduction – Establishing the development environment – Android architecture – Activities and views – Interacting with UI – Persisting data using SQLite – Packaging and deployment – Interaction with server side applications – Using Google Maps, GPS and Wi-Fi – Integration with social media applications.

UNIT V

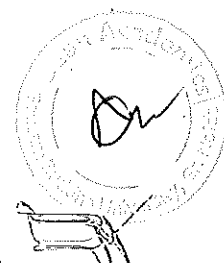
TECHNOLOGY II – iOS: Introduction to Objective C – iOS features – UI implementation – Touch frameworks – Data persistence using Core Data and SQLite – Location aware applications using Core Location and Map Kit – Integrating calendar and address book with social media application – Using Wifi- iPhone marketplace. Swift: Introduction to Swift features of swift.

TEXT BOOKS:

- [1]. Charlie Collins, Michael Galpin and Matthias Kappler, "Android in Practice", DreamTech, 2012
- [2]. Anubhav Pradhan, Anil V Deshpande Composing Mobile Apps, Learn, explore, apply.

Reference Books:

- [3]. James Dovey and Ash Furrow, "Beginning Objective C", Apress, 2012
- [4]. Jeff McWherter and Scott Gowell, "Professional Mobile Application Development", Wrox, 2012
- [5]. David Mark, Jack Nutting, Jeff LaMarche and Frederic Olsson, "Beginning iOS 6 Development: Exploring the iOS SDK", Apress, 2013.



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IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

** ELECTIVE 3

MOBILE COMMUNICATION		Course Code: EC430	Credits: 3
No. of Lectures (Hrs./Week): 3	No. of Lectures (Sem.): 45	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

Unit I:

Cellular concept, frequency reuse, channel assignment schemes, handoff strategies, interference and system capacity, trunking, grade of service, coverage and capacity enhancement techniques

Unit II: Mobile radio propagation-free space propagation model, two ray model, link budget using path loss models, outdoor and indoor propagation models, small scale fading-multipath propagation, IR model, multipath measurements, parameters of multipath channels, small scale fading, statistical models for multipath fading channels

Unit III:

Modulation techniques-overview of digital modulation, line coding, pulse shaping techniques, spread spectrum modulation-PN sequence, DS-SS, FH-SS, modulation performance in fading and multipath channels, speech coding-vocoder, LPC.

Unit IV:

Multiple access techniques-FDMA, TDMA, spread spectrum multiple access- FHMA, CDMA, SDMA, packet radio-protocols, CSMA protocols, reservation protocols, capacity of cellular systems.

Unit V:

GSM-services and features, architecture, radio sub systems, channels types, frame structure and signal processing, CDMA-specifications, forward and reverse CDMA channels, CT2, DECT, PACS, PDC, PHS.

Text Books:

- [1] Theodore S. Rappaport, Wireless Communication, Principles and Practice, Pearson.
- [2] Kaveh Pahlavan, Prashant Krishnamurthy, Principles of Wireless Networks, PHI

Reference Books:

- [3] W.C. Jakes, Microwave Mobile Communication, IEEE Press
- [4] Kaveh Pahlavan & Allen H. Levesque, Wireless Information Networks, Wiley series in Telecommunications and signal processing.
- [5] Kamilo Feher, Wireless Digital communications, Modulation and Spread Spectrum Applications. PHI

IV-YEAR (VIII-SEMESTER)
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**GENERIC ELECTIVE 2

GRAPH THEORY		Course Code: IT416	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3

Unit-I : INTRODUCTION

Graphs, sub graphs, vertex degrees, walks, path, cycles and trails, connected graphs, disconnected graphs and components, matrix representation of graphs, isomorphism, Euler graphs, Hamiltonian paths and circuits, bipartite graphs.

Unit-II: TREES AND CONNECTIVITY

Trees—rooted, binary trees and spanning trees, bridges, fundamental circuits, distance, center, diameter, eccentricity, radius and pendent vertices, Prim's, Kruskal's and Dijkstra's Algorithms, cut vertices, blocks and connectivity,

Unit-III: PLANARITY, EULER TOURS AND HAMILTONIAN CYCLES

Planer graphs – Different representation of a planer graph, discussion on criterion of planarity, thickness and crossings, Euler's formula, Platonic bodies, combinatorial and geometric dual: Kuratowski's graphs, detection of planarity, geometric dual, Euler tours, Hamiltonian cycles and travelling salesman problem.

Unit –IV: DIRECTED GRAPH AND COLORING

Directed graphs—definitions, in-degree, out-degree, orientations and tournaments, Coloring—vertex coloring, edge coloring, covering and partitioning of a graph, chromatic number, chromatic partitioning, chromatic polynomials, and four color problem.

Unit –V: EXTREMAL PROBLEMS

Enumeration of graphs, Ramsey's theorem, Ramsey numbers, edge Ramsey numbers, a generalization of party problem, Sperner's lemma and their applications.

Text Books:

1. West, Douglas Brent. *Introduction to graph theory*. Vol. 2. Upper Saddle River: Prentice hall, 2001.
2. Clark, John, and Derek Allan Holton. *A first look at graph theory*. Vol. 1. Teaneck, NJ: World Scientific, 1991.

Reference Books:

1. Deo, Narsingh. *Graph theory with applications to engineering and computer science*. Courier Dover Publications, 2016.
2. Chartrand, Gary. *Introduction to graph theory*. Tata McGraw-Hill Education, 2006.
3. Harary, Frank. *Graph Theory*, Narosa Book Distributors Pvt.
5. Bondy and Murthy, *Graph theory and application*. Addison Wesley.

IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

**GENERIC ELECTIVE 2

PROBABILITY AND STOCHASTIC PROCESS		Course Code: MA416	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3



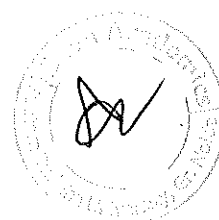
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IV-YEAR (VIII-SEMESTER)
(Effective from session: 2016-17)

**GENERIC ELECTIVE-2

MODELING AND SIMULATION		Course Code: MA402	Credits: 4
No. of Lectures (Hrs./Week): 4	No. of Lectures (Sem.): 60	Mid Sem. Exam (Hrs.): 1.5	End Sem. Exam (Hrs.): 3



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
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COURSE STRUCTURE AND DETAILED SYLLABUS

FOR

B. TECH.

IN

ELECTRONICS & COMMUNICATION ENGINEERING

(Effective from the session: 2017-2018)



Signature
Dean
School of ICT

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY

GREATER NOIDA (UTTAR PRADESH) INDIA



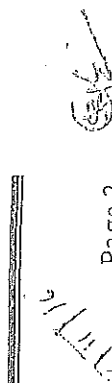
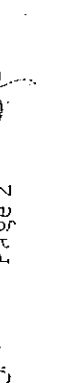


EVALUATION SCHEME
B. TECH. ELECTRONICS & COMMUNICATION ENGINEERING
1-YEAR (I-SEMESTER)
 (Effective from session: 2017-18)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL	CBCS			
			L	T	P	CT	TA							
THEORY														
1	CY101	Engineering Chemistry	3	1	0	10	15	25	50	100	FC-C1	4		
2	MA101	Engineering Mathematics --I	3	1	0	10	15	25	50	100	FC-C2	4		
3	ES 101	Environmental Studies	2	1	0	10	15	25	50	100	AECC1	3		
4	CS101	Computer Programming --I	2	0	0	10	15	25	50	100	FC-C3	2		
5	EC101	Basic Electronics	2	1	0	10	15	25	50	100	FC-C4	3		
6	EN101	English Proficiency	2	0	0	10	15	25	50	100	AECC2	2		
7	BS101	Human Values & Buddhist Ethics	2	0	0	10	15	25	50	100	AECC3	2		
PRACTICAL														
8	CY103	Engineering Chemistry Lab	0	0	2	50			0	100	FC-C5	1		
9	CS 181	Computer Programming Lab1	0	0	2	50			0	100	FC-C6*	1		
10	CE103	Engineering Graphics	0	0	3	50			0	100	FC-C7	2		
11	EC181	Basic Electronics Lab	0	0	2	50			0	100	FC-C8	1		
12	GP	General Proficiency											Non Credit	
SEMESTER TOTAL			16	4	9	375	175	550	1100	25				
TOTAL CONTACT HOURS			29											

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)		
S.No.	COURSE CODE	SUBJECT
1	EN101	English Proficiency
2	ES101	Environmental Studies
3	BS101	Human Values & Buddhist Ethics



I-YEAR (II-SEMESTER)
(Effective from session: 2017-18)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME											CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL	CBCS				
						CT	TA								
			L	T	P										
THEORY															
1	PH102	Engineering Physics	3	1	0	10	15	25	50	100	FC-C9	4			
2	MA102	Engineering Mathematics – II	3	1	0	10	15	25	50	100	FC-C10	4			
3	ME101	Engineering Mechanics	2	1	0	10	15	25	50	100	FC-C11	3			
4	CS102	Computer Programming – II	2	0	0	10	15	25	50	100	FC-C12	2			
5	EE102	Electrical Technology	2	1	0	10	15	25	50	100	FC-C13	3			
6	EN102	Professional Communication	2	0	0	10	15	25	50	100	AECC4	2			
7		Open Elective 1	2	0	0	10	15	25	50	100	OE1	2			
PRACTICAL															
8	PH104	Engineering Physics Lab	0	0	2	50			50	100	FC-C14	1			
9	CS182	Computer Programming Lab - II	0	0	2	50			50	100	FC-C15	1			
10	EE104	Electrical Technology Lab	0	0	2	50			50	100	FC-C16	1			
11	ME102	Engineering Workshop	0	0	3	50			50	100	FC-C17	2			
12	GP	General Proficiency												Non Credit	
SEMESTER TOTAL			16	4	9	375		175	550	1100		25			
TOTAL CONTACT HOURS			29												

ABILITY ENHANCEMENT COMPULSORY COURSE (AECC)	
1	EN102 Professional Communication

OPEN ELECTIVE (OE1)	
1	SS102 History of Science & Technology
2	BSC201 Introduction to Buddhist Meditation: Theories & Practices
3	BSCU305 Buddhist Art & Architect



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II-YEAR (III-SEMESTER)
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S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CBCS	CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL					
			L	T	P	CT	TA								
THEORY															
1	MA201	Engineering Mathematics III	3	1	0	10	15	25	50	100		FC-C18	4		
2	EC221	Fundamentals of Digital Electronics	3	1	0	10	15	25	50	100		FC-C19	4		
3	EC223	Network Analysis	3	1	0	10	15	25	50	100		C20	4		
4	EC225	Introduction to Signal and Systems	3	1	0	10	15	25	50	100		C21	4		
5	EC227	Analog Electronic Circuits	3	1	0	10	15	25	50	100		C22	4		
PRACTICAL															
6	EC271	Analog Electronic Circuits Lab	0	0	2	50			50	100		C23	1		
7	EC273	Digital Electronic Circuits Lab	0	0	2	50			50	100		C24	1		
8	EC275	Network Analysis Lab	0	0	2	50			50	100		C25	1		
9	EC277	PCB Design Lab	0	0	2	50			50	100		SEC1	1		
10	GP	General Proficiency												Norm Credit	
SEMESTER TOTAL			15	5	8	325	125	450	900					24	
TOTAL CONTACT HOURS			28												

SKILL ENHANCEMENT COURSE (SEC)	
1	EC277 PCB Design Lab


II-YEAR (IV-SEMESTER)
(Effective from session: 2017-18)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL	CBCS			
						CT	IA							
THEORY														
1.	EC202	Analog Communication	3	1	0	10	15	25	50	100	C26	4		
2.	EC222	Linear Integrated Circuits	3	1	0	10	15	25	50	100	C27	4		
3.	EC224	Electronics Instrumentation and Measurements	3	1	0	10	15	25	50	100	FC-C28	4		
4.	EC226	Microprocessors	3	1	0	10	15	25	50	100	C29	4		
5.	EC228	Electromagnetic Field Theory	3	1	0	10	15	25	50	100	C30	4		
PRACTICAL														
6.	EC370	Electronics Instrumentation and Measurements Lab	0	0	2	50			50	100	FC-C31	1		
7.	EC372	Communication Lab	0	0	2	50			50	100	C32	1		
8.	EC374	Microprocessors Lab	0	0	2	50			50	100	C33	1		
9.	EC376	Analog Integrated Circuits Lab	0	0	2	50			50	100	C34	1		
10.	GP	General Proficiency											Non Credit	
SEMESTER TOTAL			15	5	8	325	125	450	900	24				
TOTAL CONTACT HOURS			28											



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

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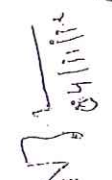
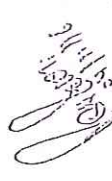

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III-YEAR (VI-SEMESTER)
(Effective from session: 2017-18)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME										CBCS	CREDITS	
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL					
			L	T	P	CT	TA								
THEORY															
1	EC320	Microwave and Radar Engineering	3	1	0	10	15	25	50	100	C43	4			
2	EC322	Digital Signal Processing and Applications	3	1	0	10	15	25	50	100	C44	4			
3	EC324	Fundamentals of Microelectronics	3	1	0	10	15	25	50	100	C45	4			
4	EC326	Data Communication Network	3	1	0	10	15	25	50	100	C46	4			
5	EC328	IC Fabrication Technology	3	1	0	10	15	25	50	100	C47	4			
PRACTICAL															
6	EC382	Microwave Engineering Lab	0	0	2	50			50	100	C48	1			
7	EC374	Digital Signal Processing and Applications Lab	0	0	2	50			50	100	C49	1			
8	EC376	Simulation Lab	0	0	2	50			50	100	SEC2	1			
9	EC388	Seminar	0	0	2	50			50	100	DP1	1			
10	GP	General Proficiency												Non Credit	
SEMESTER TOTAL			15	5	8	325	125	450	900			24			
TOTAL CONTACT HOURS			28												

SKILL ENHANCEMENT COURSE (SEC)	
1	EC376 Simulation Lab



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING
 SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

IV-YEAR (VII-SEMESTER)
(Effective from session: 2017-18)

S. No.	COURSE CODE	SUBJECT	PERIODS					EVALUATION SCHEME					CBCS	CREDITS
			L			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL				
						CT	TA							
		THEORY												
		Generic Elective 1	3	1	0	10	15	25	50	100	GE1	4		
1	EC421	Fiber Optic Communication	3	1	0	10	15	25	50	100	C50	4		
2	EC423	VLSI Design	3	1	0	10	15	25	50	100	C51	4		
4		Elective 1	2	1	0	10	15	25	50	100	DSE1	3		
5		Elective 2	2	1	0	10	15	25	50	100	DSE2	3		
		PRACTICAL												
6	EC471	Fiber Optic Communication Lab	0	0	2	50			50	100	C52	1		
7	EC473	VLSI Design Lab	0	0	2	50			50	100	C53	1		
9	EC493	Industrial Training	0	0	2	50			50	100	DP3	1		
8	EC495	Minor Project	0	0	6	50			50	100	DP2	3		
	GP	General Proficiency										Non Credit		
			13	5	12	325		125	450	900		24		
		SEMESTER TOTAL												
		TOTAL CONTACT HOURS			28									

ELECTIVE 2		
S.No.	C. CODE	SUBJECT
1	EC433	Biomedical Signal Processing
2	EC435	Television Engineering
3	EC447	Digital Image Processing
4	EC449	Power Electronics
GENERIC ELECTIVE 1		
1	MA406	Operation Research Techniques
2	MA507	Optimization Techniques
3	IT409	Digital Commerce
4	IT415	Object Oriented Programming & Design

ELECTIVE 1		
S.No.	COURSE CODE	SUBJECT
1	EC445	Satellite Communication
2	EC427	Artificial Neural Network & Fuzzy Logic
3	EC429	Secure Communication
4	EC431	Fundamentals of MEMS

IV-YEAR (VIII-SEMESTER)
(Effective from session: 2017-18)

S. No.	COURSE CODE	SUBJECT	EVALUATION SCHEME													CBCS	SUBJECT TOTAL	CREDITS
			PERIODS			SESSION-AL EXAM		MID TERM EXAM	END TERM EXAM	SUBJECT TOTAL	CREDITS							
L	T	P	CT	TA														
THEORY																		
1	EC422	Electronic Switching System	3	1	0	10	15	25	50	100		C51		4				
2	EC424	Wireless Communication	2	1	0	10	15	25	50	100		C52		3				
3		Generic Elective 2	3	1	0	10	15	25	50	100		GE2		4				
4		Elective 3	2	1	0	10	15	25	50	100		DSE3		3				
PRACTICAL																		
5	EC470	Advanced Simulation Lab	0	0	2	50			50	100		C54		1				
6	EC496	Major Project	0	0	10	50			50	100		DP4		5				
Non Credit																		
GP																		
General Proficiency																		
SEMESTER TOTAL			10	4	12	200		100	300	600				20				
TOTAL CONTACT HOURS			26															

ELECTIVE 3		SUBJECT	
S.No.	COURSE CODE	SUBJECT	
1	EC426	RF Engineering	
2	EC428	Broadband Networks	
3	EC428	Reliability Engineering	
4	EC430	Mobile Communication	

GENERIC ELECTIVE 2		SUBJECT	
S.No.	COURSE CODE	SUBJECT	
1	MA402	Modeling and Simulation	
2	MA416	Probability and Stochastic Process	
3	IT416	Graph Theory	

TOTAL CREDITS = 190

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

SCHOOL OF ICT, GAUTAM BUDDHA UNIVERSITY, GREATER NOIDA, INDIA

School of Information and Communication Technology
Gautam Buddha University, Greater Noida, Uttar Pradesh

Distribution of Marks for Evaluation of Minor Projects, Seminar, Major Projects, Dissertation Part-I and Dissertation Part II Marks

1. MINOR PROJECTS

Minor Project Internal Marks : 40
 Minor Project Mid Term Marks : 30
 Minor Project End Term Marks : 30

Total Marks: 100

Minor Project Mid -Term Evaluation				
Report with Software /System Requirement Specifications (SRS) and Software / System Design Specifications (SDS)	15			
Idea/Concept	05			
Presentation	05			
Knowledge	05			
Total	30			

Minor Project End -Term Evaluation				
Report Writing	10			
Implementation	10			
Presentation	05			
Knowledge	05			
Total	30			

2. SEMINAR

Seminar Internal Marks : 40
 Seminar Mid Term Marks : 30
 Seminar End Term Marks : 30

Total Marks: 100

Seminar on Research Paper

Seminar Mid -Term Evaluation			
Presentation	10		
Technical Contents	10		
Knowledge	10		
Total	30		

Seminar End -Term Evaluation			
Presentation	10		
Technical Contents	10		
Knowledge	10		
Total	30		

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MAJOR PROJECTS

Major Project Internal Marks : 40

Major Project Mid Term Marks : 30

Major Project End Term Marks : 30

Total Marks: 100

Major Project Mid -Term Evaluation				
Report with Software Specifications (SRS) and Software / System Design Specifications (SDS)	15	Idea/Concept	05	
		Presentation	05	
		Knowledge	05	
Total	30			

Major Project End -Term Evaluation				
Report Writing	10	Implementation	10	
		Presentation	05	
		Knowledge	05	
Total	30			

4. DISSERTATION PART I

Dissertation Part I Internal Marks : 40



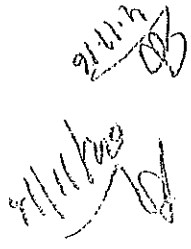
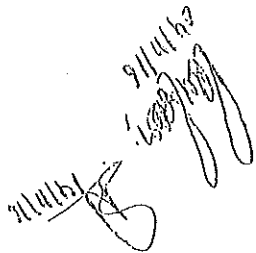
Dissertation Part I Mid Term Marks : 30

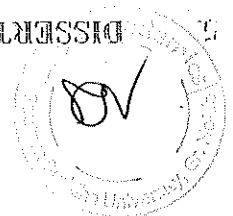
Dissertation Part I End Term Marks : 30

Total Marks: 100

Dissertation Part I Mid -Term Evaluation				
Literature Survey and Problem Identification	10	Technical Knowledge and Contents	10	
		Presentation	05	
		Report Writing	05	
Total	30			

Dissertation Part I End -Term Evaluation				
Planning and Research Methodology with Partial Implementation	10	Technical Knowledge and Contents	10	
		Presentation	05	
		Report Writing	05	
Total	30			



DISSERTATION PART II

Dissertation Part II Internal Marks : 40
 Dissertation Part II Mid Term Marks : 30
 Dissertation Part II End Term Marks : 30

Total Marks: 100

Dissertation Part II Mid -Term Evaluation									
Planning and Implementation (Final Implementation)		Technical Knowledge and Contents		Presentation		Report Writing		Total	
10		05		05		10		30	

Dissertation Part II End -Term Evaluation									
Final Implementation with Results and Analysis	10	Technical Knowledge and Contents	05	Presentation	05	Report Writing	10	Total	30

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MID TERM EVALUATION SHEET: DISSERTATION PART I

Supervisor's Name:.....

Date:.....

Title of Work (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			

Supervisor's Signature

Supervisor's Recommendation: Yes/No.....

S. No	Registration No.	Evaluator 1					Evaluator 2					Average (30)
		Literature Survey and Problem Identification 10	Technical Knowledge and Contents 10	Presentation 05	Report Writing 05	Total 30	Literature Survey and Problem Identification 10	Technical Knowledge and Contents 10	Presentation 05	Report Writing 05	Total 30	
1												
2												
3												
4												
5												

Name and Signature of Evaluator 2

Name and Signature of Evaluator 1



[Signature]
14/11/16

[Signature]
14/11/16

[Signature]

[Signature]

[Signature]

END TERM EVALUATION SHEET: DISSERTATION PART I

Date:.....

Supervisor's Name:.....

Title of Work (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			

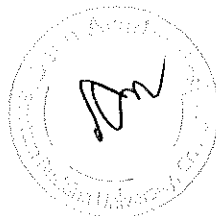
Supervisor's Signature

Supervisor's Recommendation: Yes/No.....

S. No	Registration No.	Evaluator 1					Evaluator 2				
		Planning and Research Methodology with Partial Implementation 10	Technical Knowledge and Contents 10	Presentation 05	Report Writing 05	Total 30	Planning and Research Methodology with Partial Implementation 10	Technical Knowledge and Contents 10	Presentation 05	Report Writing 05	Total 30
1											
2											
3											
4											
5											

Name and Signature of Evaluator 2

Name and Signature of Evaluator 1



MID TERM EVALUATION SHEET: DISSERTATION PART II

Date:

Supervisor's Name:

Title of Work (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			

Supervisor's Signature

Supervisor's Recommendation: Yes/No

S. No	Registration No.	Evaluator 1					Evaluator 2				
		Planning and Implementation (Final Implementation) 10	Technical Knowledge and Contents 05	Presentation 05	Report Writing 10	Total 30	Planning and Implementation (Final Implementation) 10	Technical Knowledge and Contents 05	Presentation 05	Report Writing 10	Total 30
1											
2											
3											
4											
5											

Name and Signature of Evaluator 1

Name and Signature of Evaluator 2

4/11/16



4/11/16

4/11/16

END TERM EVALUATION SHEET: DISSERTATION PART II

Date:.....

Supervisor's Name:.....

Title of Work (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			

Supervisor's Signature

Supervisor's Recommendation: Yes/No.....

S. No	Registration No.	Evaluator 1					Evaluator 2				
		Final Implementation with Results and Analysis 10	Technical Knowledge and Contents 05	Presentation 05	Report Writing 10	Total 30	Final Implementation with Results and Analysis 10	Technical Knowledge and Contents 05	Presentation 05	Report Writing 10	Total 30
1											
2											
3											
4											
5											

Name and Signature of Evaluator 2

Name and Signature of Evaluator 1



Signature

Signature

7/11/16

MID-TERM EVALUATION SHEET

Date:

Supervisor's Name:

Group No:

Title of Major Project (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			
2			
3			
4			
5			

Supervisor's Signature

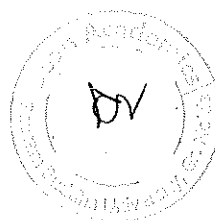
Supervisor's Recommendation: Yes/No:

S. No	Registration No.	Evaluator 1					Evaluator 2				
		Report with Software/System Requirement Specifications (SRS) and Software/System Design Specifications (SDS) 15	Idea/Concept 05	Presentation 05	Knowledge 05	Total 30	Report with Software/System Requirement Specifications (SRS) and Software/System Design Specifications (SDS) 15	Idea/Concept 05	Presentation 05	Knowledge 05	Total 30
1											
2											
3											
4											
5											

Name and Signature of Evaluator 1

Name and Signature of Evaluator 2

[Signature]



[Signature]

[Signature]

Date:

Group No:

Supervisor's Name:

Title of Major Project (CAPITAL LETTERS ONLY)

S.No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			
2			
3			
4			
5			

Supervisor's Signature

Supervisor's Recommendation: Yes/No:

Supervisor's Recommendation: Yes/No.....												
S. No	Registration No.	Evaluator 1					Evaluator 2					Average (30%)
		Report Writing 10	Implementation 10	Presentation 05	Knowledge 05	Total 30	Report Writing 10	Implementation 10	Presentation 05	Knowledge 05	Total 30	
1												
2												
3												
4												
5												

Signature of Evaluator 2

Name and Signature of Evaluator 1

Name and Signature of Evaluator 2

[Signature]



[Signature]

MINOR PROJECT EVALUATION SHEET IN DEPARTMENT

Group No.....

Supervisor's Name.....

Date.....

Title of Minor Project (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			
2			
3			
4			
5			

Supervisor's Recommendation: Yes/No.....

Supervisor's Signature

S. No	Registration No.	Evaluator 1					Evaluator 2				
		Report with Software/System Requirement Specifications (SRS) and Software/System Design Specifications (SDS) 15	Idea/Concept 05	Presentation 05	Knowledge 05	Total 30	Report with Software/System Requirement Specifications (SRS) and Software/System Design Specifications (SDS) 15	Idea/Concept 05	Presentation 05	Knowledge 05	Average (30)
1											
2											
3											
4											
5											

Name and Signature of Evaluator 1

Name and Signature of Evaluator 2

[Signature]

[Signature]



[Signature]

[Signature]

Supervisor's Name:

Group No:

Title of Minor Project (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			
2			
3			
4			
5			

Supervisor's Signature

Supervisor's Recommendation: Yes/No:

Supervisor's Recommendation: Yes/No.....											
S. No	Registration No.	Evaluator 1				Evaluator 2					Average (30)
		Report Writing 10	Implementation 10	Presentation 05	Knowledge 05	Total 30	Report Writing 10	Implementation 10	Presentation 05	Knowledge 05	
1											
2											
3											
4											
5											

Signature of Evaluator 2

Name and Signature of Evaluator 1

Name and Signature of Evaluator 2

14/11/16



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M.D. 1. PRELIMINARY INFORMATION

Group No.

Supervisor's Name

Date

Title of Seminar (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			
2			
3			
4			
5			

Supervisor's Signature

Supervisor's Recommendation: Yes/No

S. No	Registration No.	Evaluator 1			Evaluator 2			Average (30%)
		Technical Contents 10	Presentation 10	Knowledge 10	Total 30	Technical Contents 10	Presentation 10	Knowledge 10
1								
2								
3								
4								
5								

Name and Signature of Evaluator 1

Name and Signature of Evaluator 2

Group No.

Supervisor's Name:

Title of Seminar (CAPITAL LETTERS ONLY)

S. No	Registration No. of Students	Student's Name (CAPITAL LETTERS ONLY)	Student's Signature
1			
2			
3			
4			
5			

Supervisor's Signature

Supervisor's Recommendation: Yes/No.....

Supervisor's Recommendation: Yes/No.....										
S. No	Registration No.	Evaluator 1				Evaluator 2				Average (30)
		Technical Contents 10	Presentation 10	Knowledge 10	Total 30	Technical Contents 10	Presentation 10	Knowledge 10	Total 30	
1										
2										
3										
4										
5										

Name and Signature of Evaluator 1

Name and Signature of Evaluator 2

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[Signature]



SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

Doctoral Programme (Ph.D.) in various areas of Information & Communication Technology

Eligibility Criteria

Full Time

A Masters Degree in M. Tech./ M. Sc/ M.C.A./M.E./ M.S. in Computer Science/ Electronics/ Information Technology/ Communication/ Software Engineering/ VLSI/ RF and Microwave Engineering with minimum 55% aggregate marks (50% in case of SC/ST) or its equivalent grade in Master's degree obtained from any of the Universities/ institutions established and / or approved by law

Or

B. Tech. degree or equivalent in Computer Science and Engineering/ Electronics and communication Engineering/ Information Technology/ Communication/ Software Engineering/ VLSI/ RF and Microwave Engineering with excellent academic record (with a minimum CGPA of 7.00 on a 10 point scale or 75% marks) with GATE.

Working Professional

- I. Masters Degree in M. Tech./ M.C.A./ M.E./ M.Sc./ M.S. in Computer Science/ Electronics/Information Technology/ Communication/Software Engineering/ VLSI Design/ RF and Microwave Engineering with minimum 55% aggregate marks (50% in case of SC/ST) or its equivalent grade in Master's degree obtained from any of the Universities/ institutions established and / or approved by law and a candidate should have two years research/ teaching experience in an national institute of higher learning/ Universities/ Central laboratory or equivalent experience in industry at an appropriate level as on date of interview for Ph.D. programme.

Or

- B. Tech. degree or equivalent in Computer Science and Engineering/ Electronics and communication Engineering/ Information Technology/ Communication/ Software Engineering/ VLSI/ RF and Microwave Engineering with excellent academic record (with a minimum CGPA of 7.00 on a 10 point scale or 75% marks) with GATE.
- II. The candidate is also required to produce a letter of consent from the current employer for providing sufficient facilities and time for conducting the research work only at the time of interview for Ph.D. programme.

AREA OF RESEARCH

University will accept Ph.D. application only in the following research area

Reliability, Optical Communication, Design and analysis of Microstrip Antennas such as Circular Polarized, RFID, UWB and MIMO antennas, etc, Networks, Security, IOT, Cloud Computing.



Syllabus Ph.D. Entrance: SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY

COMPUTER SCIENCE

Digital Logic Boolean algebra: Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

Computer Organization and Architecture: Machine instructions and addressing modes. ALU, data-path and control unit. Instruction pipelining. Memory hierarchy: cache, main memory and secondary storage; I/O interface (interrupt and DMA mode).

Programming and Data Structures: Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

Algorithms: Searching, sorting, hashing. Asymptotic worst case time and space complexity. Algorithm design techniques: greedy, dynamic programming and divide-and-conquer. Graph search, minimum spanning trees, shortest paths.

Theory of Computation: Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and context-free languages, pumping lemma. Turing machines and undecidability.

Compiler Design: Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation.

Operating System: Processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU scheduling. Memory management and virtual memory. File systems.

Databases: ER-model. Relational model: relational algebra, tuple calculus, SQL. Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees). Transactions and concurrency control.

Computer Networks: Concept of layering. LAN technologies (Ethernet). Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi. Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.

ELECTRONICS AND COMMUNICATION ENGINEERING

Networks, Signals and Systems: Network solution methods: nodal and mesh analysis; Network theorems: superposition, Thevenin and Norton's, maximum power transfer; Wye-Delta transformation; Steady state sinusoidal analysis using phasors; Time domain analysis of simple linear circuits; Solution of network equations using Laplace transform; Frequency domain analysis of RLC circuits; Linear 2-port network parameters: driving point and transfer functions; State equations for networks. Continuous-time signals: Fourier series and Fourier transform representations, sampling theorem and applications; Discrete-time signals: discrete-time Fourier transform (DTFT), DFT, FFT, Z-transform, interpolation of discrete-time signals; LTI systems: definition and properties, causality, stability, impulse response, convolution, poles and zeros, parallel and cascade structure, frequency response, group delay, phase delay, digital filter design techniques.

Electronic Devices: Energy bands in intrinsic and extrinsic silicon; Carrier transport: diffusion current, drift current, mobility and resistivity; Generation and recombination of carriers; Poisson and continuity equations; P-N junction, Zener diode, BJT, MOS capacitor, MOSFET, LED, photo diode and solar cell; Integrated circuit fabrication process: oxidation, diffusion, ion implantation, photolithography and twin-tub CMOS process.

Analog Circuits: Small signal equivalent circuits of diodes, BJTs and MOSFETs; Simple diode circuits: clipping, clamping and rectifiers; Single-stage BJT and MOSFET amplifiers: biasing, bias stability, mid-frequency small signal analysis and frequency response; BJT and MOSFET amplifiers: multi-stage, differential, feedback, power and operational; Simple op-amp circuits; Active filters; Sinusoidal

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oscillators: criterion for oscillation, single-transistor and opamp configurations; Function generators, wave-shaping circuits and 555 timers; Voltage reference circuits; Power supplies: ripple removal and regulation.

Digital Circuits: Number systems, Combinatorial circuits: Boolean algebra, minimization of functions using Boolean identities and Karnaugh map, logic gates and their static CMOS implementations, arithmetic circuits, code converters, multiplexers, decoders and PLAs; Sequential circuits: latches and flip-flops, counters, shift-registers and finite state machines; Data converters: sample and hold circuits, ADCs and DACs; Semiconductor memories: ROM, SRAM, DRAM; 8-bit microprocessor (8085): architecture, programming, memory and I/O interfacing.

Control Systems: Basic control system components; Feedback principle; Transfer function; Block diagram representation; Signal flow graph; Transient and steady-state analysis of LTI systems; Frequency response; Routh-Hurwitz and Nyquist stability criteria; Bode and root-locus plots; Lag, lead and lag-lead compensation; State variable model and solution of state equation of LTI systems.

Communications: Random processes: autocorrelation and power spectral density, properties of white noise, filtering of random signals through LTI systems; Analog communications: amplitude modulation and demodulation, angle modulation and demodulation, spectra of AM and FM, superheterodyne receivers, circuits for analog communications; Information theory: entropy, mutual information and channel capacity theorem; Digital communications: PCM, DPCM, digital modulation schemes, amplitude, phase and frequency shift keying (ASK, PSK, FSK), QAM, MAP and ML decoding, matched filter receiver, calculation of bandwidth, SNR and BER for digital modulation; Fundamentals of error correction, Hamming codes; Timing and frequency synchronization, inter-symbol interference and its mitigation; Basics of TDMA, FDMA and CDMA.

Electromagnetics: Electrostatics; Maxwell's equations, differential and integral forms and their interpretation, boundary conditions, wave equation, Poynting vector; Plane waves and properties: reflection and refraction, polarization, phase and group velocity, propagation through various media, skin depth; Transmission lines: equations, characteristic impedance, impedance matching, impedance transformation, S-parameters, Smith chart; Waveguides: modes, boundary conditions, cut-off frequencies, dispersion relations; Antennas: antenna types, radiation pattern, gain and directivity, return loss, antenna arrays; Basics of radar; Light propagation in optical fibers.

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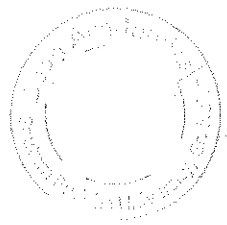
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Proceedings of Board of Studies for BSc, Physical Sciences

The meeting of Board of Studies (BOS) of school of vocational studies and Applied Sciences for BSc (programme) physical sciences was held on 23/07/2016 at 11.00 A.M. onwards in the office of Dean SOVSAS.

Following members were present:

S/N	Name	Affiliations	Designation	Remarks
1	Prof. Anuradha Mishra	Gautam Buddha University	Professor	Dean, SOVSAS
2	Prof. A K Narula	Guru Gobind Singh Indraprastha University New Delhi	Professor	External Expert (Chemistry)
3	Prof. Amita Chandra	Delhi University (Deptt. of Physics & Astro Physics)	Professor	External Expert (Physics)
4	Prof. N P Melkania	Gautam Buddha University	Professor	Special Invitee
5	Dr. Manmohan Singh Shishodia	Gautam Buddha University	Assistant Professor	Member (Head, Applied Physics)
6	Dr. Vandna Singh	Gautam Buddha University	Assistant Professor	Member (Head, Applied Chemistry)
7	Dr. Sushil Kumar	Gautam Buddha University	Assistant Professor	Member (Head, Applied Mathematics)
8	Dr. Amit Awasthi	Gautam Buddha University	Assistant Professor	Member
9	Dr. Ashish Kumar Keshari	Gautam Buddha University	Assistant Professor	Member

Agenda of first meeting of the Board of Studies (BSc. Physical Sciences):

1. Approval for the name of degree for B.Sc. in Physical Sciences: B.Sc.
2. Approval of course structure & syllabi for BSc Physical Science programme.
3. Any other point may be added with the permission of chairperson

Details of Recommendations Made:

The following recommendations were made:

1. The BOS recommended the minor modification in the course structure of BSc physical Science programme (The modifications are incorporated).
2. The contents were thoroughly discussed and as per the scope of the programme necessary change were made.
3. The Dean was authorized to carry out changes as suggested after consultation with the internal members of BOS.

The meeting was concluded with thanking to Prof. A K Narula and Prof. Amita Chandra

Dr. Amit Kumar Awasthi

(Assistant Professor)

Dr. Ashish Kumar Keshari

(Assistant Professor)

Dr. Sushil Kumar

(Head, Deptt. of Applied Mathematics)

Dr. Manmohan Singh Shishodia

(Head, Deptt. of Applied Physics)



Vandana

Dr. Vandana Singh

(Head, Deptt. of Applied Chemistry)

Prof. N.P. Melkania

Prof. N.P. Melkania

(External Expert)

Anuradha

Prof. Anuradha Mishra
(Dean, SOVSAS)

Amita Chandra

Prof. Amita Chandra

(External Expert)

Prof. N.P. Melkania

(Special Invitee)

May kindly approve the recommendations
of BoS. of B.Sc. (PCM) please.

Anuradha
04/18/16

Hon'ble V.C. Sir

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Vice Chancellor
Gaotam Buddha University



B.Sc. Physical Sciences
(Physics, Chemistry, Mathematics)
Choice Based Credit System

Course Structure

B.Sc.
(2016-17)

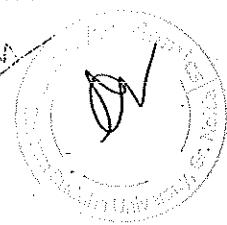


School of Vocational Studies and Applied Sciences
Gautam Buddha University, Greater Noida, UP-201312
India



**Bachelor of Science Physical Sciences
(Physics, Chemistry, Mathematics)**

SEMESTER		COURSE OPTED	COURSE NAME	CREDIT S
CC: Core Course, AECC: Ability Enhancement Compulsory Course, SEC: Skill Enhancement Course				
DSE: Discipline Specific Elective				
I	EN-101	AECC-I	English Proficiency	2
	PH-105	CC-I	Mechanics	4
	PH-107	CC-I Practical	Mechanics Lab	2
	CH-101	CC-II	Atomic structure, Bonding, General organic chemistry, Aliphatic Hydrocarbons	4
	CH-103	CC-II Practical	Laboratory (Atomic structure, Bonding, General organic chemistry, Aliphatic Hydrocarbon)-I	2
	MA-111	CC-III	Calculus-I	3
	MA-113	CC-IV	Matrices	3
		Contact Hours		23
II	ES-101	AECC-II	Environmental Science	2
	PH-106	CC-V	Electricity and Magnetism	4
	PH-108	CC-V Practical	Electricity and Magnetism Lab	2
	CH-102	CC-VI	Chemical Energetics, Phase equilibrium, Functional group organic Chemistry-I	4
	CH-104	CC-VI Practical	Laboratory (Chemical Energetics, Phase equilibrium, Functional group organic Chemistry Practicals)-II	2
	MA-112	CC-VII	Algebra	3

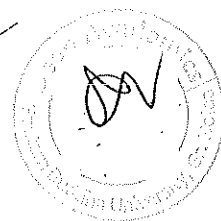


	MA-114	CC-VIII	Calculus-II	3
	BS-101	AECC-III	Human Values & Buddhist Studies	2
III	PH-201	CC-IX	Thermal Physics and Statistical Mechanics	4
	PH-203	CC-IX Practical	Thermal Physics and Statistical Mechanics Lab	2
	CH-201	CC-X	Solution, Phase Equilibrium, Conductance, Electrochemistry & Functional Group Organic Chemistry-II	4
	CH-203	CC-X Practical	Laboratory (Conductance, Electrochemistry & Functional Group Organic Chemistry-II)-III	2
	MA-213	CC-XI	Real Analysis	3
	MA-215	CC-XII	Introduction to Ordinary Differential Equation	3
	NSS-101	AECC-IV	NSS Paper 1	2
		Skill Enhancement Course -1	SEC-1	2
IV	PH-202	CC-XIII	Waves and Optics	4
	PH-204	CC-XIII Practical	Waves and Optics Lab	2
	CH-202	CC-XIV	Transition Metal & Coordination Chemistry, States of matter & Chemical kinetics	4
	CH-204	CC-XIV Practical	Laboratory (Transition Metal & Coordination Chemistry, States of matter & Chemical kinetics)-IV	2
	MA-212	CC-XV	Introduction to Partial Differential Equation	3
	MA-214	CC-XVI	Mathematical Methods	3
	NSS-102	AECC-V	NSS Paper-II	2
		Skill Enhancement Course -2	SEC-2	2
V		Skill Enhancement	SEC-3	2



VI		Course -3		
		Discipline Specific Elective -1	DSE-1	6
		Discipline Specific Elective -2	DSE-2	6
		Discipline Specific Elective -3	DSE-3	6
		Skill Enhancement Course -4	SEC-4	2
		Discipline Specific Elective -4	DSE-4	6
		Discipline Specific Elective -5	DSE-5	6
		Discipline Specific Elective -6	DSE-6	6
		Total Credits		120

	Code	Discipline Specific Electives (DSE-1)	Credits
1	PH-301	Solid State Physics	4
	PH-303	Solid State Physics Lab	2
2	PH-305	Physics of Semiconductor Devices	4
	PH-307	Physics of Semiconductor Devices Lab	2
3	PH-309	Introductory Atmospheric Physics	3
	PH-311	Basics of Nanoscience	3
	Code	Discipline Specific Electives (DSE-2)	Credits
1	CH-301	Industrial Chemicals & Environment	4
	CH-303	Laboratory (Industrial Chemicals & Environment)-V	2
2	CH-305	Quantum Chemistry, Spectroscopy & Photochemistry	4
	CH-307	Laboratory (Quantum Chemistry, Spectroscopy & Photochemistry)-V	2
	Code	Discipline Specific Electives (DSE-3)	Credits
1	MA-301	Programming in C	3
2	MA-303	Linear Algebra	3
3	MA-305	Tensor & Geometry	3
	Code	Discipline Specific Electives (DSE-4)	Credits
1	PH-302	Atomic, Molecular and Nuclear Physics	4
	PH-304	Atomic, Molecular and Nuclear Physics Lab	2
2	PH-306	Modern Physics and Quantum Mechanics	4
	PH-308	Modern Physics and Quantum Mechanics Lab	2
	Code	Discipline Specific Electives (DSE-5)	Credits
1	CH-302	Molecules of Life	4



	CH-304	Laboratory(Molecules of Life)-VI	2
2	CH-306	Chemistry of Main Group Elements, Theories of Acids and Bases	4
	CH-308	Laboratory (Chemistry of Main Group Elements, Theories of Acids and Bases)-VI	2
		Discipline Specific Electives (DSE-6)	
	Code		
1	MA-302	Numerical Methods	3
2	MA-304	Linear Programming	3
3	MA-306	Theory of Complex Variable	3

Skill Enhancement Course (SEC)								
Physics Based			Math Based			Chemistry Based		
SEC-I	PH-205	Renewable Energy and Energy harvesting,	SEC-I	MA-215	Theory of Equations	SEC-I	CH -205	Intellectual Property Rights
SEC-II	PH-206	Computational Physics	SEC-II	MA-214	Logic and sets	SEC-II	CH-206	1. Green Methods in Chemistry
SEC-III	PH-313	Photolithography and Device fabrication	SEC-III	MA-317	Mathematical Modelling	SEC-III	CH-309	Pharmaceutical Chemistry
SEC-IV	PH-310	Simulation Experiments in Physics	SEC-IV	MA-318	Experimental Statistics using R	SEC-IV	CH-310	Chemistry of Cosmetics & Perfumes

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PHYSICS

PH105: MECHANICS

4-Credits (4-0-0)

Vectors: Vector algebra, scalar and vector products, derivatives of a vector with respect to a parameter.

Ordinary Differential Equations: First order homogeneous differential equations, second order homogeneous differential equations with constant coefficients.

Laws of Motion: Frames of reference, Newton's laws of motion, dynamics of a system of particles, centre of mass.

Momentum and Energy: Conservation of momentum, work and energy, conservation of energy, motion of rockets.

Rotational Motion: Angular velocity and angular momentum, torque, conservation of angular momentum.

Gravitation: Newton's law of gravitation, motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant), Kepler's laws (statement only), satellite in circular orbit and applications, geosynchronous orbits, weightlessness, basic idea of global positioning system (GPS).

Oscillations: Simple harmonic motion, differential equation of SHM and its solutions, kinetic and potential energy, total energy and their time averages, damped oscillations.

Elasticity: Hooke's law, stress-strain diagram, elastic moduli, relation between elastic constants, Poisson's ratio, expression for Poisson's ratio in terms of elastic constants, work done in stretching and work done in twisting a wire, twisting couple on a cylinder, determination of rigidity modulus by static torsion, torsional pendulum, determination of rigidity modulus and moment of inertia - q , η and by Searles method.

Special Theory of Relativity: Constancy of speed of light, postulates of special theory of relativity, length contraction, time dilation, relativistic addition of velocities.

Texts/References

1. An introduction to mechanics, Daniel Kleppner and Robert Kolenkov, 2/e, 2014, Cambridge University Press.
2. Concepts of Physics, H. C. Verma, 1/e, 1993 (second reprint 2011), Bharati Bhawan.
3. Mechanics Berkeley Physics course, Charles Kittel, et.al. 2007, Tata McGraw-Hill. University Physics. FW Sears, MW Zemansky & HD Young, 13/e, 1986, Addison Wesley.

PH107: MECHANICS LAB

2-Credits (0-0-3)

List of Experiments

1. Measurement of basic constant, length weight and time.
2. To determine the value of (g) with the help of a compound pendulum.

3. To determine the value of g by Katter's pendulum.
4. To study the coupled pendulum for in-phase, out-phase and beat oscillation.
5. To determine the Moment of Inertia of a Flywheel about its axis of rotation.
6. To determine the Moment of Inertia of an irregular body, about an axis passing through its gravity and perpendicular to its plane by dynamical method (Inertia Table).
7. To determine the modulus of rigidity of the material of wire with the help of a torsion pendulum
8. To determine the modulus of Rigidity of a wire by Maxwell's needle.
9. To determine the Young's modulus, modulus of Rigidity and Poisson ratio of the material of a wire by Searle's method.
10. To determine Young's Modulus of the given material in the form of a beam.
11. To determine the spring constant by Hooke's law.
12. To determine Poisson ratio of rubber.

Texts/References

1. Advanced Practical Physics for students, B.L.Flint and H.T.Worsnop, 1971, Asia Publishing House.
2. B.Sc. Practical Physics, Geeta Sanon, R. Chand & Co. New Delhi, 2nd Ed. 2009.
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
4. Engineering Practical Physics, S.Panigrahi & B.Mallick, 2015, Cengag Learning India Pvt. Ltd.
5. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

PH106: ELECTRICITY AND MAGNETISM

4-Credits (4-0-0)

Vector Analysis: Review of vector algebra (scalar and vector product), gradient, divergence, curl and their significance, vector integration, line, surface and volume integrals of vector fields, Gauss-divergence theorem and Stoke's theorem of vectors (statement only).

Electrostatics: Electrostatic field, electric flux, Gauss's theorem of electrostatics, applications of Gauss theorem, electric field due to point charge, infinite line of charge, uniformly charged spherical shell and solid sphere, plane charged sheet, charged conductor, electric potential as line integral of electric field, potential due to a point charge, electric dipole, uniformly charged spherical shell and solid sphere, calculation of electric field from potential, capacitance of an isolated spherical conductor, parallel plate, spherical and cylindrical condenser, energy per unit volume in electrostatic field, dielectric medium, polarisation, displacement vector.

Magnetism: Magnetostatics: Biot-Savart's law & its applications, straight conductor, circular coil, solenoid carrying current., divergence and curl of magnetic field, magnetic vector potential, Ampere's circuital law, magnetic properties of materials: magnetic intensity, magnetic induction, permeability, magnetic susceptibility, brief introduction of dia, para, and ferro-magnetic materials.

Electromagnetic Induction: Faraday's laws of electromagnetic induction, Lenz's law, self and mutual inductance, L of single coil, M of two coils, energy stored in magnetic field.

Maxwell's Equations and Electromagnetic Wave Propagation: Equation of continuity of current, displacement current, Maxwell's equations, Poynting vector, energy density in electromagnetic field,

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electromagnetic wave propagation through vacuum and isotropic dielectric medium, transverse nature of EM waves, polarization.

Texts/References

1. Introduction to Electrodynamics, D. J. Griffith, Prentice Hall India (2009)
2. Electricity and Magnetism, E. M. Purcell, McGraw-Hill Education (1986)
3. Electricity and Magnetism, D. C. Tayal, Himalaya Publishing House, (1988)
4. University Physics, Ronald Lane Reese, Thomson Brooks/Cole, (2003)

PH108: ELECTRICITY & MAGNETISM LAB

2-Credits (0-0-3)

List of Experiments

1. To determine the capacitance of plate capacitor by charge measurement and dielectric constant of different dielectric materials. (Dielectric Constant)
2. To convert a Galvanometer into voltmeter/ammeter and to study resistance laws and a multi-meter.
3. To determine the specific resistance of a material of given wire using Carey foster's bridge.
4. To determine the specific resistance of a material of given wire using Wien's bridge.
5. Calibration of a voltmeter/ammeter with the help of a potentiometer.
6. To determine the magnetic field along the axis of current carrying coil and estimate the radius of the coil with the help of Tangent Galvanometer
7. To draw the Hysteresis curve of a given sample of ferromagnetic material and from this to determine magnetic susceptibility and permeability of the given specimen.
8. Faraday's law and induced E.M.F.
9. To determine the electro chemical equivalent of Copper using copper voltmeter
10. Magnetic field measurement with search coil & ballistic galvanometer.
11. To study the characteristics of a series R-C circuit.
12. To determine the internal resistance of a Leclanche's cell using potentiometer.

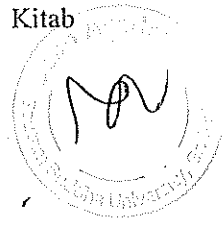
Texts/References

1. Advanced Practical Physics for students, B. L. Flint and H. T. Worsnop, 1971, Asia Publishing House.
2. B.Sc. Practical Physics, Geeta Sanon, R. Chand & Co., New Delhi, 2nd Ed. 2009.
3. Engineering Practical Physics, S. Panigrahi & B. Mallick, 2015, Cengage Learning India Pvt. Ltd.
4. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.

PH201: THERMAL PHYSICS AND STATISTICAL MECHANICS

4-Credits (4-0-0)

Laws of Thermodynamics: Thermodynamic Description of system: Zeroth law of thermodynamics and temperature, first law of thermodynamics and internal energy, conversion of heat into work, various thermo-dynamical processes, applications of first law, general relation between C_p & C_v , work done during isothermal and adiabatic processes, compressibility & expansion coefficient, reversible &



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irreversible processes, second law & entropy, Carnot's cycle & theorem, Entropy changes in reversible & irreversible processes, entropy-temperature diagrams, third law of thermodynamics, unattainability of absolute zero.

Thermodynamic Potentials: Enthalpy, Gibbs, Helmholtz and Internal energy functions, Maxwell's relations & applications, Joule-Thomson effect, Clausius-Clapeyron equation, expression for $(C_p - C_v)$, C_p/C_v , $T-dS$ equations.

Kinetic Theory of Gases: Derivation of Maxwell's law of distribution of velocities and its experimental verification, mean free path (Zeroth order), law of equipartition of energy (no derivation) and its applications to specific heat of gases; mono-atomic and diatomic gases.

Theory of Radiation: Blackbody radiation, spectral distribution, concept of energy density, derivation of Planck's law, deduction of Wien's distribution law, Rayleigh-Jeans law, Stefan Boltzmann law, and Wien's displacement law from Planck's law.

Statistical Mechanics: Phase space, macrostate and microstate, entropy and thermodynamic probability, Maxwell-Boltzmann law - distribution of velocity - Quantum statistics - Fermi-Dirac distribution law - electron gas - Bose-Einstein distribution law - photon gas - comparison of three statistics.

Texts/References

1. Thermal Physics, S. Garg, R. Bansal and C. Ghosh, 1993, Tata McGraw-Hill.
2. Heat and Thermodynamics: Brij Lal and N. Subramanyam, S. Chand.
3. Fundamentals of Statistical and Thermal Physics: F. Rief, Waveland Press.
4. A Treatise on Heat, Meghnad Saha, and B.N. Srivastava, 1969, Indian Press.
5. Heat and Thermodynamics, M.W. Zemasky and R. Dittman, 1981, McGraw Hill
6. Thermodynamics, Kinetic theory & Statistical thermodynamics, F.W. Sears and G. L. Salinger. 1988, Narosa.
7. University Physics, Ronald Lane Reese, 2003, Thomson Brooks/Cole.

PH203: THERMAL PHYSICS AND STATISTICAL MECHANICS LAB

2-Credits (0-0-3)

List of Experiments

1. To determine the value of Stefan's constant.
2. To verify the Stefan's law by electric method.
3. To determine the coefficient of real expansion of a liquid (water) by up-thrust method.
4. To determine the coefficient of Linear Expansion of given Sample.
5. To determine the value of J, the mechanical equivalent of heat by Searle's friction cone apparatus.
6. To determine the mechanical equivalent of heat (J) with the help of Joule's calorimeter.
7. To determine the Coefficient of thermal conductivity of bad conductors by Lee's Disc method.
8. To determine the thermal conductivity of rubber in the form of tube.
9. To determine the critical temperature and critical pressure of a gas.
10. Determine of Temperature coefficient of resistance (α) for platinum wire by Callender and Griffith Bridge method.
11. To study the variation of thermo emf across two junctions of a thermocouple with temperature.
12. To determine the value of Y (the ratio of two specific heats of gas) for air by Clement and Desorme's method.
13. To determine specific heat of a given liquid by method of cooling.



Texts/References

1. Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, Kitab Mahal, New Delhi.
4. A Laboratory Manual of Physics for Undergraduate Classes, D.P.Khandelwal, 1985, Vani Publication.

PH202: WAVES AND OPTICS

4-Credits (4-0-0)

Superposition of Two Collinear Harmonic oscillations: Linearity and Superposition Principle. (1). Oscillations having equal frequencies and (2). Oscillations having different frequencies (Beats).

Superposition of Two Perpendicular Harmonic Oscillations: Graphical and analytical methods, Lissajous figures with equal and unequal frequency and their uses.

Waves Motion: Transverse waves on a string, travelling and standing waves on a string, normal modes of a string, group velocity, phase velocity, plane waves, spherical waves, wave intensity.

Fluids: Viscosity: Viscosity, rate flow of liquid in a capillary tube, Poiseuille's formula, determination of coefficient of viscosity of a liquid.

Sound: Simple harmonic motion, forced vibrations and resonance, Fourier's Theorem, application to saw tooth wave and square wave, intensity and loudness of sound, Decibels, intensity levels, musical notes, musical scale.

Wave Optics: Electromagnetic nature of light, definition and properties of wave front, Huygens principle.

Interference: Division of amplitude and division of wavefront, Young's double slit experiment. Lloyd's mirror and Fresnel's bi-prism, phase change on reflection, Stokes' treatment, interference in thin films: parallel and wedge-shaped films, Newton's rings: measurement of wavelength and refractive index.

Michelson's Interferometer: Idea of form of fringes, determination of wavelength, wavelength difference, refractive index.

Diffraction: Fraunhofer diffraction: Single slit; double slit, multiple slits & diffraction grating. Fresnel diffraction: half-period zones, zone plate, Fresnel diffraction pattern of a straight edge, a slit and a wire using half-period zone analysis.

Polarization: Transverse nature of light waves, plane polarized light-production and analysis, circular and elliptical polarization.

Texts/References

1. N. K. Bajaj, Waves & Oscillations (Tata-McGraw-Hill)
2. A. K. Ghatak, Optics (Tata Mc Graw Hill)
3. D. P. Khandelwal, Optics & Atomic Physics, (Himalaya Publishing House)
4. Jenkins & White, Fundamentals of Optics (McGraw-Hill)
5. R. N. Chaudhary, Waves and Oscillations (New Age Publications)



PH204: WAVES & OPTICS LAB

2-Credits (0-0-3)

List of Experiments

1. To determine the wavelength of Sodium light by Newton ring method.
2. To determine the wavelength of Sodium light using Fresnel's Bi-prism.
3. To study interference and diffraction pattern with slits.
4. To determine the refractive index of the prism and its dispersive power with the help of spectrometer.
5. To determine the wavelength of different spectral light emitted by light sources with the Plane Transmission Grating.
6. To determine the specific rotation of cane sugar solution with the help of Polarimeter.
7. To verify the Malus's law.
8. To determine the plank's constant by photoelectric effect.
9. To verify Newton's formula for combination of two lenses.
10. Focal length of a combination of two lenses using Nodal slide assembly.
11. To determine frequency of AC mains using Sonometer.
12. To determine the surface tension by Searle's apparatus.
13. To determine the coefficient of viscosity by Poiseuille's/Stoke's method.
14. To determine the frequency of an electrically maintained tuning fork by Melde's experiment and to verify λ^2 -T law.
15. To study Lissajous' Figures.

Texts/References

1. Advanced Practical Physics for students, B.L. Flint & H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, Indu Prakash and Ramakrishna, 11th Edition, 2011, KitabMahal, New Delhi

PH301: SOLID STATE PHYSICS

4-Credits (4-0-0)

Crystal Structure: Solids: Amorphous and crystalline materials, lattice translation vectors, lattice with a basis, unit Cell, Miller indices, reciprocal lattice, types of lattices, Brillouin zones, diffraction of X-rays by crystals, Bragg's law, atomic and geometrical factor.

Elementary Lattice Dynamics: Lattice vibrations and phonons: Linear monoatomic and diatomic chains, acoustical and optical phonons, qualitative description of the phonon spectrum in solids. Dulong and Petit's law, Einstein and Debye theories of specific heat of solids (qualitative only), T^3 law.

Magnetic Properties of Matter: Dia, Para, Ferri and Ferromagnetic materials, classical Langevin theory of dia and paramagnetic domains, quantum mechanical treatment of paramagnetism, Curie's law, Weiss's theory of Ferromagnetism and Ferromagnetic domains, discussion of B-H curve, hysteresis and energy loss.

Dielectric Properties of Materials: Polarization, local electric field at an atom, depolarization field, electric susceptibility, polarizability, Clausius-Mosotti equation, Classical theory of electric polarizability,



normal and anomalous dispersion, Cauchy and Sellmeier relations, Langevin-Debye equation, complex dielectric constant, optical phenomena, applications: plasma oscillations, plasma frequency, plasmons. Elementary Band Theory: Kronig Penny model, band gaps, conductors, semiconductors and insulators, p and n type semiconductors, conductivity of semiconductors, mobility, Hall Effect, Hall coefficient. Superconductivity: Experimental results, critical temperature, critical magnetic field, Meissner effect, type-I, and type-II superconductors.

Texts/References

1. Introduction to Solid State Physics, Charles Kittel, 8th Ed., 2004, Wiley India Pvt. Ltd.
2. Introduction to Solids, Leonid V. Azaroff, 2004, Tata Mc-Graw Hill
3. Solid State Physics, Neil W. Ashcroft and N. David Mermin, 1976, Cengage Learning
4. Solid State Physics, M.A. Wahab, 2011, Narosa Publications

PH303: SOLID STATE PHYSICS LAB

2-Credits (0-0-3)

List of Experiments

1. Measurement of susceptibility of paramagnetic solution (Quinck's Tube Method)
2. To measure the Magnetic susceptibility of Solids.
3. To determine the Coupling Coefficient of a Piezoelectric crystal.
4. To measure the Dielectric Constant of a dielectric Materials with frequency
5. To determine the complex dielectric constant and plasma frequency of metal using Surface Plasmon resonance (SPR) technique.
6. To determine the refractive index of a dielectric layer using SPR technique.
7. To study the PE Hysteresis loop of a Ferroelectric Crystal.
8. To draw the BH curve of iron using a Solenoid and determine the energy loss from Hysteresis.
9. To measure the resistivity of a semiconductor (Ge) crystal with temperature (up to 150°C) by four-probe method and to determine its band gap.
10. To determine the Hall coefficient of a semiconductor sample.

Texts/References

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House.
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers.
3. Elements of Solid State Physics, J.P. Srivastava, 2nd Ed., 2006, Prentice-Hall of India.

PH 305: PHYSICS OF SEMICONDUCTOR DEVICES

Credits: 4 (4-0-0)

Semiconductor Device Physics: Bonding in Solids, Energy Bands, Metals, Semiconductors, and Insulators, E-k diagram, Direct and Indirect bandgap Semiconductors, Density of states, Occupation probability, Fermi levels, Charge Carriers in Semiconductors, Effective Mass concept, Intrinsic and extrinsic Materials, Carrier concentration, Temperature dependence, Drift of Carriers in Electric and Magnetic Fields, Hall effect.

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PLI
Ami

Semiconductor Diodes: p and n type semiconductors, Barrier Formation in PN Junction Diode, Current Flow Mechanism, junction characteristics, Static and Dynamic Resistance, Transition capacitance, Varactor diodes, junction breakdown, Zener diode and its characteristics, Tunnel Diode, Schottky Diodes, Principle and structure of Light Emitting Diodes (LED), Photodiode, Solar Cell.

Bipolar Junction transistors: n-p-n and p-n-p Transistors, Current flow mechanism, CB, CE and CC Configurations, Active, Cutoff, and Saturation Regions, Current gains α and β , Load Line and Q point, Biasing of Transistors, h-parameter model, Single-stage CE amplifier using Hybrid Model, Input and Output Impedance, Current, Voltage and Power Gains, Frequency response of transistors, pnpn diode, Silicon Controlled Rectifier (SCR).

Field Effect Transistors: Physical Description and Theory of JFET, Static characteristics, Small Signal Analysis, Equivalent circuit, Fundamental Concept of MOSFETs, Enhancement and Depletion Type.

Texts/References

1. Electronic Devices & Circuits, J. Millman and C.C. Halkias, Tata Mc-Graw Hill (1991).
2. Physics of Semiconductor Devices, S. M. Sze and K. K. Ng, Wiley Interscience (2007).
3. Solid State Electronic Devices: B. Streetman, S. Banerjee, PHI (2009)
4. Electronic Fundamentals and Applications, D. Chattopadhyay and P. C. Rakshit, New Age International (2008)

PH307 PHYSICS OF SEMICONDUCTOR DEVICES LAB

2-Credits (0-0-3)

List of Experiments

1. To measure of the band-gap of a semiconductor using four-probe method.
2. To study the Hall effect and determine the Hall Coefficient.
3. To study the I-V characteristics of pn junction diode and find the static and dynamic resistance.
4. To study the I-V characteristic of a Zener diode and use it as a voltage regulator.
5. To study the characteristics of (i) Light emitting diode and (ii) Photo-diode.
6. To study the characteristics of a Transistor in (i) CE, (ii) CB, (iii) CC configuration.
7. To design a CE amplifier of a given gain (mid-gain) using voltage divider bias.
8. To study the characteristics of a FET.

Texts/References

1. B.Sc Practical Physics, Geeta Sanon, R. Chand & Co. (2010).
2. B.Sc Practical Physics, Harnam Singh, S. Chand & Co. (2002).

PH309: INTRODUCTORY ATMOSPHERIC PHYSICS

3-Credits (3-0-0)

General features of Earth's atmosphere: Thermal structure of the Earth's Atmosphere, Composition of atmosphere, Hydrostatic equation, Atmospheric Thermodynamics, Greenhouse effect, Local winds, monsoons, fogs, clouds, precipitation, Atmospheric boundary layer, Sea breeze and land breeze.

Atmospheric Waves: Surface water waves, wave dispersion, acoustic waves, buoyancy waves, propagation of atmospheric gravity waves (AGWs) in a nonhomogeneous medium, Lamb wave, Rossby waves and its propagation in three dimensions and in sheared flow, wave absorption, non-linear consideration



Atmospheric Radar and Lidar: Radar equation and return signal, Signal processing and detection, Various type of atmospheric radars, Application of radars to study atmospheric phenomena, Lidar and its applications.

Atmospheric Aerosols: Spectral distribution of the solar radiation, Classification and properties of aerosols, Production and removal mechanisms, Concentrations and size distribution, Radiative and health effects, Absorption and scattering of solar radiation, Rayleigh scattering and Mie scattering, Optical phenomena in atmosphere, Aerosol studies using Lidars.

Texts/References

1. Fundamental of Atmospheric Physics-Murry L Salby; Academic Press, Vol 61, 1996.
2. The Physics of Atmosphere – John T. Houghton; Cambridge University press; 3rd edn. 2002.
3. An Introduction to dynamic meteorology – James R Holton; Academic Press, 2004.
4. Radar for meteorological and atmospheric observations – S Fukao and K Hamazu, Springer Japan, 2014

PH311: BASICS OF NANOSCIENCE

3-Credits (3-0-0)

Introduction to Nanoscience: Length scales in physics, Nanostructures: 1D, 2D and 3D nanostructures (nanodots, thin films, nanowires), band structure and density of states of materials at nanoscale, size effects in nano systems, *characteristic scale for quantum phenomena*, quantum confinement, applications of Schrodinger equation, infinite potential well, quantum confinement of carriers in quantum confined nanostructures and its consequences.

Overview of Nano Fabrication Methods: Top-down and bottom-up approaches. Sol-Gel, Co-precipitation and Hydrothermal synthesis. Photolithography. Physical vapor deposition (PVD): Thermal evaporation, Pulsed Laser deposition. Chemical vapor deposition (CVD). MBE

Characterization Tools: X-Ray Diffraction. Scanning Electron Microscopy. Transmission Electron Microscopy. Atomic Force Microscopy.. Profilometry. PL, UV Spectroscopy

Optical Properties of nanostructural materials

Applications: Applications of nanostructures for photonic devices (LED's and solar cells). Introduction to CNT based devices. Nanomaterial Devices: Quantum dots heterostructure lasers, optical switching and optical data storage. Magnetic quantum well; magnetic dots -magnetic data storage. Micro Electromechanical Systems (MEMS), Nano Electromechanical Systems (NEMS). Functionalized nanoparticles for biological application. Impact of nanotechnology on the environment.

Texts/References

1. Introduction to Nanotechnology by Charles P. Poole, Jr., Frank J. Owens, John Wiley & Sons, 2003.
2. Nanotechnology: Principles & Practices by S.K. Kulkarni, Springer, 3rd Edition, 2015.
3. Nanoscale science and technology, Robert Kelsall, Ian W. Hamley, Mark Geoghegan, John Wiley & Sons., 2005.

4. Nanomaterials: synthesis, properties and applications by A.S Edelstein, R.C Cammaratra, CRC Press, 1998
5. Electron Microscopy and Analysis, Peter J. Goodhew; John Humphreys; Richard Beanland, CRC Press, 3rd Edition, 2000.

PH302: ATOMIC, MOLECULAR AND NUCLEAR PHYSICS

4-Credits (4-0-0)

Basics of Atomic Physics: Quantum states of an electron in an atom, electron spin spectra of H, He, and alkali metals.

Atoms in Electric and Magnetic Fields: Electron Angular Momentum, Space Quantization. Electron Spin and Spin Angular Momentum. Larmor's Theorem. Spin Magnetic Moment. Stern-Gerlach Experiment. Zeeman Effect: Electron Magnetic Moment and Magnetic Energy, Gyromagnetic Ratio and Bohr Magneton. Normal and Anomalous Zeeman Effect. Paschen Back and Stark Effect (Qualitative Discussion only).

Raman Effect: Quantum Theory of Raman Effect. Characteristics of Raman Lines. Stoke's and Anti-Stoke's Lines. Complimentary Character of Raman and infrared Spectra.

Lasers: Einstein's A and B coefficients. Metastable states. Spontaneous and Stimulated emissions. Optical Pumping and Population Inversion. Three-Level and Four-Level Lasers. Ruby Laser and He-Ne Laser.

Basics of Nuclear Physics: Structure of nuclei: Basic Properties of Nuclei, Radioactivity: Law of Radioactive Decay. Half-life, Radioactive Series, Binding Energy, Mass Formula, α -decay: Range of α -particles, Geiger-Nuttal law and α -particle Spectra. Gamow Theory of Alpha Decay, β -decay: Energy Spectra and Neutrino Hypothesis, γ -decay: Origin of γ -rays, Nuclear Isomerism and Internal Conversion, Nuclear Reactions: Types of Reactions and Conservation Laws. Concept of Compound and Direct Reaction. Compound Nucleus. Scattering Problem in One Dimension : Reflection and Transmission by a Finite Potential Step, Attractive and Repulsive Potential Barriers. Scattering Cross-section. Reaction Rate. Q-value of Reaction. Fission and Fusion. Nuclear Models: Liquid Drop Model. Mass formula. Shell Model. Meson Theory of Nuclear Forces and Discovery of Pion. Accelerators, Detectors of Nuclear Radiations (Qualitative Discussion Only).

Texts/References

1. Concepts of Modern Physics by Arthur Beiser (McGraw-Hill Book Company, 1987)
2. Atomic physics by J.B.Rajam & foreword by Louis De Broglie.(S.Chand & Co., 2007).
3. Atomic Physics by J.H.Fewkes & John Yarwood. Vol. II (Oxford Univ. Press, 1991).
4. Nuclear physics by Irving Kaplan. (Oxford & IBH, 1962).
5. Introductory nuclear physics by Kenneth S. Krane.(John Wiley & Sons, 1988).
6. Concepts of nuclear physics by Bernard L.Cohen.(New Delhi: Tata McGraw Hill, (1998).

PH-304: ATOMIC, MOLECULAR AND NUCLEAR PHYSICS LAB

2-Credits (0-0-3)

List of Experiments

1. To study the absorption spectra of He and Na source.
2. To determine refractive index of the Material of a prism using sodium source.
3. To determine the dispersive power and Cauchy constants of the material of a prism using mercury source.



4. To determine the absorption lines in the rotational spectrum of Iodine vapour.
5. To determine wavelength of (1) Na source and (2) spectral lines of Hg source using plane diffraction grating.
6. To determine the wavelength of H-alpha emission line of Hydrogen atom.
7. To determine the ionization potential of mercury.
8. To setup the Millikan oil drop apparatus and determine the charge of an electron.
9. To determine the wavelength of laser source using diffraction of single slit.
10. To determine the wavelength of laser source using diffraction of double slits.
11. To determine angular spread of He-Ne laser using plane diffraction grating.
12. Study of Electron spin resonance- determine magnetic field as a function of the resonance frequency
13. Study of Zeeman effect: with external magnetic field; Hyperfine splitting

Texts/References

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
2. A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11-th Ed., 2011, Kitab Mahal
3. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
4. A Laboratory Manual of Physics for undergraduate classes, D.P.Khandelwal, 1985, Vani Pub.

PH306: MODERN PHYSICS AND QUANTUM MECHANICS

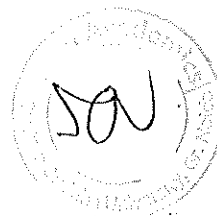
4-Credits (4-0-0)

Dual nature of wave and particle: Origin of Planck's quantum theory, Planck's constant and light as a collection of photons; Blackbody Radiation: Quantum theory of Light; Photo-electric effect and Compton scattering, de Broglie wavelength and matter waves; electron diffraction, Davisson-Germer experiment, Wave description of particles by wave packets, Group and Phase velocities and relation between them. Two-Slit experiment with electrons. Probability amplitude and density, Wave amplitude and wave functions, Heisenberg uncertainty principle, Estimating minimum energy of a confined particle using uncertainty principle; Energy-time uncertainty principle.

Quantum mechanics: Matter waves and wave amplitude; time independent and dependent Schrodinger equation for non-relativistic particles; Momentum and Energy operators; stationary states; physical interpretation of a wave function, probabilities and normalization; Applications of Schrodinger's equation: One dimensional infinitely rigid box- energy eigenvalues and eigenfunctions, normalization, Quantum mechanical tunneling in one dimension-across a step potential and rectangular potential barrier.

Basics of Atomic Physics: Quantum states of an electron in an atom, atomic spectra of H, He, and alkali metals, Bohr atom, Quantum theory of H atom, Quantum numbers, Spectral Notations for Atomic States, electron spin, Pauli's Exclusion Principle, Stern-Gerlach experiment (Brief discussion), Symmetric and antisymmetric wavefunctions, Hund's rule, Spin orbit coupling, Total Angular Momentum, L-S and J-J couplings.

Basics of Nuclear Physics: Size and structure of atomic nucleus and its relation with atomic weight; Binding energy, Radioactivity: stability of the nucleus; Law of radioactive decay; Mean life and half-life; Alpha decay; Beta decay- energy released, spectrum and Pauli's prediction of neutrino; Gamma ray emission, Nature of nuclear force, Liquid Drop model: semi-empirical mass formula and binding energy.



energy-momentum conservation: electron-positron pair creation by gamma photons in the vicinity of a nucleus. Fission and fusion reactions (brief qualitative discussions).

Texts/References

1. Concepts of Modern Physics, Arthur Beiser, 2002, McGraw-Hill.
2. Introduction to Modern Physics, Rich Meyer, Kennard, Coop, 2002, Tata McGraw Hill
3. Introduction to Quantum Mechanics, David J. Griffith, 2005, Pearson Education.
4. Modern Physics, G.Kaur and G.R. Pickrell, 2014, McGraw Hill
5. A. Ghatak and S. Lokanathan, "Quantum Mechanics: Theory and Applications", Kluwer Academic Publishers (2004)
6. H. C. Verma, "Quantum Physics", Surya Publications (2006)

PH-308: MODERN PHYSICS AND QUANTUM MECHANICS LAB

2-Credits (0-0-3)

List of Experiments

1. Measurement of Planck's constant using black body radiation and photo-detector
2. Measurement of Planck's constant using Photoelectric effect.
3. Photo-electric effect: photo current versus intensity and wavelength of light; maximum energy of photo-electrons versus frequency of light
4. To determine work function of material of filament of directly heated vacuum diode.
5. To determine the Planck's constant using LEDs of at least 4 different colours.
6. To determine the wavelength of H-alpha emission line of Hydrogen atom.
7. To determine the ionization potential of mercury.
8. To determine the absorption lines in the rotational spectrum of Iodine vapour.
9. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.
10. To setup the Millikan oil drop apparatus and determine the charge of an electron.
11. To show the tunneling effect in tunnel diode using I-V characteristics.
12. To determine angular spread of He-Ne laser using plane diffraction grating.

Texts/References

1. Advanced Practical Physics for students, B.L. Flint and H.T. Worsnop, 1971, Asia Publishing House
2. Advanced level Physics Practicals, Michael Nelson and Jon M. Ogborn, 4th Edition, reprinted 1985, Heinemann Educational Publishers
3. A Text Book of Practical Physics, I. Prakash & Ramakrishna, 11th Edn, 2011, Kitab Mahal

Physics: Skill Enhancement Courses (SEC)

PH205: RENEWABLE ENERGY AND ENERGY HARVESTING

2-Credits (2-0-0)

Conventional Energy Sources: Review of conventional energy sources and their limitations.

Solar Energy: Solar energy and its importance, storage of solar energy, solar pond, non convective solar pond, applications of solar energy, photovoltaic (PV) systems, PV models and equivalent circuits, sun tracking systems.

Wind Energy Harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies.

Ocean Energy: Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices.

Hydro Energy: Hydropower resources, hydropower technologies, environmental impact of hydro power sources.

Piezoelectric Energy harvesting: Physics and characteristics of piezoelectric effect, materials and mathematical description of piezoelectricity, piezoelectric parameters and modeling piezoelectric generators, applications.

Electromagnetic Energy Harvesting: Linear generators, physics mathematical models, recent applications.

Environmental issues and sustainability.

Texts/References

1. Non-conventional energy sources, B.H. Khan, Tata McGraw-Hill Education, 2006.
2. Solar Energy: Principles of Thermal Collection and Storage, K. Sukhatme, Suhas P. Sukhatme, Tata McGraw-Hill Education, 1996.
3. Renewable Energy, Power for a sustainable future, Godfrey Boyle, 3rd Edn., Oxford University Press, 2012.
4. Solar Energy Resource Assessment Handbook, Jayakumar, Renewable Energy Corporation Network for the Asia Pacific, 2009.
5. J. Balfour, M. Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA).

PH-206: COMPUTATIONAL PHYSICS

2-Credits (2-0-0)

Basic programming techniques, Introduction to MATLAB, variables and arrays; scalar and array operations; built-in MATLAB functions; file input/output. Data visualisation and plotting in MATLAB; Revision of error analysis; propagation of errors; MATLAB functions for error analysis; User-defined functions in MATLAB, Numerical methods for solving ordinary differential equations; Classical electrons in crossed electric and magnetic fields, Integral equations: Calculation of scattering cross section (a) quantum scattering with a spherically symmetric potential, Partial differential equations: Laplace's equation, wave equations, diffusion equation and Maxwell's equations. Numerical solution of some specific computational problems in Physics.

Texts/References

1. J Hasbun, P. Devries, A first course in computational physics
2. Rudra Pratap, Getting started with Matlab 7: A quick introduction for Scientists and Engineers, Oxford University Press (2002).

PH313 : PHOTOLITHOGRAPHY AND DEVICE FABRICATION

2-Credits (2-0-0)

Fundamentals of Photolithography, Photo resists (PR), Positive and negative photo resists, Photo Resist Parameters, Developers, Key steps for doped Silicon photolithography, growth of oxide layer, surface preparation, coating of the Photo resist, Photo mask fabrication, Chromium etching, Optical exposure.

Transparent conducting oxides films in device applications, Optical and electronic properties (absorption, resistivity, work function) of indium tin oxide (ITO) thin film. Introduction to Solar Cells and Light emitting diodes (LED) structure

Patterning of ITO, Surface treatment, evaporation or coating process, encapsulation, major challenges in device fabrication, optical out-coupling and approaches, Commercialization issues for solar cell and display devices: Efficiency, life-time, size, weight & cost, Resolution, brightness, CIE, colour Gamut, aspect ratio, contrast ratio, power consumption.

Texts/References/Resources

1. S.M.Sze, VLSI Technology, Tata McGraw Hill Edition (2003).
2. Franky So, 'Organic Electronics', CRC Press (2010).
3. Web: <http://www.nptel.ac.in>

PH-310: SIMULATION EXPERIMENTS IN PHYSICS

2-Credits (0-0-4)

1. Comparative study of gravitational, electromagnetic, and nuclear forces.
2. Planetary motion and satellite orbits.
3. Length contraction, time dilation, and mass-energy equivalence.
4. Electric and magnetic field analysis for different charge and current distributions.
5. Electromagnetic wave propagation
6. Heat transfer
7. Blackbody radiation, ultraviolet catastrophe, and Planck's radiation law.
8. Calculating energy levels for hydrogen like atoms and analysis of their spectra.
9. Energy levels, wavefunctions and, probability densities for a particle in one dimensional infinitely rigid box.
10. Energy levels, wavefunctions and, probability densities for a harmonic oscillator.
11. Quantum mechanical scattering and tunneling.
12. I-V Characteristics of semiconductor devices.



CHEMISTRY

Core papers Chemistry (Credit: 06 each) :

Semester-I, CC-II

- (i) CH 101- Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons
- (ii) CH 103- Laboratory-I

Semester-II, CC-V

- (i) CH 102- Chemical Energetic, Equilibrium & Functional Group Organic Chemistry-I
- (ii) CH 104 Laboratory-II

Semester-III, CC-VIII

- (i) CH 201- Conductance, Electrochemistry & Functional Group Organic Chemistry-II
- (ii) CH 203 - Laboratory-III

Semester-IV, CC-XI

- (i) CH 202- Transition Metal & Coordination Chemistry, States of Matter and Chemical Kinetics
- (ii) CH 204- Laboratory-IV

Discipline Specific Elective papers (Credit: 06 each):

Semester-V, DSE-2 (Choose one)

- (i) CH 301- Industrial Chemicals & Environment
- (ii) CH 303- Laboratory(DSE)-V
- (iii) CH 305 Quantum Chemistry, Spectroscopy & Photochemistry
- (iv) CH 307- Laboratory(DSE)-V

Semester-VI, DSE-5 (Choose one)

- (i) CH 302- Molecules of Life
- (ii) CH 304- Laboratory(DSE)-VI
- (iii) CH 306- Chemistry of Main Group Elements, Theories of Acids and Bases
- (iv) CH 308- Laboratory(DSE)-VI

Skill Enhancement Course (Credit: 02 each)

Semester-III, SEC-I

CH 205- Intellectual Property Rights.

Semester-IV, SEC-II

CH 206- Green Methods in Chemistry.

Semester-V, SEC-III

CH 309- Pharmaceutical Chemistry.

Semester-VI, SEC-IV

CH 310- Chemistry of Cosmetics & Perfumes.

SEMESTER-1

CHEMISTRY- CC-II:

CH 101-ATOMIC STRUCTURE, BONDING, GENERALORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS

(Credits: Theory-04, Practicals-02) Theory: 60 Lectures

Section A: Inorganic Chemistry-1

(30 Lectures)

Atomic Structure: Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's uncertainty principle and its significance, Schrödinger's wave equation, significance of ψ and ψ^2 . Quantum numbers and their significance. Normal and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions. Radial and angular distribution curves. Shapes of *s*, *p*, *d* and *f* orbitals. Contour boundary and probability diagrams. Pauli's exclusion principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations, Variation of orbital energy with atomic number. (7 Lectures)

Periodicity of Elements: *s*, *p*, *d*, *f* block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to *s* & *p*-block, Effective nuclear charge, shielding or screening effect, Slater rules, variation of effective nuclear charge in periodic table.

Ionization enthalpy, Successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy.

Electron gain enthalpy, trends of electron gain enthalpy.

Electronegativity, Pauling's/ Mulliken's/ Allred Rachow's/ and Mulliken-Jaffe's electronegativity scales.

Variation of electronegativity with bond order, partial charge, hybridization, group electronegativity.

Sanderson's electron density ratio. (7 Lectures)

Chemical Bonding and Molecular Structure

Ionic Bonding: General characteristics of ionic bonding. Energy considerations in ionic bonding, lattice energy and solvation energy and their importance in the context of stability and solubility of ionic compounds. Statement of Born-Landé equation for calculation of lattice energy, Born-Haber cycle and its applications, polarizing power and polarizability. Fajan's rules, ionic character in covalent compounds, bond moment, dipole moment and percentage ionic character.

Covalent bonding: VB Approach: Shapes of some inorganic molecules and ions on the basis of VSEPR and hybridization with suitable examples of linear, trigonal planar, square planar, tetrahedral, trigonal bipyramidal and octahedral arrangements. Concept of resonance and resonating structures in various inorganic and organic compounds.

MO Approach: Rules for the LCAO method, bonding and antibonding MOs and their characteristics for *s-s*, *s-p* and *p-p* combinations of atomic orbitals, nonbonding combination of orbitals, MO treatment of

homonuclear diatomic molecules of 1st and 2nd periods (including idea of *s-p* mixing) and heteronuclear diatomic molecules such as CO, NO and NO⁺. Comparison of VB and MO approaches. (16 Lectures)

Section B: Organic Chemistry-1

(30 Lectures)

Fundamentals of Organic Chemistry: Organic Compounds: Classification, and Nomenclature, Hybridization, Shapes of molecules, Influence of hybridization on bond properties. Electronic Displacements: Inductive, electromeric, resonance and mesomeric effects, hyperconjugation and their applications; Dipole moment; Organic acids and bases; their relative strength. Homolytic and Heterolytic fission with suitable examples. Curly arrow rules, formal charges; Electrophiles and Nucleophiles; Nucleophilicity and basicity; Types, shape and their relative stability of Carbocations, Carbanions, Free radicals and Carbenes

Introduction to types of organic reactions and their mechanism: Addition, Elimination and Substitution reactions. (8 Lectures)

Stereochemistry: Conformations with respect to ethane, butane and cyclohexane. Interconversion of Wedge Formula, Newmann, Sawhorse and Fischer representations. Concept of chirality (up to two carbon atoms). Configuration: Geometrical and Optical isomerism; Enantiomerism, Diastereomerism and Meso compounds). Threo and erythro; D and L; cis - trans nomenclature; CIP Rules: R/ S (for upto 2 chiral carbon atoms) and E / Z Nomenclature (for upto two C=C systems). (10 Lectures)

Chemistry of Aliphatic Hydrocarbons

Carbon-Carbon sigma bonds : Chemistry of alkanes: Formation of alkanes, Wurtz Reaction, Wurtz-Fittig Reactions; Free radical substitutions: Halogenation - relative reactivity and selectivity.

Carbon-Carbon pi bonds : Formation of alkenes and alkynes by elimination reactions, Mechanism of E1, E2, E1cb reactions. Saytzeff and Hofmann eliminations.

Reactions of alkenes: Electrophilic additions their mechanisms (Markownikoff/ Anti Markownikoff addition), mechanism of oxymercuration-demercuration, hydroboration-oxidation, ozonolysis, reduction (catalytic and chemical), syn and anti hydroxylation (oxidation). 1, 2- and 1, 4- addition reactions in conjugated dienes and, Diels-Alder reaction; Allylic and benzylic bromination and mechanism, e.g. propene, 1-butene, toluene, ethyl benzene.

Reactions of alkynes: Acidity, Electrophilic and Nucleophilic additions. Hydration to form carbonyl compounds, Alkylation of terminal alkynes. (12 Lectures)

Reference Books:

1. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
2. Cotton, F.A., Wilkinson, G. & Gaus, P.L. Basic Inorganic Chemistry, 3rd ed., Wiley.
3. Douglas, B.E., McDaniel, D.H. & Alexander, J.J. Concepts and Models in Inorganic Chemistry, John Wiley & Sons.
4. Huheey, J.E., Keiter, E.A., Keiter, R.L. & Medhi, O.K. Inorganic Chemistry: Principles of Structure and Reactivity, Pearson Education India, 2006.
5. Graham Solomon, T.W., Fryhle, C.B. & Snyder, S.A. Organic Chemistry, John Wiley & Sons (2014).
6. McMurry, J.E. Fundamentals of Organic Chemistry, 7th Ed. Cengage Learning India Edition, 2013.
7. Eliel, E.L. Stereochemistry of Carbon Compounds, Tata McGraw Hill education, 2000.

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8. Finar, I.L. Organic Chemistry (Vol. I & II), E.L.B.S.
9. Morrison, R.T. & Boyd, R.N. Organic Chemistry, Pearson, 2010

CHEMISTRY LAB CC-I:

CH 103 – LABORATORY-I: ATOMIC STRUCTURE, BONDING, GENERAL ORGANIC CHEMISTRY & ALIPHATIC HYDROCARBONS

(60 Lectures)

Section A: Inorganic Chemistry - Volumetric Analysis

1. Estimation of sodium carbonate and sodium hydrogen carbonate present in a mixture.
2. Estimation of oxalic acid by titrating it with KMnO_4 .
3. Estimation of water of crystallization in Mohr's salt by titrating with KMnO_4 .
4. Estimation of Fe (II) ions by titrating it with $\text{K}_2\text{Cr}_2\text{O}_7$ using internal indicator & external indicator.
5. To determine calcium and magnesium hardness of given water sample separately.

Section B: Organic Chemistry

1. Detection of extra elements (N, S, Cl, Br, I) in organic compounds (containing upto two extra elements).
2. Separation of mixtures by Chromatography: Measure the R_f value in each case (combination of two compounds to be given)
 - (a) Identify and separate the components of a given mixture of two amino acids (glycine, aspartic acid, glutamic acid, tyrosine or any other amino acid) by paper chromatography
 - (b) Identify and separate the sugars present in the given mixture by paper chromatography.

Reference Books:

1. Svehla, G. Vogel's Qualitative Inorganic Analysis, Pearson Education, 2012.
2. Mendham, J. Vogel's Quantitative Chemical Analysis, Pearson, 2009.
3. Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G., Textbook of Practical Organic Chemistry, Prentice-Hall, 5th edition, .

SEMESTER-II

CHEMISTRY- CC-V:

CH 102- CHEMICAL ENERGETICS, EQUILIBRIA , FUNCTIONAL ORGANIC CHEMISTRY

(Credits: Theory-04, Practicals-02)

Theory: 60 Lectures

Section A: Physical Chemistry-1 (30 Lectures)

Chemical Energetics: Review of thermodynamics and the Laws of Thermodynamics. Important principles and definitions of thermochemistry. Concept of standard state and standard enthalpies of formations, integral and differential enthalpies of solution and dilution. Calculation of bond energy, bond dissociation energy and resonance energy from thermochemical data. Variation of enthalpy of a reaction with temperature – Kirchhoff's equation. Statement of Third Law of thermodynamics and calculation of absolute entropies of substances.

(10 Lectures)



Chemical Equilibrium: Free energy change in a chemical reaction. Thermodynamic derivation of the law of chemical equilibrium. Distinction between G and G° , Le Chatelier's principle. Relationships between K_p , K_c and K_x for reactions involving ideal gases. (8 Lectures)

Ionic Equilibria: Strong, moderate and weak electrolytes, degree of ionization, factors affecting degree of ionization, ionization constant and ionic product of water. Ionization of weak acids and bases, pH scale, common ion effect. Salt hydrolysis-calculation of hydrolysis constant, degree of hydrolysis and pH for different salts. Buffer solutions. Solubility and solubility product of sparingly soluble salts – applications of solubility product principle. (12 Lectures)

Section B: Organic Chemistry-2 (30 Lectures)

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Aromatic hydrocarbons: Preparation (Case benzene): from phenol, by decarboxylation, from acetylene, from benzene sulphonate acid.

Reactions: (Case benzene): Electrophilic substitution: nitration, halogenation and sulphonation. Friedel-Craft's reaction (alkylation and acylation) (upto 4 carbons on benzene). Side chain oxidation of alkyl benzenes (upto 4 carbons on benzene). (8 Lectures)

Alkyl and Aryl Halides:

Alkyl Halides Methods of preparation, nucleophilic substitution reactions – S_N1 , S_N2 and S_Ni mechanisms with stereochemical aspects and effect of solvent etc.; nucleophilic substitution vs elimination

Aryl halides: Preparation, including preparation from diazonium salts. nucleophilic aromatic substitution; S_NAr , Benzyne mechanism Relative reactivity of Alkyl, allyl/benzyl, vinyl and aryl halides towards nucleophilic substitution reactions. Organometallic compounds of Mg and Li – Use in synthesis of organic compounds. (8 Lectures)

Alcohols, Phenols and Ethers (Upto 5 Carbons)

Grignard Reagent: Preparation, Properties and Reaction mechanism.

Alcohols: preparation, properties and relative reactivity of 1° , 2° , 3° alcohols, Bouvaelt-Blanc Reduction; Preparation and properties of glycols: Oxidation by periodic acid and lead tetraacetate, Pinacol- Pinacolone rearrangement;

Phenols: Preparation and properties; Acidity and factors effecting it, Ring substitution reactions, Reimer – Tiemann and Kolbe's – Schmidt Reactions, Fries and Claisen rearrangements with mechanism;

Ethers and Epoxides: Preparation and reactions with acids. Reactions of epoxides with alcohols, ammonia derivatives and $LiAlH_4$

Aldehydes and ketones (aliphatic and aromatic): (Formaldehyde, acetaldehyde, acetone and benzaldehyde) Preparation: from acid chlorides and from nitriles.

Reactions – Reaction with HCN, ROH, $NaHSO_3$, NH_2-G derivatives. Iodoform test. Aldol Condensation, Cannizzaro's reaction, Wittig reaction, Benzoin condensation. Clemensen reduction and Wolff Kishner reduction. Meerwein-Ponndorf Verley reduction. (14 Lectures)

Reference Books:

24

Section B: Organic Chemistry-3 (30 Lectures)

Functional group approach for the following reactions (preparations & reactions) to be studied in context to their structure.

Carboxylic acids and their derivatives: Carboxylic acids (aliphatic and aromatic), Preparation: Acidic and Alkaline hydrolysis of esters. Reactions: Hell – Vohlard - Zelinsky Reaction.

Carboxylic acid derivatives (aliphatic): (Upto 5 carbons) Preparation: Acid chlorides, Anhydrides, Esters and Amides from acids and their interconversion. Reactions: Comparative study of nucleophilicity of acyl derivatives. Reformatsky Reaction, Perkin condensation. (6 Lectures)

Diazonium Salts: Amines (Aliphatic and Aromatic): (Upto 5 carbons)

Preparation: from alkyl halides, Gabriel's Phthalimide synthesis, Hofmann Bromamide reaction.

Reactions: Hofmann vs. Saytzeff elimination, Carbylamine test, Hinsberg test, with HNO_2 , Schotten – Baumann Reaction. Electrophilic substitution (case aniline): nitration, bromination, sulphonation.

Diazonium salts:

Preparation: from aromatic amines. Reactions: conversion to benzene; phenol, dyes. (6 Lectures)

Amino Acids, Peptides and Proteins: Preparation of Amino Acids: Strecker synthesis using Gabriel's phthalimide synthesis. Zwitterion, Isoelectric point and Electrophoresis.

Reactions of Amino acids: ester of $-\text{COOH}$ group, acetylation of $-\text{NH}_2$ group, complexation with Cu^{2+} ions, ninhydrin test.

Overview of Primary, Secondary, Tertiary and Quaternary Structure of proteins.

Determination of Primary structure of Peptides by degradation Edmann degradation (N-terminal) and C-terminal (thiohydantoin and with carboxypeptidase enzyme). Synthesis of simple peptides (upto dipeptides) by N-protection (t-butyloxycarbonyl and phthaloyl) & C-activating groups and Merrifield solid-phase synthesis. (10 Lectures)

Carbohydrates: Classification, and General Properties, Glucose and Fructose (open chain and cyclic structure), Determination of configuration of monosaccharides, absolute configuration of Glucose and Fructose, Mutarotation, ascending and descending in monosaccharides. Structure of disaccharides (sucrose, cellobiose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.

Reference Books:

1. Barrow, G.M. Physical Chemistry Tata McGraw-Hill (2007).
2. Castellan, G.W. Physical Chemistry 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. General Chemistry, Cengage Learning India Pvt. Ltd.: New Delhi (2009).
4. Morrison, R. T. & Boyd, R. N. Organic Chemistry, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
5. Finar, I. L. Organic Chemistry (Volume 1), Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
6. Nelson, D. L. & Cox, M. M. Lehninger's Principles of Biochemistry 7th Ed.,
7. Berg, J.M., Tymoczko, J.L. & Stryer, L. Biochemistry, W.H. Freeman, 2002



CHEMISTRY CC-VIII- LABORATORY

CH 203- LABORATORY-II: SOLUTIONS, PHASE EQUILIBRIUM, CONDUCTANCE, ELECTROCHEMISTRY & FUNCTIONAL ORGANIC CHEMISTRY-II (60 Lectures)

Section A: Physical Chemistry

Distribution

Study of the equilibrium of one of the following reactions by the distribution method:

- i. $I_2(aq) + I^-(aq) \rightleftharpoons I_3^-(aq)$
- ii. $Cu^{2+}(aq) + xNH_3(aq) \rightleftharpoons [Cu(NH_3)_x]^{2+}$

Phase equilibria

1. Construction of the phase diagram of a binary system (simple eutectic) using cooling curves.
2. Determination of the critical solution temperature and composition of the phenol water system and study of the effect of impurities on it.
3. Study of the variation of mutual solubility temperature with concentration for the phenol water system and determination of the critical solubility temperature.

Conductance

1. Determination of cell constant
2. Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.
3. Perform the following conductometric titrations:
 - i. Strong acid vs. strong base
 - ii. Weak acid vs. strong base

Potentiometry

1. Perform the following potentiometric titrations:
 - i. Strong acid vs. strong base
 - ii. Weak acid vs. strong base
 - iii. Potassium dichromate vs. Mohr's salt
2. Determination of cell constant.
3. Determination of equivalent conductance, degree of dissociation and dissociation constant of a weak acid.
4. Perform the following conductometric titrations:
 - i. Strong acid vs. strong base
 - ii. Weak acid vs. strong base
 - iii. Potassium dichromate vs. Mohr's salt

Section B: Organic Chemistry

1. Systematic Qualitative Organic Analysis of Organic Compounds possessing monofunctional groups (-COOH, phenolic, aldehydic, ketonic, amide, nitro, amines) and preparation of one derivative.
2.
 - i. Separation of amino acids by paper chromatography
 - ii. Determination of the concentration of glycine solution by formulation method.
 - iii. Titration curve of glycine



- iv. Action of salivary amylase on starch
- v. Effect of temperature on the action of salivary amylase on starch.
- vi. Differentiation between a reducing and a non-reducing sugar.

Reference Books:

1. Vogel, A.I., Tatchell, A.R., Furnis, B.S., Hannaford, A.J. & Smith, P.W.G.,
2. Textbook of Practical Organic Chemistry, Prentice-Hall, 5th edition, 1996.
3. Khosla, B. D.; Garg, V. C. & Gulati, A. Senior Practical Physical Chemistry, R. Chand & Co.: New Delhi (2011).
4. Ahluwalia, V.K. & Aggarwal, R. Comprehensive Practical Organic Chemistry, Universities Press.

SEMESTER-IV

CHEMISTRY- CC-XI:

CH 202-TRANSITION METAL & COORDINATION CHEMISTRY, STATES OF MATTER & CHEMICAL KINETICS

(Credits: Theory-04, Practicals-02)

Theory: 60 Lectures

Transition Elements (3d series): General group trends with special reference to electronic configuration, variable valency, colour, magnetic and catalytic properties, ability to form complexes and stability of various oxidation states (Latimer diagrams) for Mn, Fe and Cu.

Lanthanoids and actinoids: Electronic configurations, oxidation states, colour, magnetic properties, lanthanide contraction, separation of lanthanides (ion exchange method only). (12 Lectures)

Coordination Chemistry: Valence Bond Theory (VBT): Inner and outer orbital complexes of Cr, Fe, Co, Ni and Cu (coordination numbers 4 and 6). Structural and stereoisomerism in complexes with coordination numbers 4 and 6. Drawbacks of VBT. IUPAC system of nomenclature. (8 Lectures)

Crystal Field Theory: Crystal field effect, octahedral symmetry. Crystal field stabilization energy (CFSE), Crystal field effects for weak and strong fields. Tetrahedral symmetry. Factors affecting the magnitude of D. Spectrochemical series. Comparison of CFSE for *O_h* and *T_d* complexes, Tetragonal distortion of octahedral geometry. Jahn-Teller distortion, Square planar coordination. (10 Lectures)

Section B: Physical Chemistry-3 (30 Lectures)

Kinetic Theory of Gases: Postulates of Kinetic Theory of Gases and derivation of the kinetic gas equation. Deviation of real gases from ideal behaviour, compressibility factor, causes of deviation. van der Waals equation of state for real gases. Boyle temperature (derivation not required). Critical phenomena, critical constants and their calculation from van der Waals equation. Andrews isotherms of CO₂. Maxwell Boltzmann distribution laws of molecular velocities and molecular energies (graphic representation – derivation not required) and their importance. Temperature dependence of these distributions. Most probable, average and root mean square velocities (no derivation). Collision cross section, collision number, collision frequency, collision diameter and mean free path of molecules. Viscosity of gases and effect of temperature and pressure on coefficient of viscosity (qualitative treatment only). (8 Lectures)

Liquids: Surface tension and its determination using stalagmometer. Viscosity of a liquid and determination of coefficient of viscosity using Ostwald viscometer. Effect of temperature on surface tension and coefficient of viscosity of a liquid (qualitative treatment only). (6 Lectures)



Solids: Forms of solids. Symmetry elements, unit cells, crystal systems, Bravais lattice types and identification of lattice planes. Laws of Crystallography - Law of constancy of interfacial angles, Law of rational indices. Miller indices. X-Ray diffraction by crystals, Bragg's law. Structures of NaCl, KCl and CsCl (qualitative treatment only). Defects in crystals. Glasses and liquid crystals. (8 Lectures)

Chemical Kinetics: The concept of reaction rates. Effect of temperature, pressure, catalyst and other factors on reaction rates. Order and molecularity of a reaction. Derivation of integrated rate equations for zero, first and second order reactions (both for equal and unequal concentrations of reactants). Half-life of a reaction. General methods for determination of order of a reaction. Concept of activation energy and its calculation from Arrhenius equation.

Theories of Reaction Rates: Collision theory and Activated Complex theory of bimolecular reactions. Comparison of the two theories (qualitative treatment only). (8 Lectures)

Reference Books:

1. Barrow, G.M. *Physical Chemistry* Tata McGraw-Hill (2007).
2. Castellan, G.W. *Physical Chemistry* 4th Ed. Narosa (2004).
3. Kotz, J.C., Treichel, P.M. & Townsend, J.R. *General Chemistry* Cengage Learning India Pvt. Ltd., New Delhi (2009).
4. Cotton, F.A. & Wilkinson, G. *Basic Inorganic Chemistry*, Wiley.
5. Shriver, D.F. & Atkins, P.W. *Inorganic Chemistry*, Oxford University Press.
6. Wulfsberg, G. *Inorganic Chemistry*, Viva Books Pvt. Ltd.
7. Rodgers, G.E. *Inorganic & Solid State Chemistry*, Cengage Learning India Ltd., 2008.

CHEMISTRY CC XI -LABORATORY

CH 204- LABORATORY-III: TRANSITION METAL & COORDINATION CHEMISTRY, STATES OF MATTER & CHEMICAL KINETICS (60 Lectures)

Section A: Inorganic Chemistry

Semi-micro qualitative analysis (using H₂S or other methods) of mixtures - not more than four ionic species (two anions and two cations, excluding insoluble salts) out of the following:

Cations: NH₄⁺, Pb²⁺, Bi³⁺, Cu²⁺, Cd²⁺, Fe³⁺, Al³⁺, Co²⁺, Ni²⁺, Mn²⁺, Zn²⁺, Ba²⁺, Sr²⁺, Ca²⁺, K⁺

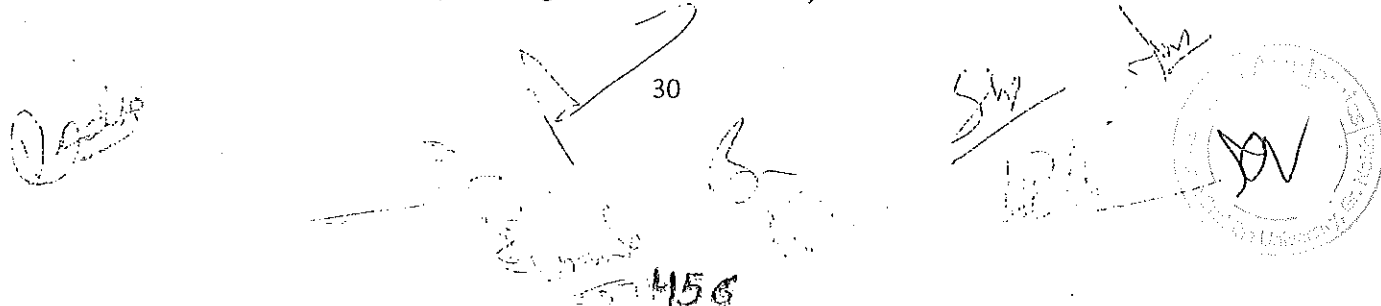
Anions: CO₃²⁻, S²⁻, SO₃²⁻, S₂O₃²⁻, NO₃⁻, CH₃COO⁻, Cl⁻, Br⁻, I⁻, NO₂⁻, SO₄²⁻, PO₄³⁻, BO₃³⁻, C₂O₄²⁻, F⁻

(Spot tests should be carried out wherever feasible)

1. Estimate the amount of nickel present in a given solution as bis (dimethylglyoximate) nickel(II) or aluminium as oximate in a given solution gravimetrically.
2. Estimation of (i) Mg²⁺ or (ii) Zn²⁺ by complexometric titrations using EDTA.
3. Estimation of total hardness of a given sample of water by complexometric titration.

Section B: Physical Chemistry

1. Surface tension measurement (use of organic solvents excluded).
 - i. Determination of the surface tension of a liquid or a dilute solution using a stalagmometer.
 - ii. Study of the variation of surface tension of a detergent solution with concentration.
2. Viscosity measurement (use of organic solvents excluded).



- i. Determination of the relative and absolute viscosity of a liquid or dilute solution using an Ostwald's viscometer.
- ii. Study of the variation of viscosity of an aqueous solution with concentration of solute.
3. Chemical Kinetics: Study the kinetics of the following reactions.
 - i. Initial rate method: Iodide-persulphate reaction
 - ii. Integrated rate method:
 - a. Acid hydrolysis of methyl acetate with hydrochloric acid.
 - b. Saponification of ethyl acetate.
 - c. Compare the strengths of HCl and H₂SO₄ by studying kinetics of hydrolysis of methyl acetate

Reference Books:

1. Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.
2. Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009.
3. Khosla, B. D.; Garg, V. C. & Gulati, A. *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).

SEMESTER-V

Discipline Specific Electives (DSE-2)

CHEMISTRY-DSE - 2

CH-301: INDUSTRIAL CHEMICALS AND ENVIRONMENT

(Credits: Theory-04, Practicals-02)

Theory: 60 Lectures

Industrial Gases and Inorganic Chemicals: Industrial Gases: Large scale production, uses, storage and hazards in handling of the following gases: oxygen, nitrogen, argon, neon, helium, hydrogen, acetylene, carbon monoxide, chlorine, fluorine, sulphur dioxide and phosgene.

Inorganic Chemicals: Manufacture, application, analysis and hazards in handling the following chemicals: hydrochloric acid, nitric acid, sulphuric acid, caustic soda, common salt, borax, bleaching powder, sodium thiosulphate, hydrogen peroxide, potash alum, chrome alum, potassium dichromate and potassium permanganate.

(10 Lectures)

Industrial Metallurgy: Preparation of metals (ferrous and nonferrous) and ultrapure metals for semiconductor technology. (4 Lectures)

Environment and its segments

Ecosystems. Biogeochemical cycles of carbon, nitrogen and sulphur.

Air Pollution: Major regions of atmosphere. Chemical and photochemical reactions

Atmosphere. Air pollutants: types, sources, particle size and chemical nature; Photochemical smog: its constituents and photochemistry. Environmental effects of ozone, Major sources of air pollution. Pollution by SO₂, CO₂, CO, NO_x, H₂S and other foul smelling gases. Methods of estimation of CO, NO_x, SO_x and control procedures. Effects of air pollution on living organisms and vegetation. Greenhouse effect and Global warming, Ozone depletion by oxides of nitrogen, chlorofluorocarbons and Halogens, removal of sulphur from coal. Control of particulates.

Water Pollution: Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological and ecosystems. Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment). Industrial effluents from the following industries and their treatment: electroplating, textile,



tannery, dairy, petroleum and petrochemicals, agro, fertilizer, etc. Sludge disposal.

Industrial waste management, incineration of waste. Water treatment and purification (reverse osmosis, electro dialysis, ion exchange). Water quality parameters for waste water, industrial water and domestic water.

(30 Lectures)

Energy & Environment: Sources of energy: Coal, petrol and natural gas. Nuclear Fusion / Fission, Solar energy, Hydrogen, geothermal, Tidal and Hydel, etc. Nuclear Pollution: Disposal of nuclear waste, nuclear disaster and its management.

(10 Lectures)

Biocatalysis: Introduction to biocatalysis: Importance in "Green Chemistry" and Chemical Industry.

(6 Lectures)

Reference Books:

1. E. Stocchi: Industrial Chemistry, Vol-I, Ellis Horwood Ltd. UK.
2. R.M. Felder, R.W. Rousseau: Elementary Principles of Chemical Processes, Wiley Publishers, New Delhi.
3. J. A. Kent: Riegel's Handbook of Industrial Chemistry, CBS Publishers, New Delhi.
4. S. S. Dara: A Textbook of Engineering Chemistry, S. Chand & Company Ltd. New Delhi.
5. K. De, Environmental Chemistry: New Age International Pvt., Ltd, New Delhi.
6. S. M. Khopkar, Environmental Pollution Analysis: Wiley Eastern Ltd, New Delhi.
7. S.E. Manahan, Environmental Chemistry, CRC Press (2005).
8. G.T. Miller, Environmental Science 11th edition. Brooks/ Cole (2006).
9. A. Mishra, Environmental Studies. Selective and Scientific Books, New Delhi (2005).

CHEMISTRY DSE-2 LABORATORY:

CH 303- LABORATORY-V: INDUSTRIAL CHEMICALS & ENVIRONMENT

(60 Lectures)

1. Determination of dissolved oxygen in water.
2. Determination of Chemical Oxygen Demand (COD)
3. Determination of Biological Oxygen Demand (BOD)
4. Percentage of available chlorine in bleaching powder.
5. Measurement of chloride, sulphate and salinity of water samples by simple titration method (AgNO₃ and potassium chromate).
6. Estimation of total alkalinity of water samples (CO₃²⁻, HCO₃⁻) using double titration method.
7. Measurement of dissolved CO₂.
8. Study of some of the common bio-indicators of pollution.
9. Estimation of SPM in air samples.
10. Preparation of borax/ boric acid.

Reference Books:

1. E. Stocchi: *Industrial Chemistry*, Vol-I, Ellis Horwood Ltd. UK.
2. R.M. Felder, R.W. Rousseau: *Elementary Principles of Chemical Processes*, Wiley Publishers, New Delhi.
3. J. A. Kent: *Riegel's Handbook of Industrial Chemistry*, CBS Publishers, New Delhi.
4. S. S. Dara: *A Textbook of Engineering Chemistry*, S. Chand & Company Ltd. New Delhi.

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5. K. De, *Environmental Chemistry*: New Age International Pvt. Ltd, New Delhi.
6. S. M. Khopkar, *Environmental Pollution Analysis*: Wiley Eastern Ltd, New Delhi

CHEMISTRY DSE-2:

CH-305- QUANTUM CHEMISTRY, SPECTROSCOPY & PHOTOCHEMISTRY
(Credits: Theory-04, Practicals-02) Theory: 60 Lectures

Quantum Chemistry

Postulates of quantum mechanics, quantum mechanical operators, Schrödinger equation and its application to free particle and "particle-in-a-box" (rigorous treatment), quantization of energy levels, zero-point energy and Heisenberg Uncertainty principle; wavefunctions, probability distribution functions, nodal properties, Extension to two and three dimensional boxes, separation of variables, degeneracy.

Qualitative treatment of simple harmonic oscillator model of vibrational motion: Setting up of Schrödinger equation and discussion of solution and wavefunctions. Vibrational energy of diatomic molecules and zero-point energy. Angular momentum: Commutation rules, quantization of square of total angular momentum and z-component.

Rigid rotator model of rotation of diatomic molecule. Schrödinger equation, transformation to spherical polar coordinates. Separation of variables. Spherical harmonics. Discussion of solution.

Qualitative treatment of hydrogen atom and hydrogen-like ions: setting up of Schrödinger equation in spherical polar coordinates, radial part, quantization of energy (only final energy expression). Average and most probable distances of electron from nucleus.

Setting up of Schrödinger equation for many-electron atoms (He, Li). Need for approximation methods. Statement of variation theorem and application to simple systems (particle-in-a-box, harmonic oscillator, hydrogen atom).

Chemical bonding: Covalent bonding, valence bond and molecular orbital approaches, LCAO-MO treatment of H_2^+ . Bonding and antibonding orbitals. Qualitative extension to H_2 . Comparison of LCAO-MO and VB treatments of H_2 (only wavefunctions, detailed solution not required) and their limitations. Refinements of the two approaches (Configuration Interaction for MO, ionic terms in VB). Qualitative description of LCAO-MO treatment of homonuclear and heteronuclear diatomic molecules (HF, LiH). Localised and non-localised molecular orbitals treatment of triatomic (BeH_2 , H_2O) molecules. Qualitative MO theory and its application to AH_2 type molecules. (24 Lectures)

Molecular Spectroscopy: Interaction of electromagnetic radiation with molecules and various types of spectra; Born-Oppenheimer approximation.

Rotation spectroscopy: Selection rules, intensities of spectral lines, determination of bond lengths of diatomic and linear triatomic molecules, isotopic substitution.

Vibrational spectroscopy: Classical equation of vibration, computation of force constant, amplitude of diatomic molecular vibrations, anharmonicity, Morse potential, dissociation energies, fundamental frequencies, overtones, hot bands, degrees of freedom for polyatomic molecules, modes of vibration, concept of group frequencies. Vibration-rotation spectroscopy: diatomic vibrating rotator, P, Q, R branches.

Raman spectroscopy: Qualitative treatment of Rotational Raman effect; Effect of nuclear spin, Vibrational Raman spectra, Stokes and anti-Stokes lines; their intensity difference, rule of mutual

exclusion.

Electronic spectroscopy: Franck-Condon principle, electronic transitions, singlet and triplet states, fluorescence and phosphorescence, dissociation and predissociation, calculation of electronic transitions of polyenes using free electron model.

Nuclear Magnetic Resonance (NMR) spectroscopy: Principles of NMR spectroscopy, Larmor precession, chemical shift and low resolution spectra, different scales, spin-spin coupling and high resolution spectra, interpretation of PMR spectra of organic molecules.

Electron Spin Resonance (ESR) spectroscopy: Its principle, hyperfine structure, ESR of simple radicals.

(24 Lectures)

Photochemistry: Characteristics of electromagnetic radiation, Lambert-Beer's law and its limitations, physical significance of absorption coefficients. Laws, of photochemistry, quantum yield, actinometry, examples of low and high quantum yields, photochemical equilibrium and the differential rate of photochemical reactions, photosensitised reactions, quenching. Role of photochemical reactions in biochemical processes, photostationary states, chemiluminescence. (12 Lectures)

Reference Books:

1. Banwell, C. N. & McCash, E. M. Fundamentals of Molecular Spectroscopy 4th Ed. Tata McGraw-Hill: New Delhi (2006).
2. Chandra, A. K. Introductory Quantum Chemistry Tata McGraw-Hill (2001).

CHEMISTRY DSE-2 LABORATORY:

CH-307- LABORATORY-V: QUANTUM CHEMISTRY, SPECTROSCOPY & PHOTOCHEMISTRY (60 Lectures)

UV/Visible spectroscopy

1. Study the 200-500 nm absorbance spectra of KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$ (in 0.1 M H_2SO_4) and determine the λ_{max} values. Calculate the energies of the two transitions in different units (J molecule^{-1} , kJ mol^{-1} , cm^{-1} , eV).
2. Study the pH-dependence of the UV-Vis spectrum (200-500 nm) of $\text{K}_2\text{Cr}_2\text{O}_7$.
3. Record the 200-350 nm UV spectra of the given compounds (acetone, acetaldehyde, 2-propanol, acetic acid) in water. Comment on the effect of structure on the UV spectra of organic compounds.

Colourimetry

1. Verify Lambert-Beer's law and determine the concentration of $\text{CuSO}_4/\text{KMnO}_4/\text{K}_2\text{Cr}_2\text{O}_7$ in a solution of unknown concentration
2. Determine the concentrations of KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$ in a mixture.
3. Study the kinetics of iodination of propanone in acidic medium.
4. Determine the amount of iron present in a sample using 1,10-phenanthroline.
5. Determine the dissociation constant of an indicator (phenolphthalein).
6. Study the kinetics of interaction of crystal violet/ phenolphthalein with sodium hydroxide.
7. Analyse the given vibration-rotation spectrum of HCl(g)

Reference Books

1. Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009.

2. Khosla, B. D.; Garg, V. C. & Gulati, A., *Senior Practical Physical Chemistry*, R. Chand & Co.: New Delhi (2011).
3. Garland, C. W.; Nibler, J. W. & Shoemaker, D. P. *Experiments in Physical Chemistry 8th Ed.*; McGraw-Hill: New York (2003).
4. Halpern, A. M. & McBane, G. C. *Experimental Physical Chemistry 3rd Ed.*; W.H. Freeman & Co.: New York (2003).

SEMESTER-VI

Discipline Specific Electives (DSE-4)

CHEMISTRY DSE-5:

CH-302- MOLECULES OF LIFE

(Credits: Theory-04, Practicals-02) Theory: 60 Lectures

Carbohydrates

Classification of carbohydrates, reducing and non-reducing sugars, General properties of glucose and fructose, their open chain structure. Epimers, mutarotation and anomers. Determination of configuration of Glucose (Fischer proof).

Cyclic structure of glucose. Haworth projections. Cyclic structure of fructose. Linkage between monosaccharides, structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.

(10 Lectures)

Amino Acids, Peptides and Proteins

Classification of Amino Acids, Zwitterion structure and Isoelectric point.

Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins. Determination of primary structure of peptides, determination of N-terminal amino acid (by DNFB and Edman method) and C-terminal amino acid (by thiohydantoin and with carboxypeptidase enzyme). Synthesis of simple peptides (upto dipeptides) by N-protection (t-butyloxycarbonyl and phthaloyl) & C-activating groups and Merrifield solid phase synthesis.

(12 Lectures)

Enzymes and correlation with drug action

Mechanism of enzyme action, factors affecting enzyme action, Coenzymes and cofactors and their role in biological reactions, Specificity of enzyme action (including stereospecificity), Enzyme inhibitors and their importance, phenomenon of inhibition (Competitive and Non-competitive inhibition including allosteric inhibition). Drug action-receptor theory. Structure-activity relationships of drug molecules, binding role of -OH group, -NH₂ group, double bond and aromatic ring.

(12 Lectures)

Nucleic Acids

Components of nucleic acids: Adenine, guanine, thymine and Cytosine (Structure only), other components of nucleic acids, Nucleosides and nucleotides (nomenclature), Structure of polynucleotides; Structure of DNA (Watson-Crick model) and RNA (types of RNA), Genetic Code, Biological roles of DNA and RNA: Replication, Transcription and Translation.

(10 Lectures)

Lipids

Introduction to lipids, classification.

Oils and fats: Common fatty acids present in oils and fats, Omega fatty acids, Trans fats, Hydrogenation,



Saponification value, Iodine number. Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol). (8 Lectures)

Concept of Energy in Biosystems

Calorific value of food. Standard caloric content of carbohydrates, proteins and fats. Oxidation of foodstuff (organic molecules) as a source of energy for cells. Introduction to Metabolism (catabolism, anabolism), ATP: the universal currency of cellular energy, ATP hydrolysis and free energy change. Conversion of food into energy. Outline of catabolic pathways of Carbohydrate-Glycolysis, Fermentation, Krebs Cycle. Overview of catabolic pathways of Fats and Proteins. Interrelationships in the metabolic pathways of Proteins, Fats and Carbohydrates. (8 Lectures)

Recommended Texts:

1. Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. *Organic Chemistry (Volume 1)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. *Organic Chemistry (Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
4. Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Biochemistry 7th Ed.*, W. H. Freeman.
5. Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, W.H. Freeman, 2002.

CHEMISTRY DSE-5 LABORATORY:

CH-304- LABORATORY-VI: MOLECULES OF LIFE

(60 Lectures)

1. Separation of amino acids by paper chromatography
2. To determine the concentration of glycine solution by formylation method.
3. Study of titration curve of glycine
4. Action of salivary amylase on starch
5. Effect of temperature on the action of salivary amylase on starch.
6. To determine the saponification value of an oil/fat.
7. To determine the iodine value of an oil/fat
8. Differentiate between a reducing/ nonreducing sugar.
9. Extraction of DNA from onion/cauliflower
10. To synthesise aspirin by acetylation of salicylic acid and compare it with the ingredient of an aspirin tablet by TLC.

Recommended Texts:

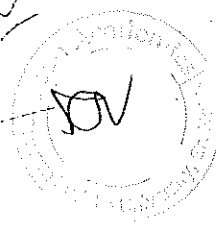
1. Furniss, B.S.; Hannaford, A.J.; Rogers, V.; Smith, P.W.G.; Tatchell, A.R. *Vogel's Textbook of Practical Organic Chemistry*, ELBS.
2. Ahluwalia, V.K. & Aggarwal, R. *Comprehensive Practical Organic Chemistry*, Universities Press.

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CHEMISTRY-DSE-5

CH-306- CHEMISTRY OF MAIN GROUP ELEMENTS, THEORIES OF ACIDS AND BASES (Credits: Theory-04, Practicals-02)

Theory: 60 Lectures

Acids and Bases: Brönsted-Lowry concept, conjugate acids and bases, relative strengths of acids and bases, effects of substituent and solvent, differentiating and levelling solvents. Lewis acid-base concept, classification of Lewis acids and bases, Lux-Flood concept and solvent system concept. Hard and soft acids and bases (HSAB concept), applications of HSAB process. (10 Lectures)

General Principles of Metallurgy: Chief modes of occurrence of metals based on standard electrode potentials, Ellingham diagrams for reduction of metal oxides using carbon and carbon monoxide as reducing agents.

Hydrometallurgy with reference to cyanide process for gold and silver. Methods of purification of metals (Al, Pb, Ti, Fe, Cu, Ni, Zn, Au): electrolytic refining, zone refining, van Arkel-de Boer process, Parting Process, Mond's process and Kroll Process. (8 Lectures)

s- and *p*-Block Elements: Periodicity in *s*- and *p*-block elements with respect to electronic configuration, atomic and ionic size, ionization enthalpy, electron gain enthalpy, electronegativity (Pauling scale).

General characteristics of *s*-block metals like density, melting and boiling points, flame colour and reducing nature.

Oxidation states of *s*- and *p*-block elements, inert-pair effect, diagonal relationships and anomalous behaviour of first member of each group. Allotropy in C, P and S.

Complex forming tendency of *s* block elements and a preliminary idea of crown ethers and cryptates, structures of basic beryllium acetate, salicylaldehyde/ acetylacetonato complexes of Group I metals.

Solutions of alkali metals in liquid ammonia and their properties.

Common features, such as ease of formation, solubility and stability of oxides, peroxides, superoxides, sulphates and carbonates of *s*-block metals. (14 Lectures)

Structure, bonding and properties (acidic/ basic nature, oxidizing/ reducing nature and hydrolysis of the following compounds and their applications in industrial and environmental chemistry wherever applicable:

Diborane and concept of multicentre bonding, hydrides of Groups 13 (EH_3), 14, 15, 16 and 17.

Oxides of N and P, Oxoacids of P, S and Cl.

Halides and oxohalides of P and S (PCl_3 , PCl_5 , SOCl_2 and SO_2Cl_2)

Interhalogen compounds. A brief idea of pseudohalides (14 Lectures)

Noble gases: Rationalization of inertness of noble gases, clathrates, preparation and properties of XeF_2 , XeF_4 and XeF_6 , bonding in these compounds using VBT and shapes of noble gas compounds using VSEPR Theory. (5 Lectures)

Inorganic Polymers: Types of inorganic polymers and comparison with organic polymers, structural features, classification and important applications of silicates. Synthesis, structural features and applications of silicones. Borazines and cyclophosphazenes – preparation, properties and reactions. Bonding in $(\text{NPCI}_2)_3$. (9 Lectures)

Recommended texts:

1. Lee, J.D. Concise Inorganic Chemistry ELBS, 1991.
2. Cotton, F.A., Wilkinson, G. & Gaus, P.L. Basic Inorganic Chemistry, 3rd ed., Wiley.
3. Douglas, B.E., McDaniel, D.H. & Alexander, J.J. Concepts and Models in Inorganic Chemistry, John Wiley & Sons.
4. Greenwood, N.N. & Earnshaw. Chemistry of the Elements, Butterworth-Heinemann. 1997.
5. Rodger, G.E. Inorganic and Solid State Chemistry, Cengage Learning India Edition, 2002.
6. Miessler, G. L. & Donald, A. Tarr. Inorganic Chemistry 4th Ed., Pearson, 2010.
7. Atkin, P. Shriver & Atkins' Inorganic Chemistry 5th Ed. Oxford University Press (2010).

CHEMISTRY DSE-5 LABORATORY:

CH-308 - LABORATORY-VI: CHEMISTRY OF MAIN GROUP ELEMENTS, THEORIES OF ACIDS AND BASES (60 Lectures)

1. Iodometric estimation of potassium dichromate and copper sulphate
2. Iodimetric estimation of antimony in tartaremetic
3. Estimation of amount of available chlorine in bleaching powder and household bleaches
4. Estimation of iodine in iodized salts.
5. Iodimetric estimation of ascorbic acid in fruit juices.
6. Estimation of dissolved oxygen in water samples.
7. Gravimetric estimation of sulphate as barium sulphate.
8. Gravimetric estimation of aluminium as oximate complex
9. Preparation of the following: potash alum, chrome alum, tetraamminecopper (II) sulphate monohydrate, potassium trioxalatoferrate (III) (any two, including one double salt and one complex).

Recommended Texts:

1. Svehla, G. *Vogel's Qualitative Inorganic Analysis*, Pearson Education, 2012.
2. Mendham, J. *Vogel's Quantitative Chemical Analysis*, Pearson, 2009.

Skill Enhancement Course (any four)

(Credit: 02 each)

SEMESTER-III

SEC-1

CH-205- INTELLECTUAL PROPERTY RIGHTS (IPR)

(Credits: 02)

Theory: 30 Lectures

In this era of liberalization and globalization, the perception about science and its practices has undergone dramatic change. The importance of protecting the scientific discoveries, with commercial potential or the intellectual property rights is being discussed at all levels – statutory, administrative, and judicial. With India ratifying the WTO agreement, it has become obligatory on its part to follow a minimum acceptable standard for protection and enforcement of intellectual property rights. The purpose of this course is to apprise the students about the multifaceted dimensions of this issue.

Introduction to Intellectual Property:

Historical Perspective, Different Types of IP, Importance of protecting IP.

Copyrights

Introduction, How to obtain, Differences from Patents.

Trade Marks

Introduction, How to obtain, Different types of marks – Collective marks, certification marks, service marks, Trade names, etc.

Differences from Designs.

Patents

Historical Perspective, Basic and associated right, WIPO, PCT system, Traditional Knowledge, Patents and Healthcare – balancing promoting innovation with public health, Software patents and their importance for India.

Geographical Indications

Definition, rules for registration, prevention of illegal exploitation, importance to India.

Industrial Designs

Definition, How to obtain, features, International design registration.

Layout design of integrated circuits

Circuit Boards, Integrated Chips, Importance for electronic industry.

Trade Secrets

Introduction and Historical Perspectives, Scope of Protection, Risks involved and legal aspects of Trade Secret Protection.

Different International agreements

(a) World Trade Organization (WTO):

- (i) General Agreement on Tariffs & Trade (GATT), Trade Related Intellectual Property Rights (TRIPS) agreement
- (ii) General Agreement on Trade related Services (GATS)
- (iii) Madrid Protocol
- (iv) Berne Convention
- (v) Budapest Treaty

(b) Paris Convention

WIPO and TRIPS, IPR and Plant Breeders Rights, IPR and Biodiversity

IP Infringement issue and enforcement – Role of Judiciary, Role of lawenforcement agencies – Police, Customs etc. Economic Value of Intellectual Property

– Intangible assets and their valuation, Intellectual Property in the Indian Context – Various laws in India
Licensing and technology transfer.

Reference Books:

1. N.K. Acharya: Textbook on intellectual property rights, Asia Law House (2001).
2. Manjula Guru & M.B. Rao, Understanding Trips: Managing Knowledge in Developing Countries, Sage Publications (2003).
3. P. Ganguli, Intellectual Property Rights: Unleashing the Knowledge Economy, Tata McGraw-Hill (2001).



4. Arthur Raphael Miller, Micheal H. Davis; Intellectual Property: Patents, Trademarks and Copyright in a Nutshell, West Group Publishers (2000).
5. Jayashree Watal, Intellectual property rights in the WTO and developing countries, Oxford University Press, Oxford.

SEMESTER-IV

SEC-2

CH-206- GREEN METHODS IN CHEMISTRY (Credits: 02) Theory: 30 Lectures

Theory and Hand-on Experiments: Introduction: Definitions of Green Chemistry. Brief introduction of twelve principles of Green Chemistry, with examples, special emphasis on atom economy, reducing toxicity, green solvents, Green Chemistry and catalysis and alternative sources of energy, Green energy and sustainability

The following Real world Cases in Green Chemistry should be discussed:

1. Surfactants for carbon dioxide – Replacing smog producing and ozone depleting solvents with CO₂ for precision cleaning and dry cleaning of garments.
2. Designing of environmentally safe marine antifoulant.
3. Rightfit pigment: Synthetic azo pigments to replace toxic organic and inorganic pigments.
4. An efficient, green synthesis of a compostable and widely applicable plastic (poly lactic acid) made from corn.

Practicals

1. Preparation and characterization of biodiesel from vegetable oil.
2. Extraction of D-limonene from orange peel using liquid CO₂ prepared from dry ice.
3. Mechano chemical solvent free synthesis of azomethine.
4. Solvent free, microwave assisted one pot synthesis of phthalocyanine complex of copper(II).

Reference Books:

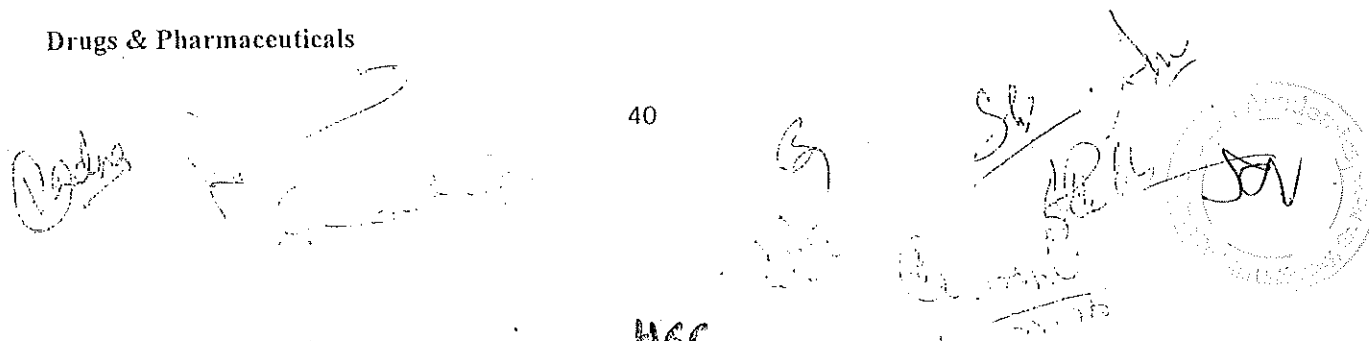
1. Matlack, A.S. Introduction to Green Chemistry, Marcel Dekker (2001).
2. Cann, M.C. & Connely, M.E. Real-World cases in Green Chemistry, American Chemical Society, Washington (2000).
3. Ryan, M.A. & Tinnesand, M. Introduction to Green Chemistry, American Chemical Society, Washington (2002).
4. Sharma, R.K.; Sidhwani, I.T. & Chaudhari, M.K. Green Chemistry Experiments: A monograph I.K. International Publishing House Pvt Ltd. New Delhi, Bangalore.
5. Lancaster, M. Green Chemistry: An introductory text RSC publishing, 2nd Edition.
6. Sidhwani, I.T., Saini, G., Chowdhury, S., Garg, D., Malovika, Garg, N. Wealth from waste: A green method to produce biodiesel from waste cooking oil and generation of useful products from waste further generated
7. "A Social Awareness Project", Delhi University Journal of Undergraduate Research and Innovation, 1(1): 2015.

SEMESTER-V

SEC-3

CH- 309- PHARMACEUTICAL CHEMISTRY (Credits: 02) Theory: 30 Lectures

Drugs & Pharmaceuticals



Drug discovery, design and development; Basic Retrosynthetic approach. Synthesis of the representative drugs of the following classes: analgesics agents, antipyretic agents, anti-inflammatory agents (Aspirin, paracetamol, Ibuprofen); antibiotics (Chloramphenicol); antibacterial and antifungal agents (Sulphonamides; Sulphanethoxazol, Sulphacetamide, Trimethoprim); antiviral agents (Acyclovir), Central Nervous System agents (Phenobarbital, Diazepam), Cardiovascular (Glycerol trinitrate), antilprosy (Dapsone), HIV-AIDS related drugs (AZT- Zidovudine).

Fermentation

Aerobic and anaerobic fermentation. Production of (i) Ethyl alcohol and citric acid, (ii) Antibiotics; Penicillin, Cephalosporin, Chloromycetin and Streptomycin, (iii) Lysine, Glutamic acid, Vitamin B₂, Vitamin B₁₂ and Vitamin C.

Practicals

1. Preparation of Aspirin and its analysis.
2. Preparation of magnesium bisilicate (Antacid).

Reference Books:

1. G.L. Patrick: *Introduction to Medicinal Chemistry*, Oxford University Press, UK.
2. Hakishan, V.K. Kapoor: *Medicinal and Pharmaceutical Chemistry*, VallabhPrakashan, Pitampura, New Delhi.
3. William O. Foye, Thomas L., Lemke, David A. William: *Principles of Medicinal Chemistry*, B.I. Waverly Pvt. Ltd. New Delhi.

SEMESTER-VI

SEC-4

CHEMISTRY OF COSMETICS & PERFUMES (Credits: 02) (30 Lectures)

A general study including preparation and uses of the following: Hair dye, hair spray, shampoo, suntan lotions, face powder, lipsticks, talcum powder, nail enamel, creams (cold, vanishing and shaving creams), antiperspirants and artificial flavours. Essential oils and their importance in cosmetic industries with reference to Eugenol, Geraniol, sandalwood oil, eucalyptus, rose oil, 2-phenyl ethyl alcohol, Jasmone, Civetone, Muscone.

Practicals

1. Preparation of talcum powder.
2. Preparation of shampoo.
3. Preparation of enamels.
4. Preparation of hair remover.
5. Preparation of face cream.
6. Preparation of nail polish and nail polish remover.

Reference Books:

1. E. Stocchi: *Industrial Chemistry*, Vol -I, Ellis Horwood Ltd. UK.
2. P.C. Jain, M. Jain: *Engineering Chemistry*, Dhanpat Rai & Sons, Delhi.

Mathematics

Course Name: Calculus-I

Course Code: MA-111

Credits: 03

Limit and Continuity (ϵ - δ definition), Indeterminate forms, Types of Discontinuities, Differentiability of Functions, Successive Differentiation, Leibnitz's Theorem, Partial Differentiation, Euler's Theorem on Homogeneous Functions, Tangents, Normals, Maxima & Minima, Curvature, Asymptotes, Singular Points, Tracing of Curves. Parametric Representation of Curves, Tracing of Parametric Curves, Polar coordinates, Tracing of Curves in Polar Coordinates. Rolle's Theorem, Mean Value theorems.

Sequences, Infinite Series, The Integral Test, The Comparison Tests, Ratio & Root Tests, Alternating Series, Absolute & Conditional Convergence, Power Series, Representations of Functions as Power Series. Taylor & Maclaurin series of $\sin x$, $\cos x$, e^x , $\ln(1+x)$, $(1+x)^n$, Taylor's Theorem with Lagrange's and Cauchy's forms of remainder, Definite Integral, Introduction to improper integral.

Books Recommended:

1. G.B. Thomas, J Hass and Maurice D. Weir, *Thomas' Calculus*, Pearson Education, 2009.
2. H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.
3. S. R. Ghorpade and B. Limaye, *A Course in Calculus and Real Analysis*, Springer, 2006.
4. J. Stewart, *Calculus: Early Transcendentals*, Cengage Learning, 2012

Course Name: Matrices

Course Code: MA-113

Credits: 03

Vector space over \mathbb{R} and \mathbb{C} , Concept of linear dependence and independence, basis, Subspaces, Translation, Dilation, Rotation, Reflection in a point, line and plane, Matrix form of basic geometric transformations, Interpretation of eigen values and eigen vectors for such transformations and eigen spaces as invariant subspaces. Types of matrices, Rank of a matrix, Invariance of rank under elementary transformations, Reduction to normal form, Solutions of linear homogeneous and non-homogeneous equations with number of equations and unknowns upto four, Matrices in diagonal form, Reduction to diagonal form upto matrices of order 3, Computation of matrix inverses using elementary row operations, Solutions of a system of linear equations using matrices and its applications.

Books Recommended

1. A.I. Kostrikin, *Introduction to Algebra*, Springer Verlag, 1984.
2. S. H. Friedberg, A. L. Insel and L. E. Spence, *Linear Algebra*, Prentice Hall of India Pvt. Ltd., New Delhi, 2004.
3. Richard Bronson, *Theory and Problems of Matrix Operations*, Tata McGraw Hill, 1989.

Course Name: Algebra

Course Code: MA-112

Credits: 03

Groups, Subgroups and their examples, the group Z_n of integers under addition modulo n , The group $U(n)$ of units under multiplication modulo n , cyclic groups, complex roots of unity, circle group, the general linear group $GL_n(n, R)$, Dihedral group. The commutator subgroup, Examples of subgroups including the center of a group, Cosets, Index of subgroup, Lagrange's theorem, order of an element. Normal subgroups: their definition, examples, and characterizations, Quotient groups, Class equat

Books Recommended

1. John B. Fraleigh, *A First Course in Abstract Algebra*, 7th Ed., Pearson, 2002.
2. M. Artin, *Abstract Algebra*, 2nd Ed., Pearson, 2011.
3. Joseph A Gallian, *Contemporary Abstract Algebra*, 4th Ed., Narosa, 1999.
4. I. HerrNSTein, *Topics in Algebra*, 2nd ed., John Wiley, 1999

Course Name: Calculus-II

Course Code: MA-114

Credits: 03

Functions of two Variables: Limit, Continuity, Differentiability. Partial differentiation, Definite Integral, Evaluating Definite Integral, The Fundamental Theorems of Calculus. Indefinite Integrals & Substitution Rule, Integration by Parts, Integration of Rational Functions by Partial Fractions, Trigonometric Integrals, Maxima and Minima, Lagrange's Multiplier Method, Areas between Curves, Improper Integrals, Jacobian, Double Integrals, Double Integrals in Polar Form, Triple Integrals in Rectangular Coordinates, Triple Integrals in Cylindrical & Spherical Coordinates, Substitutions in Multiple Integrals.

Books Recommended:

1. G.B. Thomas, J Hass and Maurice D. Weir, *Thomas' Calculus*, Pearson Education, 2009.
2. H. Anton, I. Birens and S. Davis, *Calculus*, John Wiley and Sons, Inc., 2002.
3. S. R. Ghorpade and B. Limaye, *A Course in Calculus and Real Analysis*, Springer, 2006.
4. J. Stewart, *Calculus: Early Transcendentals*, Cengage Learning, 2012

Course Name: Real Analysis

Course Code: MA-213

Credits: 03

Set Theory: Relations, Equivalence Relation, Partial Order, Total Order, Zorn's Lemma, Finite & Infinite Sets, Examples of Countable and Uncountable Sets. Real Line, Bounded Sets, Cantor's Theorem, Continuum Hypothesis, Suprema & Infima, Completeness Property of R , Archimedean Property, Intervals, Bolzano-Weierstrass Theorem.

Riemann Integral, Integrability of continuous and monotonic functions, Fundamental theorem of integral calculus, Mean Value theorems of integral calculus. Improper integrals and their convergence.

Point-wise Convergence, Uniform Convergence. Uniformly Bounded Sequence, Cauchy's Criterion for Uniform Convergence, Uniformly Cauchy Sequence, Weierstrass' M-test, Uniform Convergence and Continuity, Uniform Convergence and Integration, Uniform Convergence and Differentiation, Power series and radius of convergence.

Books Recommended

1. T. M. Apostol, *Calculus* (Vol. I), John Wiley and Sons (Asia) P. Ltd., 2002.
 2. W. Rudin, *Principles of Mathematical Analysis*, McGraw Hill, 1976
 3. R.G. Bartle and D. R Sherbert, *Introduction to Real Analysis*, John Wiley and Sons (Asia) P. Ltd., 2000.
 4. K.A. Ross, *Elementary Analysis-The Theory of Calculus Series*-Undergraduate Texts in Mathematics, Springer Verlag, 2003.
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Course Name: Introduction to Ordinary Differential Equation

Course Code: MA-215

Credits: 03

Introduction to differential equation, Formulation of differential equation, Order and degree of differential equation, linear, nonlinear differential equation, First order exact differential equations. Integrating factors, First order higher degree equations solvable for x, y, p. Methods for solving higher-order differential equations. Basic theory of linear differential equations, Wronskian, and its properties. Solving a differential equation by reducing its order. Linear homogenous equations with constant coefficients, Linear non-homogenous equations, The method of variation of parameters, The Cauchy-Euler equation, Simultaneous differential equations.

Books Recommended:

1. G. F Simmons, *Differential equations with Historical Notes*. Tata McGraw-Hill.
 2. Shepley L. Ross, *Differential equation*, 3rd Ed., John Wiley & Sons.
 3. William E. Boyce, Richard C. DiPrima, *Elementary Differential Equations and Boundary value*, Wiley, 2000.
-

Course Name: Introduction to Partial Differential Equation

Course Code: MA-212

Credits: 03

Introduction to partial differential equation, origins of first order partial differential equation, Order and degree of partial differential equation, Concept of linear and non-linear partial differential equations, Pfaffian differential forms and equations, Integral surfaces passing through a given curve, Linear partial differential equation of first order, Lagrange's method, Charpit's method, Non linear partial differential equations of the first order, Classification of second order partial differential equations into elliptic, parabolic and hyperbolic through illustrations only.

Books Recommended:

1. I. N Sneddon, *Elements of Partial Differential equations*, Tata McGraw-Hill. problems, John Wiley & Sons.
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2. T. Amaranath, *An Elementary Course in Partial Differential Equations*, Narosa.

Course Name: Mathematical Methods

Course Code: MA-214

Credits: 03

Integral Transforms: Laplace Transformation, Laplace Transforms of derivatives and integrals, shifting theorems, differentiation and integration of transforms, convolution theorem. Application of Laplace transform in solution of ordinary differential equations, Fourier series expansion. Calculus of Variations: Functionals, Deduction of Euler's equations for functionals of first order and higher order for fixed boundaries. Shortest distance between two non-intersecting curves. Isoperimetric problems. Jacobi and Legendre conditions.

Recommended Books:

1. I.M. Gelfad and S.V. Fomin, *Calculus of Variation*, Prentice-Hall, Inc.
2. A.S. Gupta, *Text Book on Calculus of Variation*, Prentice-Hall of India.
3. Francis B. Hildebrand, *Methods of Applied Mathematics*, Dover, New York, 20124.
4. W. E. Boyce, R. C. DiPrima, *Elementary Differential Equations and Boundary value*, Wiley, 2000.

Discipline Specific Electives (DSE-3)

Course Name: Programming in C

Course Code: MA-301

Credits: 03

Introduction to C fundamentals, Constants, Variables, statements, iterative statements and Data types, Operators and expression, formatted input and output, Decision makings, Branching and Looping, Arrays, User defined functions, Passing arguments to procedure, procedures, Structures, Pointers, File handling, concept of recursion.

Recommended Books:

1. B.W. Kernighan and D.M. Ritchie, *The C Programming Language* 2nd Edition, (ANSI features) Prentice Hall, 1989.
2. V. Rajaraman, *Programming in C*, Prentice Hall of India, 1994.
3. Byron S. Gotfried, *Theory and Problems of Programming with C*, Tata McGraw-Hill, 1998.

Course Name: Linear Algebra

Course Code: MA-303

Credits: 03



Vector spaces, subspaces, algebra of subspaces, quotient spaces, linear combination of vectors, linear span, linear independence, basis and dimension, dimension of subspaces.

Linear transformations, null space, range, rank and nullity of a linear transformation, matrix representation of a linear transformation, algebra of linear transformations.

Dual Space, Dual Basis, Double Dual, Eigen values and Eigen vectors, Characteristic Polynomial. Isomorphisms, Isomorphism theorems, invertibility and isomorphisms, change of coordinate matrix.

Books Recommended

1. David C. Lay, *Linear Algebra and its Applications*, 3rd Ed., Pearson Education Asia, Indian Reprint, 2007.
2. S. Lang, *Introduction to Linear Algebra*, 2nd Ed., Springer, 2005.
3. Gilbert Strang, *Linear Algebra and its Applications*, Thomson, 2007.

Course Name: Tensor & Geometry

Course Code: MA-305

Credits: 03

Contravariant and Covariant vectors, Transformation formulae, Symmetric and Skew symmetric properties, Contraction of tensors, Quotient law, Polar equation of a conic, Sphere, Cone, Cylinder, Illustrations of graphing standard quadric surfaces like cone, ellipsoid, Paraboloids, Central Conicoids.

Recommended Books:

1. Barry Spain, *Tensor Calculus*, Radha Publ. House Calcutta, 1988.
2. R.J.T. Bell, *Elementary Treatise on Coordinate Geometry of Three Dimensions*, McMillan India Ltd., 1994
3. R.J.T. Bell, *Elementary Treatise on Co-ordinate geometry of three dimensions*, Macmillan India Ltd., 1994.
4. Shanti Narayan, *Analytical Solid Geometry*, S. Chand & Company, New Delhi.

Discipline Specific Electives (DSE-6)

Course Name: Numerical Methods

Course Code: MA-302

Credits: 03

Errors in computation, floating representation of number, binary number, significant digits, errors due to rounding/chopping Algorithms; Convergence, Bisection method, False position method, Fixed point iteration method, Newton's method, Secant method, LU decomposition, Gauss-Jacobi, Gauss-Siedel and SOR iterative methods. Lagrange and Newton interpolation: linear and higher order, finite difference operators. Numerical differentiation: forward difference, backward difference and Central Difference. Integration: trapezoidal rule, Simpson's rule, Euler's method.

Recommended Books

1. B. Bradie, *A Friendly Introduction to Numerical Analysis*, Pearson Education, India, 2007.

2. M.K. Jain, S.R.K. Iyengar and R.K. Jain, *Numerical Methods for Scientific and Engineering Computation*, 5th Ed., New age International Publisher, India, 2007.
3. R. S. Gupta, *Elements of Numerical Analysis*, Macmillan, 2009.

Course Name: Linear Programming

Course Code: MA-304

Credits: 03

Linear Programming Problems, Graphical Approach for Solving some Linear Programs, Convex Sets, Supporting and Separating Hyperplanes, Theory of simplex method, optimality and unboundedness, the simplex algorithm, simplex method in tableau format, introduction to artificial variables, two-phase method, Big-M method and their comparison, Duality, formulation of the dual problem, primal-dual relationships, economic Interpretation of the dual, sensitivity analysis.

Recommended Books

1. Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, *Linear programming and Network Flows*, 2nd Ed., John Wiley and Sons, India, 2004.
2. F.S. Hillier and G.J. Lieberman, *Introduction to Operations Research*, 8th Ed., Tata McGraw Hill, Singapore, 2004.
3. Hamdy A. Taha, *Operations Research, An Introduction*, 8th Ed., Prentice-Hall India, 2006.

Course Name: Theory of Complex Variable

Course Code: MA-306

Credits: 03

Limits, Limits involving the point at infinity, continuity, Properties of complex numbers, regions in the complex plane, functions of complex variable, mappings, Derivatives, differentiation formulas, Cauchy-Riemann equations, sufficient conditions for differentiability.

Analytic functions, examples of analytic functions, exponential function, Logarithmic function, trigonometric function, derivatives of functions, definite integrals of functions, Contours, Contour integrals and its examples, upper bounds for moduli of contour integrals, Cauchy-Goursat theorem, Cauchy integral formula, Liouville's theorem and the fundamental theorem of algebra. Convergence of sequences and series, Taylor series and its examples, Laurent series and its examples, absolute and uniform convergence of power series.

Books Recommended

1. James Ward Brown and Ruel V. Churchill, *Complex Variables and Applications*, 8th Ed., McGraw – Hill International Edition, 2009.122
2. Joseph Bak and Donald J. Newman, *Complex analysis*, 2nd Ed., Undergraduate Texts in Mathematics, Springer-Verlag New York, Inc., New York, 1997.

Skill Enhancement Course (SEC)



Course Name: Theory of Equations

Course Code: MA-215

Credits: 02

General properties of polynomials, Graphical representation of a polynomials, maximum and minimum values of a polynomials, General properties of equations, Descarte's rule of signs positive and negative rule, Relation between the roots and the coefficients of equations.

Symmetric functions, Applications symmetric function of the roots, Transformation of equations, Solutions of reciprocal and binomial equations, Algebraic solutions of the cubic and biquadratic, Properties of the derived functions.

Books Recommended

1. W.S. Burnside and A.W. Panton, *The Theory of Equations*, Dublin University Press, 1954.
 2. C. C. MacDuffee, *Theory of Equations*, John Wiley & Sons Inc., 1954.
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Course Name: Logic and Sets

Course Code: MA-214

Credits: 02

Introduction, propositions, truth table, negation, conjunction and disjunction. Implications, biconditional propositions, converse, contra positive and inverse propositions and precedence of logical operators. Propositional equivalence: Logical equivalences. Predicates and quantifiers: Introduction, Quantifiers, Binding variables and Negations.

Sets, subsets, Set operations, the laws of set theory and Venn diagrams. Examples of finite and infinite sets. Finite sets and counting principle. Empty set, properties of empty set. Standard set operations. Classes of sets. Power set of a set. Difference and Symmetric difference of two sets. Set identities, Generalized union and intersections. Relation: Product set, Composition of relations, Types of relations, Partitions, Equivalence Relations with example of congruence modulo relation.

Book Recommended

1. R.P. Grimaldi, *Discrete Mathematics and Combinatorial Mathematics*, Pearson Education, 1998.
 2. P.R. Halmos, *Naive Set Theory*, Springer, 1974.
 3. E. Kamke, *Theory of Sets*, Dover Publishers, 1950.
-

Course Name: Mathematical Modeling

Course Code: MA-317

Credits: 02

Fundamental of Modelling, working with models, Applications of differential equations: the vibrations of a mass on a spring, mixture problem, free damped motion, forced motion, resonance phenomena, electric circuit problem, Transport equation, Applications to Traffic Flow, Vibrating string, vibrating membrane, conduction of heat in solids, diffusion equation, gravitational potential, conservation laws, Mathematical modeling in Biological process.

Books Recommended:

1. Shepley L. Ross, *Differential Equations*, 3rd Ed., John Wiley and Sons, 1984.
2. I. Sneddon, *Elements of Partial Differential Equations*, McGraw-Hill, International Edition, 1967.
3. Y. Pinchover and J. Rubinstein, *An introduction to Partial Differential Equations*, Cambridge University Press.

Course Name: Experimental Statistics using R

Course Code: MA-318

Credits: 02

Experimental Design: Principles, experimental designs, real random variables (discrete and continuous), cumulative distribution function, probability mass/density functions, mathematical expectation, moments, moment generating function, characteristic function, discrete distributions: uniform, binomial, Poisson, continuous distributions: uniform, normal.

Test of hypothesis: Chi-square test, t, F and Z tests and Turkey's Q test

Experimental Data Analysis: RBD, SPD, ANOVA, linear regression analysis using SPSS, Cluster analysis.

Books Recommended:

1. Robert V. Hogg, Joseph W. McKean and Allen T. Craig, *Introduction to Mathematical Statistics*, Pearson Education, Asia, 2007.
2. Irwin Miller and Marylees Miller, John E. Freund, *Mathematical Statistics with Application*, 7th Ed., Pearson Education, Asia, 2006.
3. Sheldon Ross, *Introduction to Probability Model*, 9th Ed., Academic Press, Indian Reprint, 2007.
4. G.W. Snedecor and W.C. Cochran, *Statistical Method*, Oxford & IBH Pub. Pvt. Ltd. New-Delhi.

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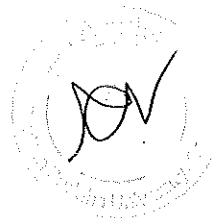
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National Service Scheme - (NSS) Studies
Semester I & II
Credit Based Grading and Semester System
To be implemented from the Academic year 2015-2016

SEMESTER I
Title of the Course: NSS Paper I

Course code	Unit	Topic Headings	Lectures	Credits
NSS-101	I	Introduction to NSS	05	02
	II	Concept of Society & Social issues in India	05	
	III	Indian Constitution & Social Justice	10	
	IV	Human Personality & National Integration	10	

SEMESTER II
Title of the Course: NSS Paper II

Course code	Unit	Topic Headings	Lectures	Credits
NSS-102	I	Socio Economic Survey & Special Camp	05	02
	II	Value System & Gender Sensitivity	05	
	III	Environment & Energy Conservation	10	
	IV	Voluntary Organisation (VOs) and Government Organisation (GOs)	10	

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UNIT III: Environment enrichment program; Sustainability in environment;- Features , issues, conservation of natural resources.

Energy conservation program; Concept of conservation- conventional and non-conventional energy

UNIT IV: Set up of VO/GO

Meaning of VO-Legal set up of formation-functioning of VO- Sources of functioning- VO and NSS Integration- Case study of any VO/GO/Welfare department; Government schemes for community development; Scheme from each department- detail provisions- examples, Communication skills and documentation.

Verbal and non verbal communication- activity report writing- basics of NSS accounting- annual report- press note preparation

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MA

Compulsory Course of Environmental Science for all Undergraduates as per
the mandate of UGC from academic session 2015-2016

Course Name: Environmental Studies

Course code: ES 101

Credits :3

Syllabus

Unit I: Multidisciplinary nature of environmental studies

Definition, scope and importance, Need for public awareness.

Unit II: Natural Resources

Renewable and non-renewable resources:

- i) Forest resources: Use and over-exploitation, deforestation, case studies.
Timber extraction, mining, dams and their effects on forest and tribal people.
- ii) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
- iii) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
- iv) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
- v) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- vi) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- vii) Natural resources and associated problems; Role of an individual in conservation of natural resources; Equitable use of resources for sustainable lifestyles.

Unit III: Ecosystems

- i) Concept of an ecosystem.
- ii) Structure and function of an ecosystem.
- iii) Producers, consumers and decomposers.
- iv) Energy flow in the ecosystem.
- v) Ecological succession.
- vi) Food chains, food webs and ecological pyramids.
- vii) Introduction, types, characteristic features, structure and function of the ecosystem- Forest ecosystem, Grassland ecosystem, Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries).

Unit IV: Biodiversity and its conservation

- i) Introduction – Definition : genetic, species and ecosystem diversity.
- ii) Biogeographical classification of India.

Human Values & Buddhist Ethics

Code of Course: BS 101

No. of Credits: 2

Unit 1:

Life of Gautam Buddha

Origin of Buddhism

Human Values and Buddhist Ethics

Buddhist Literature (Pāli Canonical Literature)

Unit 2:

Basic Tenets of Buddhism:

Cattāri-Ariya-Saccāni (The Four Noble Truths)

Ariyo-Aṭṭhaṅgiko-Maggo (The Eightfold Path or The Middle Path)

Brahma-Vihāra-Bhāvanā (Four Sublime States)

Pañcasīla (The Five Precepts)

Unit 3:

Socially Engaged Buddhism

Social Values of Buddhism

Relevance of Buddhism

Unit 4:

Buddhist View on Environmental Crisis

Buddhist View on Human Rights

Buddhist Economic Theory

Suggested Readings:

- ✓ Ambedkar, Bhim Rao, *The Buddha and His Dhamma*, Nagpur: Buddha Bhoomi Prakashan, 1997.
- ✓ Bapat, P. V., *2500 Years of Buddhism*, Delhi: Publications Division, Ministry of Information and Broadcasting, Government of India, 1997.
- ✓ Bhikkhu Dr. Beligāite Dhammajoti, *Buddhism & Modern World*, Taiwan: The Corporate Body of the Buddha Educational Foundation, 2011.
- ✓ Bhikshu Dharmarakshita, *Pāli Sāhitya Kā Itihās*, Varanasi: Gyanamandala Limited, 1988.
- ✓ Bhikshu Dharmarakshita, *Sukhī Gṛihastha Ke Liye Buddha Upadesh*, New Delhi: Samyaka Prakashana, 2011.
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- ✓ Sarao, K.T.S., *Origin and Nature of Ancient Indian Buddhism*, New Delhi: Munshiram Manoharlal, 2009.
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- ✓ Shakya, Gyanaditya, *Bauddha Dharma Darshana Mein Brahma-Vihāra-Bhāvanā*, Ahmadabad: Reliable Publishing House, 2013.
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- ✓ Upadhyaya, Bharat Singh, *Pāli Sāhitya Kā Itihās*, Prayag: Hindi Sahitya Sammelan, 2005.
- ✓ Upadhyaya, Baladeva, *Bauddha Dharma Darshan Mimamsa*, Varanasi: Chaukhamba Vidya Bhawan, 1999.

Please find the minutes of the meetings held in SoVSAS on 27.10.16. The ^{main} measure highlights of the BOS meeting decisions are as follows.

- 1) BOS has approved the experts for question papers for examination which is attached as Annexure 1 (Flag A).
- 2) Strength of the faculty members in each department (Applied Chemistry/Applied Mathematics/Applied Physics/Environmental Science/Food Processing and Technology) and list is given below:

Faculty Strength S. No.	Name of the Department	Faculty Strength	Final Faculty Strength
1.	Applied Physics	14	77
2.	Applied Chemistry	15	
3.	Applied Mathematics	15	
4.	Food Processing and Technology	25	
5.	Environmental Science	8	

- 3) BOS has approved the modified list of course code wherever corrections are required and list is attached as an Annexure 2 (Flag B)
- 4) BOS has approved the revised list of experts (Thesis evaluation/BOS experts/RDC experts) and list is attached as an Annexure 3 (Flag C)
- 5) Revised list of experts is sent to experts through emails for their perusal and approval and the approval is received through emails. Email's copies of approval of each BOS experts are attached as an Annexure (Flag D).

Deem Academic

Arun Kansal
Prof. Arun Kansal
Dean SoVSAS

School of ...

Minutes of BOS meeting may kindly be approved by competent authority.

Amity
23/11/2016

Dean, School of ...
Gautam Buddha University
Greater Noida - 201 303
Gautam Buddha Nagar (U.P.)

Registrar

AR (C&A)

hsp

29.11.16

Registrar

Gautam Buddha University



Meeting of Board of Studies of School of Vocational Studies and Applied Sciences:

The meeting of the Board of Studies (BOS) of School of Vocational Studies and Applied Sciences, GBU was held on 27.10.2016 at 11:00 AM onwards in the conference room of SoVSAS.

Following members attended the meeting:

S. No.	Name	Affiliation
1	Prof. Arun Kansal	Dean, SoVSAS
2	Prof. D. S. Rawat	University of Delhi, New Delhi
3	Dr. Avinashi Kapoor	University of Delhi, New Delhi
4	Prof. Amarjeet Kaur	GGSIU University, New Delhi
5	Dr. Sushil Kumar	Head, Applied Mathematics, SoVSAS
6	Dr. Manmohan Singh Shishodia	Head, Applied Physics, SoVSAS
7	Dr. Vandna Singh	Head, Applied Chemistry, SoVSAS
8	Er. Ashish M. Mohite	Coordinator, Food Processing and Technology, SoVSAS
9	Dr. Pratiksha Saxena	Faculty, Department of Applied Mathematics, SoVSAS
10.	Dr. Jaya Maitra	Faculty, Department of Applied Chemistry, SoVSAS
11.	Dr. Mausumi Pohit	Faculty, Department of Applied Physics, SoVSAS

Agenda of the Board of Studies

1. Approval of the name of experts for question paper setting for the first two year of UG courses offered by the School.
2. Approval for the strength of the faculty members required in each department.
3. Corrections in the course code of subjects which are repeated, if any.
4. Any other important point

Details of Discussion and Decisions taken

1. The list of the experts (Theory/Practical examination) was displayed and discussed in details with BOS members. Inclusion of more senior professors for theory examination paper is advised by BOS members. It is also suggested to include experts for practical examination mainly from NCR. Revised list of experts after including suggestions will be shared with BOS members on email and their approval will be sought through email communications and approved list will be attached as annexure 1 to this BOS minutes.

[Signature]

[Signature]
27/10/16

[Signature]
Jaya Maitra

[Signature]
27/10/16

[Signature]

[Signature]
27/10/16

[Signature]
M. Mohite

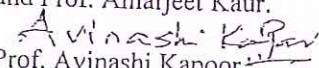
[Signature]
M. Mohite

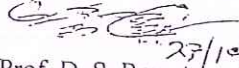
2. Strength of the faculty members (departmentwise) is displayed by concerned HODs and discussed in details with BOS experts in the light of GBU ordinance. Approval is given for following list.

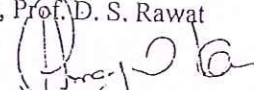
Faculty Strength S. No.	Name of the Department	Faculty Strength	Final Faculty Strength
1.	Applied Physics	14	77
2.	Applied Chemistry	15	
3.	Applied Mathematics	15	
4.	Food Processing and Technology	25	
5.	Environmental Science	8	

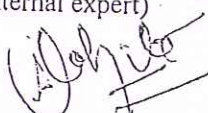
3. Corrections in the repeated course code of subjects are examined department wise and modified list is approved (attached as annexure 2).
4. In addition to the existing list of experts (Thesis evaluation/BOS experts/RDC experts) was displayed and discussed with BOS members. It is observed that more experts to be included as per their expertise to the existing list wherever required. List of experts after including suggestions will be shared with BOS members on email and their approval will be sought through email communications and approved list will be attached as annexure 3 to this BOS minutes.

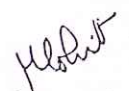
The meeting was concluded with thanking note to Dr. Avinashi Kapoor, Prof. D. S. Rawat and Prof. Amarjeet Kaur.

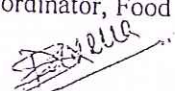

Prof. Avinashi Kapoor
(External expert)

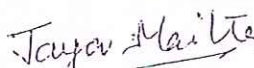

Prof. D. S. Rawat
(External expert)



Prof. Amarjeet Kaur
(External Expert)

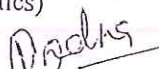

Mr. Ashish M. Mohite
Coordinator, Food Proc. & Tech.)

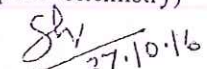

Dr. Mausumi Pohit
(Assistant professor, Applied Physics)



Dr. Pratiksha Saxena
(Assistant professor, Applied Mathematics)


Dr. Jaya Maïtra
(Head, Applied Chemistry)


Dr. Manmohan Singh Shishodia
(Head, Applied Physics)


Dr. Vandna Singh
(Head, Applied Chemistry)


Dr. Sushil Kumar
(Head, Applied Mathematics)


Prof. Arun Kansal
Professor & Dean, SoVSAS



Environmental Science

Annex
11

Programme: Foundation Course UG level (for B. Tech. I yr IT, CS, EC; B.A. Hons Buddhist Studies I year; B. Tech. I year FPT)

Semester: I, Academic session: 2016-17

(8). Course code: ES 101

Course Name: Environmental Studies

S No.	Name & Designation	Affiliation	Mobile/Tel.	Email
1.	Prof. Gopal Singh, Professor	Institute of Environment and Sustainable Development, Banaras Hindu University, Varansi 221 005 (U.P.)	09450530681	gopalsingh.bhu@gmail.com
2.	Dr. G.P. Sharma, Asstt. Professor	Department of Environmental Studies, University of Delhi, Delhi 110007	09953397096	gyanprakashsharma@gmail.com
3.	Prof. Prodyut Bhattacharya, Professor	University School of Environmental Management, GGS Indraprastha University, Dwarka, New Delhi	011-25302363/62	prodyutbhattacharya@yahoo.com
4.	Prof. I.S. Thakur, Professor	School of Environmental Science, JNU, New Delhi 110067	09868558865	isthakur@mail.jnu.ac.in
5.	Dr. A.K. Srivastava, Asstt. Professor	School of Environmental Science, JNU, New Delhi 110067	09868088440	a_srivastava@mail.jnu.ac.in
6.	Prof. N.P. Melkania	Dept. of Environmental Science, SoVSAS, GBU	09410906829	niranjn.melkania@gbu.ac.in

Praveen

Slv
27/10/16

Amber
peer

G. P. Sharma

Prodyut

Amber

Jaya Lal



School of Buddhist Studies and Civilization

Gautam Buddha University

Proceedings of the Board of Studies

4 November, 2016

The Board of Studies of the School of Buddhist Studies and Civilization as approved by Hon'ble Vice Chancellor under clause 1.3 of the ordinance of Gautam Buddha University conducted its meeting on 04 November, 2016 at 11.00 am in the office of the Dean, School of Buddhist Studies and Civilization.

The following members attended the meeting of Board of Studies.

- | | |
|--|----------|
| 1. Dr. Anand Singh, Dean School of Buddhist Studies and Civilization | Chairman |
| 2. Professor K.T.S.Sarao (External Expert) | Member |
| 3. Dr. Arvind Kumar Singh | Member |
| 4. Dr. Priyadarshini Mitra | Member |
| 5. All Faculty Members (Special Invitees) | Members |

Following agenda points are discussed and approved-

- BoS has discussed and approved the names of external experts for B.A. (Hons) Programme in School of Buddhist Studies and Civilization for paper setting and evaluation.
- BoS has discussed and approved the names of external experts for M.A. Programme in School of Buddhist Studies and Civilization for paper setting and evaluation.
- BoS has discussed and approved the names of external experts for M.Phil /Ph.D. Programmes for evaluation and Viva- Voce in School of Buddhist Studies and Civilization.
- BoS has discussed and approved some modifications in syllabus of B.A. (Hons) + M.A, M Phil, and Ph D programmes of School of Buddhist Studies and Civilization based on CBCS.
- BoS has discussed and approved separate syllabus of Course Work for Ph.D programme.
- BoS has discussed and approved modified curriculum and tenure for M Phil programme as per UGC office order no. 2781 dated 5 May 2016. M Phil programme shall be for a minimum duration of two consecutive semesters/ one year. It can be extended for maximum of four consecutive semesters/ two years.
- BoS has approved faculty strength of School of Buddhist Studies & Civilization 17 (Seventeen).

Mitra
4/11/16
Dr. Priyadarshini Mitra

Arvind
4/11/16
Dr. Arvind Kumar Singh

K.T.S.
4/11/16
Professor K/T S Sarao

Anand
4/11/16
Dr. Anand Singh

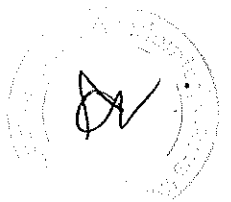
Faculty Members (SBSC)
Priyadarshini
4/11/16

Arvind
4/11/16

Manish
4/11/2016

Arvind
4/11/16

Arvind
4/11/16



Gyanashakti
4/11/2016
Sharma

Arvind



School of Management Gautam Buddha University

Proceeding of the 16th Meeting of Board of Studies

Sixteenth meeting of the Board of Studies was held on November 3rd 2016 at 12:30 P.M in Dean Conference Room, School of Management Gautam Buddha University. Following members attended the meeting:

1. Prof. Shweta Anand, Dean SoM	Chairperson
2. Prof. P.K. Yadav, Professor	Member
3. Dr. Indu Uprety, Associate Professor	Member
4. Dr. Dinesh Kumar Sharma, Assistant Professor	Member
5. Prof. Lallan Prasad, Retd. Professor University of Delhi	Expert
6. Dr. Varsha Dixit, Assistant Professor	Convener

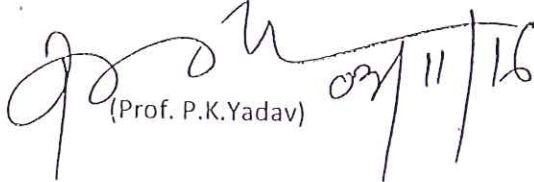
The following decisions were made in the meeting

1. The list of Expert of Integrated MBA I year and II year was approved by the BoS (Annexure I). The BoS however suggested that examination should take a question bank from the concerned faculty as per prescribed syllabus and as per the format prescribed and send the same to external expert for question selection with some modification, if required.
2. The course outlines of open Electives offered by School of Management was approved by the BoS (Annexure II).


Meeting ended with vote of thanks to chairperson.


(Dr. Varsha Dixit)


(Dr. Indu Uprety)


(Prof. P.K. Yadav)


(Dr. Dinesh K. Sharma)


(Prof. Shweta Anand)


(Prof. Lallan Prasad)





Gautam Buddha University School of Management
Integrated MBA VI Sem.

Course: Entrepreneurship and Innovation (MB 312)

Instructor	Dr. Deepika Joshi	Year/Sem.	2016-17, VI
Email	deepika@gbu.ac.in	Phone	0120-234-6152
Department	Business Management	Credit	3
Sessions	45	Each session	60 minutes

Introduction

The course aims at developing an understanding among students about the entrepreneurship strategies in which innovation is an important part of business. They will recognize various key theories on innovation and entrepreneurship to apply them in a much broader and contemporary context for attainment of competitive advantage. The impact on sustainability, development and creating and capturing value from innovation and entrepreneurship will be studied in detail. Course will cover various aspects related to innovation for the success of entrepreneurial business growth.

Course objectives

1. Why innovation is significant for entrepreneurial growth?
2. To develop the ability to recognize innovative business environment in existing opportunity
3. How do entrepreneurs organize to capture value from innovations?

Pedagogy and Evaluation

The teaching/learning approach combines lectures, cases, and in-class activities. Each session includes a number of readings (required/optional) pertaining to the theme of the session. Lectures are conducted to give students an overview of the fundamental concepts and theories. Case studies are given to students to facilitate the application of learned knowledge and interactive knowledge sharing. In-class activities include seminars by industrialists and projects involving hands-on experience on the subject.

Evaluation Scheme is as follows:

Case presentation and individual participation	10 marks
Class project	05 marks
Class assignment and discipline	10 marks
Mid-term Exam	25 marks
End-term Exam	50 marks

Text Book

Bessant John and Tidd Joe, 2011, *Innovation and Entrepreneurship*, John Wiley & Sons Ltd.
Third Edition

Additional Readings

Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Harvard Business Press

Vijay Govind Rajan and Trimble, *Ten rules for strategic innovators*, Harvard Business School Press

C.K. Prahalad and Krishnan, *The new age of innovation*, McGraw Hill Books

Drucker, F P 1985, *Innovation and Entrepreneurship*, New York: Harper Business

Session Plan: (Each session of 60 minutes)

Session	Topic (s)	Text Book
Part I Entrepreneurial Goals and Context		
1-3	The Innovation Imperative	Chapter 1
4-7	Social Innovation	Chapter 2
8-10	Sustainability-led Innovation	Chapter 4
Part II Recognizing the Opportunity		
11-13	Entrepreneurial Creativity	Chapter 5
14-16	Sources of Innovation	Chapter 6
Part III Finding the Resources		
17-19	Building the Case	Chapter 8
20-22	Leadership and Teams <i>Managing Risk</i>	Chapter 9
23-25	Exploiting Networks	Chapter 10
Part IV Developing the Venture		
26-28	Creating New Ventures	Chapter 12
29-31	Developing Businesses and Talent through Corporate Venturing	Chapter 13
Part V Creating Value		
32-34	Business Models and Capturing Value	Chapter 16
35-37	Learning to Manage Innovation and Entrepreneurship	Chapter 17
38-41	Case analysis	
42-45	Presentations	

Note: The case/assignment/project/ presentation topics will be provided in advance through proper channel (e-mail/in-person).

Lella Prasad





Gautam Buddha University School of Management
Integrated MBA VI Sem.

Course: Entrepreneurship and Innovation (MB-312)

Instructor	Dr. Deepika Joshi	Year/Sem.	2016-17, VI
Email	deepika@gbu.ac.in	Phone	0120-234-6152
Department	Business Management	Credit	3
Sessions	45	Each session	60 minutes

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Third Edition

Deepika Joshi



Additional Readings

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Vijay Govind Rajan and Trimble, *Ten rules for strategic innovators*, Harvard Business School Press

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29-31	Developing Businesses and Talent through Corporate Venturing	Chapter 13
Part V Creating Value		
32-34	Business Models and Capturing Value	Chapter 16
35-37	Learning to Manage Innovation and Entrepreneurship	Chapter 17
38-41	Case analysis	
42-45	Presentations	

Note: The case/assignment/project/ presentation topics will be provided in advance through proper channel (e-mail/in-person).

Deepika Joshi

DA



Gautam Buddha University School of Management
Greater Noida

Programme: Integrated B.Tech (mech.) sem 3

Course: Modern management-Concepts and skills

Instructor: Dr. Lovy Sarikwal
Email: lsarikwal@gbu.ac.in
Department: School of Management
Sessions: Forty five

Year/Sem: 2016-17 Sem.3
Phone: 6155
Credit: 03 ,Code-MB -323
Each Session: 60 Minutes

Introduction: Managers influence all phases of modern organization. One of the most important activities is managing. Ever since people began forming groups to accomplish aims they could not achieve as individuals, managing has been essential to ensure the co ordination of individual efforts. As society has come to rely increasingly on group effort and as many organized groups have become large, the task of managers has been rising in importance. The purpose of this course is to promote excellence among all managers in organizations.

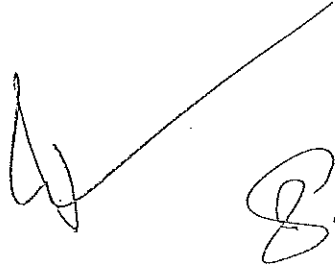
In addition to understanding the significance of managerial work to themselves and society and its related benefits, prospective managers need to know what the management task entails. This course introduces the basics of management task through discussion of the roles and definition of management, the management process as it pertains to management functions and organizational goal attainment, and need to manage organizational resources effectively and efficiently.

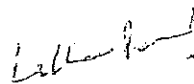
Peter Drucker emphasized that effective management is probably the main resource of developed countries and the most needed resource of developing ones. In short all societies desperately need good managers. The course helps the aspiring students to develop managerial skill and develop an insight on modern management concepts.

Aims and Objectives:

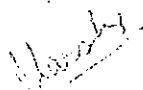
- Satisfy the need to predict and prepare the managers of tomorrow by introducing them to the issues they will face in future.
- Explore in depth the current issues that frame the workplace ,environment and environmental awareness
- Influence organisational events to improve our ability to work with and manage other people in organizations.

Pedagogy: Entire course will be taught through lectures, relevant cases and management games.









Learning Outcomes:

- Apply the theory and research of modern management to practice.
- Relate structure, context and communication patterns to organizations for the development of social and intellectual capital.
- Appreciate the role of analytical and research methods in the systematic study of managerial problems and issues.
- Choose communication strategies that best fit emerging management challenges.
- Link the theories of managerial leadership to systems and organizational learning.
- Understand the characteristics of effective and ineffective group dynamics.
- Recognize the complexity of leading successful change initiatives.

Evaluation Scheme:

Internal	: 25 Marks
Mid-Sem	: 25 Marks
End-Sem	: 50 Marks
Total	: 100 marks

Suggested Readings:

Text Book: Koontz Harold & Weihrich Heinz, Essentials of Management, Mc Graw Hill
Prasad L M, Principle of Management

Reference Books

Certo C. Samuel, Organizational Behaviour, Eastern Economy Edition

Stoner A. F. James & Freeman R. Edward, Management, Person Education

Aquinas, P G, Organisation structure design, Excel Books

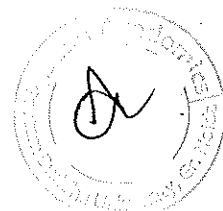
Singh, N, Management of organizational Behaviour, Pragati Publication

Prasad L, Mgr Principles & Practices, Excel Publications.
2 SS Gulshan

Session Plan: (Each session of 60 minutes)

Session Plan

Session No.	Contents
1-4	Introduction to Modern management • The management Process Functions and. • Challenges for management
5-10	Historical perspective of Management • Management evolution • Scientific management • Human relation approach



BV

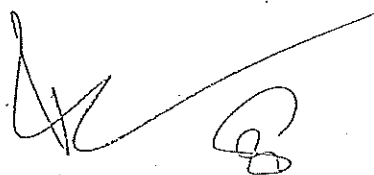
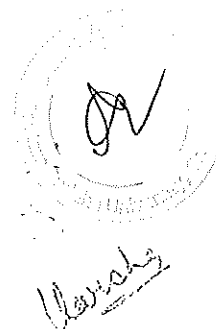
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	<ul style="list-style-type: none"> Contingency approach
11-13	Introduction to organising <ul style="list-style-type: none"> Types of organization Organisational Structure
14-18	Management and Society <ul style="list-style-type: none"> The external Environment Corporate Social Responsibility
19-22	Management and Diversity <ul style="list-style-type: none"> Managing in global Arena Challenges in diversity Advantages of diversity
23-26	Management and Entrepreneurship <ul style="list-style-type: none"> Fundamental of Entrepreneurship Corporate entrepreneurship Social entrepreneurship
27-30	Planning and Strategic Management <ul style="list-style-type: none"> Management by objective Fundamentals of Strategic Planning Strategic management
31-35	Motivation <ul style="list-style-type: none"> Concept Theories (Herzberg, Maslow, Alderfer's) Motivational Applications Tools for Motivation
36-38	Committees, Teams & Group Dynamics <ul style="list-style-type: none"> Concepts and types of group & Committees Stages of Group development Group Decision making Team Building
39-42	Leadership <ul style="list-style-type: none"> Definition Leadership styles Leadership theories
43-45	Organisational Conflict <ul style="list-style-type: none"> Concepts sources and types
	Reading: chap 18, OB, Rao VSP & Chap 15, OB, Robbins, Stephen P.

Learning Outcomes:

- Apply the theory and research of modern management to practice.
- Relate structure, context and communication patterns to organizations for the development of social and intellectual capital.
- Appreciate the role of analytical and research methods in the systematic study of managerial problems and issues.
- Choose communication strategies that best fit emerging management challenges.
- Link the theories of managerial leadership to systems and organizational learning.
- Understand the characteristics of effective and ineffective group dynamics.
- Recognize the complexity of leading successful change initiatives.

Evaluation Scheme:

Internal	: 25 Marks
Mid-Sem	: 25 Marks
End-Sem	: 50 Marks
Total	: 100 marks

Suggested Readings:

Text Book: Koontz Harold & Weihrich Heinz, Essentials of Management, Mc Graw Hill
Prasad L. M., Principle of Management

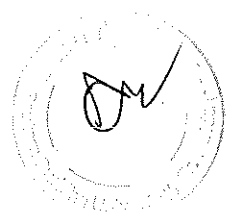
Reference Books

Certo C. Samuel, Organizational Behaviour, Eastern Economy Edition
Stoner A. F. James & Freeman R. Edward, Management, Person Education
Aquinas; P G, Organisation structure design, Excel Books
Singh, N, Management of organizational Behaviour, Pragati Publication,
Prasad, L & Gulshan, S S, Mgt Principles & Practices, Excel Publications.

Session Plan: (Each session of 60 minutes)

Session Plan

Session No.	Contents
1-4	Introduction to Modern management <ul style="list-style-type: none">• The management Process• Challenges for management
5-10	Historical perspective of Management <ul style="list-style-type: none">• Management evolution• Scientific management



Gautam Buddha University

School of Management

Greater Noida

Programme: Integrated B.TECH +M.TECH/MBA

COURSE: Team development & Leadership (MB-223)

Department: Business Management

Credit: 3

Sessions: 45 (60 Minute each)

Instructor: Dr. Varsha Dixit

OBJECTIVES: - Good leaders have been expected to be able to solve new problems, capitalize on new opportunities and navigate through the ever-changing landscape of business. Leadership is a complex process by which the leader influences others to perform and achieve. To create awareness among students regarding personality traits, attitudes, behaviors patterns of leaders, their styles and their contribution towards various aspects of organizational functioning. The course also deals with the process of team-building and role of leaders during various phases of team development and what leaders do to be successful.

PEDAGOGY: - Through Lectures, Exercises, Activities and Presentations.

LEARNING OUTCOMES: - At the end of the course students are expected to acquire adequate awareness about the personality and behavioral factors of various types of Leaders and their social, ethical and professional responsibilities beside their role as team builders and also as team players.

COURSE CONTENT

LEADERSHIP

- Leadership Nature, Role and relevance 3
- Leadership Traits, characteristics and Behavior 3
- Leadership Theories and Styles 4
- Leadership Ethics and Social Responsibility 3
- Creativity, Innovation and Leadership 3
- Communication and Conflict Resolution 3
- Cultural Diversity and Leadership 3
- Motivation, Empowerment, Satisfaction and Performance 3

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TEAM BUILDING

• An inside look into ourselves	2
• Managing Diversity	3
• Team-building – Phases of development	3
• Process Organization for Teambuilding	3
• Intergroup Behavior and Managing Conflict	3
• Sustaining Team Effectiveness	3
• Team Leader Role and effectiveness	3

Total 45

EVALUATION SCHEME

• Regularity and class participation	05
• Assignments & Presentations	20
• Mid semester Exam	25
• End semester Exam	50

Total 100

TEXT BOOK:- Sadler, 'Leadership', Kogan Page 2003

SUGGESTED READINGS:- Gary Yukl, D.Ray, N.Gold, Hersey P., Andrew J.Dubrin.

RESEARCH PAPERS:- As and when referred.

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Gautam Buddha University School of Management
Greater Noida
Program: Open Elective for non-management Students
Course: Finance for non-finance, MB-321

Instructor	: Dr. Satish K. Mittal	Year/ Sem	: 2016-17/Sem- III
Email	: skumar@gbu.ac.in	Phone	: 01202346170
Department	: Finance & Economics	Credit	: 3
Sessions	: Forty Five	Each Session	: 60 Minutes

Introduction:

This course is especially designed keeping in mind the finance knowledge required by an graduate professional for enhanced performance in the industry. Since it is the only paper in Finance, care has been taken to ensure a wide coverage of various aspects of finance and accounting. It covers the concept knowledge of financial statements, Cost and management accounting, Financial Services Industry, and Personal Direct Tax Planning & Management.

Aims and Objectives:

At the end of this course students are able to

- Discuss and analyse financial statements and understand the financial health and performance of a company.
- They will be able to take key management decisions that relate to operations such as execute or outsource work, expansion, process continuation, break-even point etc.
- They will also get a fair grip on the various aspects of the financial system such as Financial markets, index, financial products and services and a overview of how the entire system is regulated.
- The individual graduate professional will be able to do Personal Direct Tax Planning & Management: i.e. filing Income Tax returns, Tax saving, Market investment, future financial planning, etc.


Learning Outcomes:

At the end of this course students will be able to:

- Get into a continuous learning mode of tracking the latest business and finance news.



Dr. Satish K. Mittal



- Comfortably understand and discuss various aspects of finance and financial services.
- Easily and efficiently execute any technical work that relates to Accounting, Financial Services Industry.
- Student should be able to Design: Business Plan development, File Income tax returns, plan tax savings, future financial planning, share market investments, etc.

Course Delivery:

A mix of instructional methods will be used like lectures, case analysis and exercises. Handout and reading references will be provided as and when required.

Evaluation Scheme:

Continuous assessment will be done. All the students are advised and expected to be regular in all evaluation exercises.

The weight-age for the different components are as follows:

a.	Quizzes/ Class Tests/ Assignments	20%
b.	Class Participation/ Presentation & Discussion	5%
c.	Mid-term Exam	25%
d.	Term- end Exam	50%

Session Plan (30 sessions of 60 minutes each)

Unit I

Session 1-10: Basics of Financial Accounting

1. Importance and Significance of Financial Accounting,
2. Related Accounting Concepts and Rules,
3. Business firms' final accounts,
4. Understanding Financial Statements,
5. Analysis of Financial Statements

Suggested Readings:



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1. R. Narayanaswami : Financial Accounting; a managerial Perspective (2005), PHI
2. S. N. & S.K. Maheshwari : Advanced Accounting Vol.-I
3. T. S. Grewal - Introduction To Accountancy
4. M.Y. Khan and P. K. Jain : Management Accounting

Unit II

Sessions 11-20 Basics of Management Accounting

1. Introduction,
2. Cost Classification,
3. Cost-Volume-Profit Analysis,
4. Variable Costing and Incremental Analysis for Decision Making,
5. Production Decision Making,
6. Pricing Decision Making.

Suggested Readings:

1. Managerial Accounting – James Jimbalvo (John Wiley & Sons)
2. Adv. Management Accounting Text, Problems and Cases – Jawahar Lal (S. Chand)
3. Management Accounting for Decision Making – Mamta Shah (Ane Books)
4. Introduction to Management Accounting – Charles T Horngren (Pearson Education)

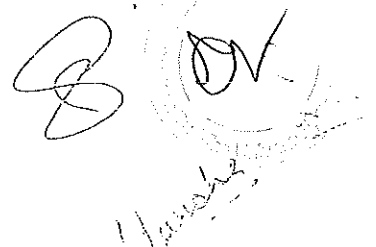
Unit III

Sessions 21-30 Financial System Overview

1. Financial Institutions and Regulators,
2. Financial Markets and Index,
3. Financial products – Exchange traded and Over the Counter products,
4. Financial Services Overview
5. Contemporary issues in Finance and Accounting.

Suggested Readings:

1. Financial Markets and Financial Services - Dr. Vasant Desai (Himalaya Publishing, Latest Edition)
2. Financial Services – M Y Khan (Tata McGraw Hills, Latest Edition)
3. Financial Institutions and Markets – Meir Kohn (Oxford University Press, First Indian Edition)



4. Indian Financial System – D K Murthy, Venugopal (I K International, First Edition)
5. RBI Publications, Financial dailies and magazines.

Unit IV

Sessions 31-38 Tax Planning & Management

1. Overview of Taxation: Direct Tax, Nature and scope of tax planning: Nature, Objectives of Tax management. Tax Planning, Tax Avoidance and Tax Evasion.
2. Tax Calculation on individual income: types of Income, an overview.
3. Hands-on Practice on: PAN Application form; ITR-1, ITR-2, ITR-4s; ITNS-280; and E-return filing.
4. Filing Income Tax returns,
5. Current Issues: Double Tax Treaty, MAT, VAT, STT, Direct Tax Code (DTC).

Suggested Readings:

1. Singhanian V K, Singhanian Kapil - Direct Taxes, Law & Practice (46th Edition, Taxman, 2012-13 or latest edition) [VKS]
2. Palkhiwala- Income Tax (Tripathi Publication) [PIT]
3. Finance Ministry (Govt of India) E-Notes, available with instructor.

Unit V Session

Sessions 39-45 Wealth Management

1. Indian Social Environment and Financial Planning.
2. Comprehensive Personal Financial Planning and Goal Setting.
3. Investment Options, both Physical and Financial Products.
4. Evaluating Available Asset Classes.
5. Wealth Management : Contemporary issues.

Reference Books:

1. The Intelligent Investor - Benjamin Graham Collins Business Essentials (BG)
2. Personal Finance - Ashu Dutt - Penguin (AD)
3. Financial Risk Management - Vivek, PN Asthana – HPH (VA)



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Gautam Buddha University
School of Management
Integrated MBA, IIIrd Sem
Techniques of Stress Management, MB-221

Introduction:

This course is designed to provide the student with the opportunity to develop the knowledge and skills needed to teach their students about the detrimental effects that are associated with excessive level of stress and tension. Students will also learn how to manage a stress-free classroom to improve the learning experience. Holistic stress reduction approaches will be presented which are designed to acquaint the individual with theory, technique, and teaching skills to deal with stress from a physical, emotional, and environmental perspective. This course will provide the student with the skills necessary to teaching about the following research based subjects: a) understand the nature of stress, b) identify sources of stress, c) learn and apply techniques to deal with stress, d) understand the nature of various stress-related conditions, e) design and implement a goal setting and time management program, and f) apply stress management techniques to the classroom setting.

Pedagogy: The teaching methodology will be a judicious blend of discussions, real life situation analysis, case study, presentation and exercises. The content delivery shall be in a highly interactive mode, expected to be participated by all the students.

Learning Outcomes:

- (a) Define stress and examine how stress may have direct and indirect effects on your immune system and on your overall health status.
- (b) Explain an understanding of the basic concepts of the human stress response.
- (c) Assess and identify physical, emotional, environmental, and self-imposed sources of stress using several different stress assessment instruments.
- (d) Demonstrate an understanding of the use of self-monitoring techniques in their own stress management program.
- (e) Demonstrate an understanding of the methods used to relieve physical, emotional, and environmental stress from the classroom.
- (f) Design and produce a relaxation video / audio script to use in their teaching or for other professional use, utilizing at least one of the relaxation methods covered in this course.

Unit-I: Understanding Stress

- a) Nature and Definition, Health, well-being and stress
- b) Types of Stress – Basic,
- c) Stressors – Physiology and Psychological Stress
- d) Stress, Illness and disease





Gautam Buddha University
School of Management
Integrated MBA, IIIrd Sem
Techniques of Stress Management, MB-221

Introduction:

This course is designed to provide the student with the opportunity to develop the knowledge and skills needed to teach their students about the detrimental effects that are associated with excessive level of stress and tension. Students will also learn how to manage a stress-free classroom to improve the learning experience. Holistic stress reduction approaches will be presented which are designed to acquaint the individual with theory, technique, and teaching skills to deal with stress from a physical, emotional, and environmental perspective. This course will provide the student with the skills necessary to teaching about the following research based subjects: a) understand the nature of stress, b) identify sources of stress, c) learn and apply techniques to deal with stress, d) understand the nature of various stress-related conditions, e) design and implement a goal setting and time management program, and f) apply stress management techniques to the classroom setting.

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- (d) Demonstrate an understanding of the use of self-monitoring techniques in their own stress management program.
- (e) Demonstrate an understanding of the methods used to relieve physical, emotional, and environmental stress from the classroom.
- (f) Design and produce a relaxation video / audio script to use in their teaching or for other professional use, utilizing at least one of the relaxation methods covered in this course.

Unit-I: Understanding Stress

- a) Nature and Definition, Health, well-being and stress
- b) Types of Stress – Basic,
- c) Stressors – Physiology and Psychological Stress
- d) Stress, Illness and disease

301

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Unit-II: Life Style Stress

- a) Life events and stress
- b) Challenges and Opportunities
- c) Stress in Modern Life: Family and College
- d) Stress at Workplace, Causes, Work Family Conflicts
- e) Effects of Stress in the workplace, Treating stress in the workplace
- f) Effects on personality – Smoking, Alcoholism and drug abuse

Unit-III: Stress Management and Coping Strategies

- a) Positive and negative coping and life style choices
- b) Positive copings: Diet, Exercise, Time Management, Locus of Control, Meditation, Yoga, Relaxation Technique, Support Group, Inculcating Hobbies
- c) Negative coping: Avoidance, suppressing emotions and fatalistic ideas
- d) Emotional Intelligence and dealing with stress

Unit-IV: Personal Wellness and Social Commitment

- a) Practice at personal level: Altruism and Ego Satisfaction, Interpersonal Relationship, Problem Solving
- b) Practice at family: Daily routine, quality time, practice of family get-together, social engagement and good neighborhood relations.
- c) Practice in professional life: Commitment, responsibilities, working in team, assertiveness and maintaining transparency.
- d) Positive Psychology : Principle of Pleasure, Positive Emotions, Happiness and Well-being

Unit-V: Interventions for dealing with Stress

- a) Behaviour Modification
- b) Art and Music Therapy
- c) Counseling Services
- d) Team building, Group Intervention, Resilience building
- e) Family enrichment and student enrichment programme
- f) De-addiction services,
- g) Mental health education

Suggested Readings:

1. Cooper, C., & Payne, R. (1988). Causes, Coping and Consequences of Stresses at Work. Chichester: Wiley.
2. Hoeger, Werner, Turner, Lori W. & Hafen, Brent Q.(2003). Wellness: Guidelines for a Healthy Lifestyle. Wadsworth Publishers, 2003.
3. Kottler, J.A. & Chen, D.D. (2008). Stress Management and Prevention: Applications to daily life. Belmont, CA: Wadsworth.



4. Kottler, J.A. & Chen, D.D. (2008). Activities manual for stress management and prevention: Applications to daily life. Belmont, CA: Wadsworth.
5. Lazarus, R.S. & Folkman, S. (1984). Stress, Appraisal and Coping, New York, Springer Publishing Company Ltd.
6. Pestonjee, D.M. (1999). Stress and Coping (2nd) New Delhi: Sage Publication.
7. Shafer, Walt (2000). Stress Management, (4th ed.), New Delhi: Wadsworth – Cengage Learning India Pvt. Ltd.
8. Tubesing, Nancy Loving (2001). Structural Exercises in Stress Management. Volume II. The Whole Person Press. Duluth, MN.
9. Take Charge of your Health. The Steven Greene Press, Inc. Penguin Books.
10. Ali, M. (1996). What Do Lions Know About Stress? Denville, NJ: Life Span Press. Arden, J. (2002). Surviving Job Stress. Franklin Lakes, NJ: Career Press. Benson, H. (2000). The Relaxation Response. New York: Harper Paperback



Department of Civil Engineering, School of Engineering
Gautam Buddha University

Proceedings of the 10th Meeting of Board of Studies

Tenth Meeting of the Board of Studies of Department of Civil Engineering was held on May 30, 2016 at 02:00 p.m. in the office of Dean Conference room, School of Engineering. Following members attended the meeting:

1. Prof. Arun Kansal, Dean, SOE	Chairperson
2. Dr. Shilpa Pal, Civil Engineering SOE, GBU	HOD
3. Prof. Amjad Masood, Civil Engineering, AMU	Expert
4. Dr. A. K. Sahu, Professor, Civil Engineering, DTU Delhi	Expert
5. Dr. Shobha Ram, Civil Engineering, SOE	Member

Following items were discussed in the meeting:

Item No. 10.1 Modifications in the syllabus of Surveying Lab II

- Dr. Shilpa Pal presented the syllabus of Surveying Lab II (course code: CE212). She informed the members that there is a need to conduct two days surveying camp as is a practice in all institution offering Civil engineering Programme. The members discussed the matter in detail and the following changes have been accepted.

1. Changes in the contents:

Prepare a detailed site map by using any of the surveying method (compass surveying, chain, theodolite, total station etc.)

2. Evaluation criteria for Surveying Lab II

Existing evaluation criteria	Proposed evaluation criteria
Field Exercise and laboratory assignments – 30%	Survey Camp - 30%
Class Participation & Discussion – 5%	Field Exercise and laboratory assignments - 20%
Presentation of laboratory exercise/quiz – 15%	
End Term Laboratory Examination - 50%	End Term Laboratory Examination - 50% (30 written and 20 viva voce examination)



Shilpa Pal
30/5/16

Amjad Masood

Arun Kansal
30/5/16

Dr. Shobha Ram

Dr.

504

The revised syllabus as approved by BOS is attached as Appendix I.

Item No. 10.2 Dr. Shilpa Pal, HOD proposed a five year plan to make the Department financially self sustainable which includes funded research projects/ consultancy services through laboratory testing etc. BOS members agreed in principle the proposal for research and consultancy services to be carried out in the Department. however, suggested to review the process after improving the status of faculty and technical staff strength in the Department.

Item No. 10.3 Dr. Shilpa Pal, apprised the BOS about the need for faculty and staff requirements of the Department and made a brief presentation to the BOS members. A summary of the presentation is attached (Appendix 2). The BOS member discussed the requirements with respect to the syllabus offered by the Department in various programmes and had a detailed discussion on 'NEEDS ASSESSMENT'. After a detailed deliberation, BOS approved the proposal of the department for filling the vacant faculty and staff positions for the consideration of the academic council which is placed as -Annexure DBOS and DBOS II.

BOS members also suggested that for Assistant Professor Position, the recruitment of faculty at AGP of Rs. 6000/-, Rs. 7000/- should also be considered.

Item No. 10.4 BOS members unanimously proposed for recruitment of RA/FA position as per chapter 2 of GBU ordinance. This is required for a) shouldering the load of supervising 200 students for their dissertation and b) upkeep of laboratory and assist conduct of practical.

The BOS members suggested that student's dissertation supervision and laboratory practical cannot be handled through guest faculty and hence, RA/FA should be recruited immediately before the new academic session 2016-2017. The number of RA/ FA can be reduced over a period of time as and when new permanent faculty/staff members join the department.

The BOS deliberated in detail the need of such RA/FA which is presented as annexure named DBOSR.

Further, the BOS proposed that the recruitment of RA/FA be made according to the GBU ordinance but with following amendments. Chapter 2, pt 3 pg 32

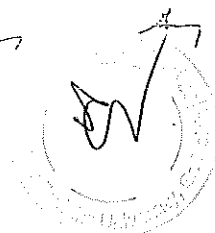
Academic Eligibility Criteria:

P.G. degree in the appropriate subject specialization in first division or equivalent and 55% marks or equivalent at U.G. level from recognized institutions. A relaxation of 5% in marks or equivalent in grades is allowed in case of SC/ST/Physically Challenged candidates. Pay structure: Research Associate: Rs.42000/- per month.

Shilpa Pal
20/5/16

Ankur Kumar
20/5/16
505

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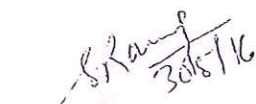


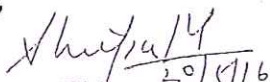
Terms of initial Contract and its Extension:


- All appointments of RAs shall be initially made on Contract for a period of two years.
- The Contract may be extended on year – to year basis on satisfactory performances of the appointee by Vice –Chancellor on the recommendation of the Dean of the School.


*For Environment Specialization, candidates with M.Sc. having 2 years research experience on funded projects may also be considered for the post of RA/FA. However, these will be filled only in case when suitable candidates with M.Tech. degree are not available.

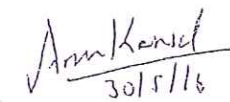
Meeting was ended with a vote of thanks to chair.


(Shobha Ram)


(Shilpa Pal)


(A. K. Sahu)


(Amjad Masood)


(Arun Kansal)





Ug & P.G. degree in the appropriate area in first division or equivalent and ~~55%~~ marks or equivalent at U.G. level from recognized institutions. A relaxation of 5% in marks or equivalent in grades is allowed in case of SC/ST/Physically Challenged candidates.

Professional Experience – Essential

A minimum of two year of teaching/research/professional experience in recognized academic institutions/research institutions/industries is essential. Experience in research as a Ph.D. Scholar shall also be valid for this purpose.

In the above proposed changes Ph.D. and NET requirement has been done away with and in place of this minimum year of experience has been increased form one year to two year.

Item no. 11.3 The BOS has discussed the syllabus in details of the following subjects

EIC510/EE538 Mechatronics, EE303 Electromagnetic Field Theory and EE 532 Robust & Adaptive Control; Power System-I and Power System-II in place of 'Generation of electric power' and 'Transmission and distribution of electric power' respectively. After due deliberations, the revised syllabus as approved by BOS is attached.

The detail is mentioned below:

S.No.	Name of subject	Context/Present Status	Modification
1	EIC510/EE538 Mechatronics	Regarding syllabus	Syllabus has been approved
2	EE 532 Robust & Adaptive Control	Present credit: 3-0-0	Syllabus is same and lab content is added and the same is approved with Cr: 2-0-2 (3) Note: The exam may be conducted in lab.
3	EE659 Robotics	Regarding syllabus	Syllabus has been approved
4	EE303 Electromagnetic Field Theory	Present Credit 3-0-0	Credit 2-0-0, Syllabus has been modified accordingly and approved.
5	Power System-I	Present name is Generation of electric power with Cr: 3-0-0	Name is modified as Power System-I with same credit and same syllabus and approved.

31/5/16

31.05.2016

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31/5



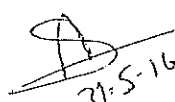
6	Power System-II	Transmission and distribution of electric power with Cr: 3-1-0	Name is modified as Power System-II with credit as 3-0-0 with same syllabus and the same is approved.
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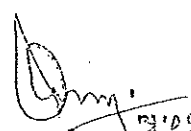
The credit/name of the subjects at Sr. no. 4, 5, and 6 are already been modified in 10th BOS and required to be approved. The total number of credits for integrated program is remains intact at 240.

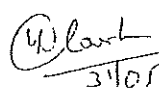
Item no. 11.4 The BOS has discussed and approved the cover page and certificate page of M.Tech. dissertation of various M.Tech. specialization of EED and approved both the pages to maintain the uniformity among all M.Tech. programs of EED.

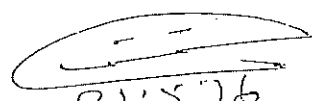
Item No. 11.5 The BOS has discussed and approved the time extension of Integrated/ M.Tech. dissertation duration in case of unsatisfactory work and approved the provision of time extension by three/six month duration depending upon the requirement.


Meeting was ended with a vote of thanks to chair.

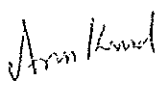

31.5.16
(Dr. Nidhi Singh)


31.05.2016
(Dr. M.A. Ansari)


31/05
(Dr. Yogesh K Chauhan)


31.5.16
(Prof. Vijender Singh)


31/05
(Prof. Vishal Verma)


(Prof. Arun Kansal)
Chairperson, BOS





Gautam Buddha University
School of Engineering
Mechanical Engineering

Proceedings of the 15th Meeting of Board of Studies

Fifteenth Meeting of the Board of Studies of Department of Mechanical Engineering was held on May 31, 2016 at 9:30 AM in the office of Dean Conference room, School of Engineering. Following members attended the meeting:

- | | |
|--|-----------------|
| 1. Prof. Arun Kansal, Dean, SoE | Chairperson |
| 2. Prof. S. N. Mishra, Mechanical Engineering SoE, GBU | Special Invitee |
| 3. Dr. Satpal Sharma, Mechanical Engineering SoE, GBU | HoD |
| 4. Prof. Sagar Maji, Professor and Principal GB Pant Engg. College Okhla, Delhi, | External Expert |
| 5. Prof. Sachin Maheswari, Professor NSIT, Delhi. | External Expert |
| 6. Dr. R. K. Mishra, Mechanical Engineering, SoE | Member |

Following items were discussed in the meeting:

Item No. 15.1 Dr. Satpal Sharma, HoD proposed a five year plan to make the Department financially self sustainable which includes funded research projects/ consultancy services through laboratory testing etc. BoS members agreed in principle the proposal for research and consultancy services to be carried out in the Department, however, suggested to review the process after improving the status of faculty and technical staff strength in the Department.

Item No. 15.2 Dr. Satpal Sharma, apprised the BoS about the need for faculty and staff requirements of the Department and made a brief presentation to the BoS members. A summary of the presentation is attached (Appendix 2). The BoS members discussed the requirements with respect to the syllabus offered by the Department in various programmes and had a detailed discussion on 'NEEDS ASSESSMENT'. After a detailed deliberation, BoS approved the proposal of the department for filling the vacant faculty and staff positions for the consideration of the academic council which is placed as -Annexure DBOS and DBOS II.

Proposal for the recruitment of Assistant Professors at AGP of Rs. 6000/- and Rs. 7000/- and Rs. 8000/- AGP were presented to BoS members. But it was recommended by the BoS members that selection of Assistant Professors in 6000/ AGP should be on contract for one year which can be extended upto three years on satisfactory performance of the faculty. Assistant Professors in 7000/ AGP was not considered and 03 years post Ph. D. experience was included in 8000/AGP. The API score of 150 as per UGC norms and GBU rules have been included for Assistant Professor (8000/AGP).

Arun Kansal
31-5-16

Sagar Maji
SM



31-5-16

5/10

Further, for the post of Professor minimum of 10 years teaching / research / industrial experience of which at least 4 years should be at the level of Associate Professor. 5 years post Ph. D. experience is essential.

OR

Total 13 years of teaching experience have been included as per AICTE norms and 5 years post Ph. D. experience is essential for the post of Professor. The API score of 450 as per UGC norms have been included Professor.

Similarly, for the post of Associate Professor 8 years teaching experience have been included as per AICTE norms and 3 years post Ph. D. experience is essential. The API score of 350 as per UGC norms and GBU rules have been included for Associate Professor.

Item No. 15.3 BoS members unanimously proposed for recruitment of RA/FA position as per chapter 2 of GBU ordinance. This is required for

- a) shouldering the load of supervising 160 students for their dissertation and
- b) upkeep of laboratory and assist conduct of practical.

The BoS members suggested that student's dissertation supervision and laboratory practical cannot be handled through guest faculty and hence, RA/FA should be recruited immediately before the new academic session 2016-2017. The number of RAs/ FAs can be reduced over a period of time as and when new permanent faculty members join the department.

The BoS deliberated in detail the need of such RA/FA which is presented as annexure named DBOSR.

Further, the BoS proposed that the recruitment of RAs/FAs be made according to the GBU ordinance but with following amendments. Chapter 2, pt 3 pg 32

Academic Eligibility Criteria:

P.G. degree in the appropriate Area in first division or equivalent and 55% marks or equivalent at U.G. level from recognized institutions. A relaxation of 5% in marks or equivalent in grades is allowed in case of SC/ST/Physically Challenged candidates. Research/ Faculty Associate (RAs/ FAs) will get Rs 42000/- p.m. One year of teaching experience is essential.

Terms of initial contract and its extension

- a. All appointments of RAs/ FAs shall be initially made on contract for a period of two years.
- b. The contract may be extended on year to year basis on satisfactory performance of the appointee by Vice Chancellor on the recommendation of Dean School of Engineering.

Meeting was ended with a vote of thanks to chair.

(Dr. R K Mishra)

(Dr. Satpal Sharma)

(Prof. S. N. Mishra)

(Prof. Sachin Maheswari)

(Prof. Sagar Maji)

(Prof. Arun Kansal)

School of Engineering Architecture & Planning

Minutes of the 15th meeting of Board of Studies

Fifteenth meeting of the board of studies of Department of Architecture and Planning was held on June 1st 2016 at 9:30 AM in the office of Dean conference room, School of Engineering. following member s attended the meeting.

- | | |
|--|-------------------|
| 1. Prof. Arun kansa, Dean, SoE | Chairperson |
| 2. Prof.SM Akhtar, Dean School of Ekistics JMI, Delhi. | Expert |
| 3. Prof. Mayank Mathur, Professor SPA Delhi | Expert |
| 4. Dr. Nirmita Mehrotra | HoD, Architecture |

Following items were discussed in the meeting

Item No. 15.1 Dr. Nirmita Mehrotra, HoD proposed a five year plan to make the Department financially self sustainable which includes funded research projects/ consultancy services through the laboratory testing etc. BoS members agreed in principal the proposal for research and consultancy services to be carried out in the Department, however, suggested to review the process after improving the status of the faculty and technical staff strength in the Department.

Item No. 15.2 Dr. Nirmita Mehrotra, apprised the BoS about the need for the faculty and staff requirements of the Department and made a brief presentation in the BoS members. The BoS members discussed the requirements with respect to courses offered by the Department in various Programmes and had a detailed discussion on NEEDS ASSESSMENT. After a detailed deliberation, BoS approved the proposal of the Department for filling the vacant faculty and staff positions for the consideration of the academic council which is placed as -Annexure DBOS and DBOS II. The BoS also proposed recruitment of Assistant professor at AGP of Rs 6000/- The eligibility criteria for various faculty position should be as per the COA norms.

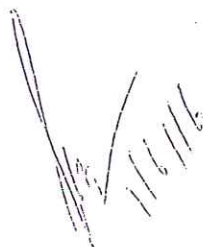
Item No. 15.3 BoS members unanimously proposed for recruitment of RA/FA position as per chapter 2 of GBU ordinance. This is required for

- Shouldering the load of field visits, supervising hands on workshop for 200 students and
- Upkeep of studios and assist in academic curriculum.

The Bos members suggested that students Dissertation supervision and Design studio cannot be handled through the guest faculty alone and hence, RA/FA should be recruited immediately before the new academic session 2016-2017. The BoS deliberated in detail the need of such RA/FA which is presented as annexure named DBOSR. Further, The BoS proposed that the recruitment of RA/FA be made according to the GBU ordinance but with following amendments. (Chapter 2, pt 3 pg 32)



Arun Kansa
21-06-2016



11/6/2016



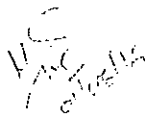
Academic Eligibility criteria for RA/FA

First class M.Arch/M. Planning P.G. degree in the appropriate Area in first division or equivalent grades 60% . A relaxation of 5 % in marks or equivalent in grades is allowed in case of DC/ST/Physically Challenged candidates.

Professional Experience- Essential

One year of teaching/research/professional experience in recognized academic institutions/research institutions/industries. Experience in research as a Ph.D. scholar shall also be valid for this purpose.

Meeting was ended with a vote of thank to chair.



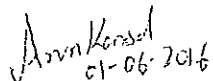
(Dr. Mayank Mathur)
External Expert



(Prof. SM Akthar)
External Expert



(Dr. Nirmita Mehrotra)
HoD, A & P



(Prof. Arun Kansal)
Dean, SoE



112

School of Engineering
Gautam Buddha University, Greater Noida

Dated: 28.10.2016

Meeting of Board of Studies of School of Engineering:

The meeting of the Board of Studies (BOS) of School of Engineering, GBU was held on 28.10.2016 at 11:00 AM onwards in the conference room of SoE.

Following members attended the meeting:

S. No.	Name	Affiliation
1	Prof. Arun Kansal	Dean, SoE, GBU
2	Prof. A.K. Sahu	Delhi Technological University, New Delhi
3	Prof. Sagar Maji	Principal G. B. Pant Engineering College, Okhla, Delhi
4	Prof. Vijender Singh	NSIT, Delhi
5	Prof. S.M.Akhtar	JMI, New Delhi
6	Dr. Satpal Sharma	Head, Department of Mechanical Engg., GBU
7	Dr. Shilpa Pal	Head, Department of Civil Engg., GBU
8	Dr. Yogesh K. Chauhan	Head, Department of Electrical Engg., GBU
9	Dr. Nirmitra Mehrotra	Head, Department of Architecture and Planning, GBU
10	Dr. Raghvendra Mishra	Asst. Prof., Deptt. of Mechanical Engg., GBU

Agenda of the Board of Studies

- Subject experts for 1st, 11nd, 111rd and 1Vth semester of Civil, Electrical, Mechanical and Architecture undergraduate courses.
- Sanction of department wise faculty strength – for recruitment.
- Changes in course codes to remove duplication.
- Approval of list of experts of all Departments for the purpose of M.Tech and Ph.D. viva voce, and other academics related issues.
- Vetting of the specifications of instruments to be purchased in material testing lab and concrete lab.
- Minor Modifications/corrections in the few courses in Civil and Electrical Engineering.
- Any other issue with the permission of DEAN, SOE

Details of Discussion and Decisions taken

1. The list of the experts (Theory/Practical examination) was displayed and discussed in details with BOS members. BOS members suggested some alternative names than those proposed by the HOD's in view of the participation/cooperation of the subject experts for question paper setting/examination system. The changes as proposed by BOS members was incorporated and final list is attached as Annexure -1.

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[Circular stamp: Gautam Buddha University, Greater Noida]

[Handwritten text: 28/10]

- (111)
2. Strength of the faculty members (department wise) is displayed by concerned HODs and discussed in details with BOS experts in the light of GBU ordinance. Approval is given for following list.

S. No.	Name of the Department	Faculty Strength	Final Faculty Strength
1.	Civil Engineering	22	73
2.	Mechanical Engineering	22	
3.	Electrical Engineering	22	
4.	Architecture and Planning	7	

3. Corrections in the repeated course code of subjects are examined for each Department of the School and final list as approved is attached as annexure 2.
4. In addition to the existing list of experts (Thesis evaluation/BOS experts/RDC experts) was displayed and discussed with BOS members. The list includes the name of experts as approved earlier along with new members. Some existing experts who were approved earlier are no more in services and hence such experts have been removed from the list. The approved list is attached as Annexure 3.
5. Specifications of instrument required for Material Testing Lab and Structural Analysis – I Lab were discussed. HOD's mentioned that these specifications were discussed with the subject experts earlier also. BOS members suggested some minor modification and approved the specifications.
6. Modification in the syllabus of Surveying Lab II (CE 212 of Department of Civil Engineering) which was approved by departmental BOS in 10th BOS Meeting held on 30th May 2016 was approved by School BOS.
- Dr. Shilpa Pal presented the syllabus of Surveying Lab II (course code: CE212). She informed the members that there is a need to conduct two days surveying camp as is a practice in all institution offering Civil engineering Programme. The members discussed the matter in detail and the following changes have been accepted.

1. Changes in the contents:

Prepare a detailed site map by using any of the surveying method (compass surveying, chain, theodolite, total station etc.)

2. Evaluation criteria for Surveying Lab II

Existing evaluation criteria	Proposed evaluation criteria
Field Exercise and laboratory assignments – 30%	Survey Camp - 30%
Class Participation & Discussion – 5%	Field Exercise and laboratory assignments - 20%
Presentation of laboratory exercise/quiz – 15%	
End Term Laboratory Examination - 50%	End Term Laboratory Examination - 50% (30 written and 20 viva voce examination)

7. The subject name "Electric Drive system" of M.Tech. (PED), II semester has been changed and approved to "Advance Electric Drive System". The subject name "HVDC and Flexible AC Transmission Systems Devices" of III Sem (M.Tech

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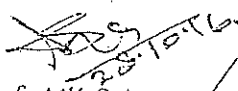
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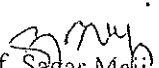
PED) had been changed and approved as "HVDC and Custom Power Devices". Further, the Elective-III of M.Tech. (PED) "Digital Signal Processing and its Applications" has been changed and approved to "Advance Digital Signal Processing and its Applications".

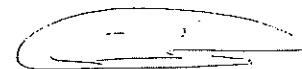
8. The updated experiment list for EE697 Distribution Network Lab in M.Tech (PS). III sem. is vetted and approved.

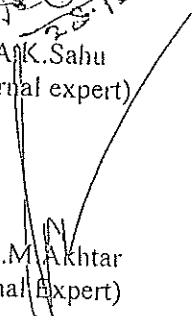
9. Corrected list of Architecture course.


The meeting was concluded with thanking note to

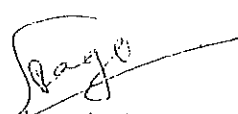

Prof. A.K. Sahu
(External expert)


Prof. Sagar Maji
(External expert)

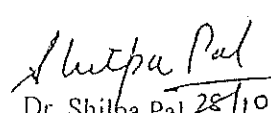

Prof. Vijender Singh
(External Expert)

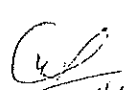

Prof. S.M. Akhtar
(External Expert)

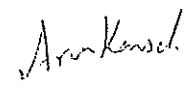

Dr. Nimitra Mehrotra
HOD, Arch. & Pla.


Dr. Raglivendra Mishra
Asstt. Prof., MED


Dr. Satpal Sharma
HOD, MED


Dr. Shilpa Pal
HOD, CED


Dr. Yogesh K. Chauhan
HOD, EED


Prof. Arun Kansal
Professor & Dean, SoE



Gautam Buddha University
School of Law, Justice & Governance

Minutes of the meeting

The meeting of Board of Studies of School of Law, Justice & Governance was held on dated 8th August 2016 at 11:00 AM, in the Committee room. The following members were present:-

Dr Indu Uprety
(Dean (I/C), SoLJ& G)



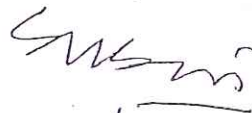
Chairperson

Dr Brahm Dev Pandey
(Head of Department, SoLJ& G)



HoD & Member

Prof. Surendra Kumar Singh
(Professor, SoLJ& G)



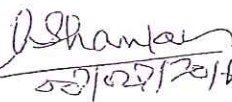
Special Invitee

Prof. Subhash Chandra Singh
(Professor, SoLJ& G)



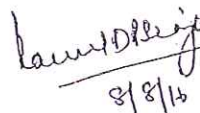
Special Invitee

Prof. Girija Shankar Tewari
(Dr. H.S.G. University, Sagar, M.P.)



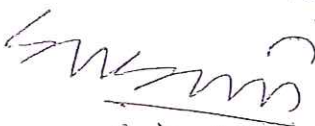
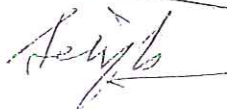
External Expert

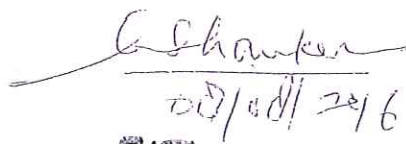
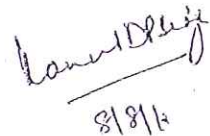
Prof. Kanwal D.P. Singh
GGs IP University, New Delhi



External Expert

Dr. Mamta Sharma could not attend the meeting.

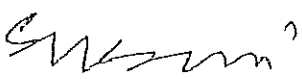




Following resolutions were passed:

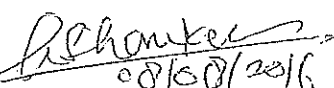
1. The Course Structure of Ph.D. has been passed as per annexure of this minute.
2. Regarding the Ordinance of LL.M. Two years programme, it was decided to constitute a committee of three members consisting of Dr. Mamta Sharma, Dr. Rama Sharma and Dr. K.K. Dwivedi. It has been suggested that the committee will prepare a detailed Ordinance consisting of Course structure of LL.M according to choice based credit system (CBCS) which will be placed before the next meeting of the Board of Studies.

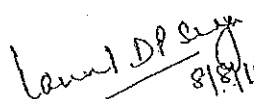
The meeting ended with the vote of thanks to the Chair.



(Prof. Surendra Kumar Singh)


(Prof. Subhash Chandra Singh)


(Dr. Brahm Dev Pandey)


08/08/2016
(Prof. Girija Shankar Tiwari)


8/8/16
(Prof. Kanwal D.P. Singh)


8/8/16
(Dr. Indu Uprety)



SYLLABUS FOR Ph.D. PROGRAMME, SCHOOL OF LAW, JUSTICE & GOVERNANCE

Ph.D Course Work Structure

Paper Code	Course	Credit	Lecture Hours per Week	Maximum Marks
LP101	Research Methodology and Computer application	4	4	100
LP102	Modern Legal theory	4	4	100
LP103*	Seminar/ Review of Literature/ Report Writing	4	4	100
	Total Credits	12		

* For Paper Code LP103, Research scholar has to make one seminar presentation, one literature review and submit a report of the same to the research committee. It shall be evaluated by the committee consisting of three senior most faculty members.

Note: All other ordinances pertaining to Ph.D programme shall be as per GBU norms.

Suresh

Tejash

Ashanker
08/08/2016

K. S. Pandey
08/08/16

Dr. P. K. Singh

Dr. J. K. Singh
08/08/16



Page 1 of 1

Gautam Buddha University
SCHOOL OF LAW, JUSTICE & GOVERNANCE

Course Title: Research Methodology and Computer Application
Course Code: LP 101
Course Credits: 4
Course Duration: 6 months

Course Aim(s): The main aim of the course is to understand the meaning, objectives, scope and relevance of legal research. The course will stress on legal research methodology and explain major stages in carrying legal research. The course will also look into the current status of legal research in India in terms of perspectives and problems. It also focuses to develop computer skills necessary to produce a quality legal writings.

Course Syllabus:

What is Research: Meaning of research, objective of research, types of research, research method and research methodology

Legal Research: Nature and scope of legal research, purpose of legal research, steps of legal research, contemporary trends of legal research in India.

Legal Research Methodology: Elements in research methodology, doctrinal and non-doctrinal method, advantages and disadvantages, inter-relationship between doctrinal and non-doctrinal method, modes and trends in legal research.

Research Design: Major contents in research design, formation of hypothesis and hypothesis testing.

Tools and Techniques of Data Collection: Primary and secondary sources, major sampling techniques; interview, interview schedule, questionnaire, observation, analysis and interpretation of data.

Writing a Research Report: Structural layout of research report, stages of preparation, referencing (basic rules and forms of referencing: footnotes, endnotes and in-text referencing), bibliography, index, and appendix/appendices.

Ethics in Legal Research: Plagiarism and copyright violation, sources of funding and influence on research.

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08/08/2016

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Law 101
08/08

[Signature]
Dean (I/C)
School of Law, Justice and Governance
Gautam Buddha University
Greater Noida - 201308 (U.P.)

Computer Application in Legal Research: Microsoft Word, Excel and use of search engines, use of multimedia tools, use of database management (Manupatra, SCC online, Westlaw etc.)

Institutional Approach Towards Research:

University Grants Commission (UGC)
Indian Council for Social Science Research (ICSSR) and other funding organizations.

Recommended Readings:

- Goode and Hatt, *Methods in Social Research* (Delhi: Surjeet Publications, 2006)
- C. K. Kothari, *Research Methodology: Method and Techniques* (New Delhi: Wiley Eastern Ltd., 1980)
- Julius Stone, *Legal System and Lawyer's Reasoning* (New Delhi: Universal, 2008)
- M. Mc Conville and W.H. Chui, *Research Methods for Law* (Edinburgh: Edinburgh University Press, 2007)
- M.V. Hoecke, *Methodologies of Legal Research* (Oxford: Hart Publishing, 2011)
- Upendra Baxi, *Socio-Legal Research in India (A Program Schrift)*, ICSSR: Occasional Monograph, 1975)
- Cohen, L. Morris, *Legal Research* (Minnesota: West Publishing Co. 1985)
- B. N. Ghosh, *Scientific Method and Social Research* (New Delhi: Sterling Publishers Pvt. Ltd., 1984)
- S.K. Verma and M. Afzal Wani, eds., *Legal Research and Methodology*, (Indian law Institute, 2001)
- J.C. Johari, eds., *Introduction to the Method of Social Sciences* (New Delhi: Sterling Publishers Pvt. Ltd. 1988)
- N.R. Madhava Menon, *A Handbook of Clinical Legal Education* (New Delhi: Eastern Book Company, 1998)

Susmi

Sesingh

Ashwika
08/08/2016

Kamini Singh
9/8/16

08/08/2016

2016

School of Law, Governance
Gautam Buddha University
Greater Noida - 201308 (U.P.)



Course Title: Modern Legal theory

Course Code: LP 102

Course Credits: 4

Course Duration: 6 months

Course Aim(s): This course is designed to focus on how the law can be a tool for social justice. It also lay down the ground rules of the law and aims to identify the legislative intent behind the statute.

Course Syllabus:

1. Law and Social Transformation,
2. Law and Morality,
3. Law and Socio-Economic Approach
4. Advance Theories of Justice,
5. Advance Legal Theory

Recommended Readings:

- A. Barron et al., *Introduction to Jurisprudence and Legal Theory* (London: OUP, 2005)
Patterson, *A Companion to Philosophy of Law and Legal Theory* (London: Blackwell, 2011)
H. L. A. Hart, *The Concept of Law* (New Delhi: Universal, 2007).
J. England, *Corrective and Distributive Justice: From Aristotle to Modern Times* (London: OUP, 2009).
J. Rawls, *A Theory of Justice* (Cambridge, Mass.: CUP; New York, 1972). Lon L. Fuller, *The Morality of Law* (New Delhi: Universal, 2006).
M. D. A Freeman, *Lloyd's Introduction to Jurisprudence* (London: Sweet & Maxwell, 2001).
M. Walzer, *Spheres of Justice* (Oxford: Blackwell, 1983).
P. J. Fitzgerald, *Salmond on Jurisprudence* (New Delhi: Universal, 2008).
P. S. A. Pillai, *Jurisprudence and Legal Theory* (Lucknow: Eastern Book Co., 2006).
R. Dworkin, *A Matter of Principle* (Cambridge, Mass: Harvard University Press, 1985).
R. Posner, *The Economics of Justice* (Cambridge, Mass.: Harvard University Press, 1983).
R. Wacks, *Understanding Jurisprudence: An Introduction to Legal Theory* (London: OUP, 2012).
S. P. Sinha, *Jurisprudence, Legal Philosophy, in a Nutshell* (St. Paul: West Group, 1993).
T. Campbell and A. Mancilla, *Theories of Justice* (London: Ashgate, 2012).
W. Friedmann, *Legal Theory* (New Delhi: Universal, 2008).

Gurpreet
8/8/2016

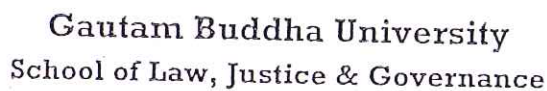
Shamir
8.8.2016

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Kamini DP Singh
8/8/2016

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8/8/2016





Minutes of Board of Studies (BoS) Meeting held on
November 10, 2016

In compliance of the Office Communication vide letter no. GBU-010/Acad./01/2016-60 dated 14.10.2016, a meeting of Board of Studies of School of Law, Justice & Governance was held on 10th November 2016 at 12:00 PM in the Meeting Hall of the School.

The following members were present in the meeting:

Dr Indu Uprety
(Dean (I/C), SoLJ& G)

Chairperson

Dr Brahm Dev Pandey
(Head of Department, SoLJ& G)

HoD & Member

Dr. Mamta Sharma.
Professor, SoLJ& G

Member

Prof. Girija Shankar Tewari
(Dr. H.S.Gaur Central University, Sagar, M.P)

External Expert

Prof. Kanwal D.P. Singh
GGS IP University, New Delhi

External Expert

Prof. Surendra Kumar Singh
(Professor, SoLJ& G)

Special Invitee

Prof. Subhash Chandra Singh
(Professor, SoLJ&G)

Special Invitee

The Committee recommended and approved the following after full deliberation and discussion:

1. Course Structure of two years LL.M. programme approved as per Choice Based Credit System (CBCS). (Attached as Annexure-1)




2. A list of Experts approved for the purpose of setting question papers for UG (BA. LL.B.) programme for the first two years. (Attached as Annexure-2)

3. Approval of 15 Faculty Members in School of Law, Justice & Governance as per Bar Council of India (BCI) and UGC rules.


4. Approval of the nomenclature for Course Code EN-102:

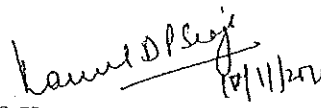
The course title for EN-102 has been changed to "Professional Communication" in place of "English Proficiency" in 2nd year (4th Semester) of B.A. LL.B programme based on Choice Based Credit System (CBCS). (Attached as Annexure-3)

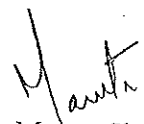
The meeting ended with vote of thanks to the Chair.



(Prof. Surendra Kumar Singh)



(Prof. Subhash Chandra Singh)


10.11.2016
(Prof. Girija Shankar Tewari)


10/11/2016
(Prof. Kanwal D.P. Singh)


(Dr. Mamta Sharma)


(Dr Brahm Dev Pandey)


10/11/2016
(Dr Indu Uprety)



SCHOOL OF LAW, JUSTICE & GOVERNANCE
GAUTAM BUDDHA UNIVERSITY

ORDINANCE FOR INTRODUCTION OF LL.M.(MASTER OF LAWS) PROGRAMME

1. INTRODUCTION:

Introduction of two year LL.M. Programme under School of Law, Justice & Governance Gautam Buddha University from session 2017 onwards.

2. FUNCTIONS OF THE HEAD OF DEPARTMENT:

- a. The Head of Department shall coordinate the proper functioning of the Department.
- b. The Head of Department shall be responsible to ensure the high standards of course studies.
- c. The Head of Department shall allot the teaching schedule of courses in consultation with the faculty members.
- d. The Head of Department or his nominee shall organize from time to time Seminars/Workshops/Conferences and all other Co-curricular activities of the department.
- e. The Head of Department shall prepare yearly achievements of the department and submit its report to the Board of Studies.
- f. The Head of Department shall ensure that the teaching pedagogy including Tutorials/Seminars/Field Works/Clinics/Teaching/Technology and such other activities are experimented in the teaching process from time to time.
- g. The Head of Department shall have the responsibilities to supervise the overall functioning of the Department.
- h. He shall perform any other function allotted by the Vice-Chancellor from time to time.

3. BOARD OF STUDIES: Constitution, Power and Functions of Board of Studies will be as per GBU ordinance/rules.

4. ELIGIBILITY FOR ADMISSION:

- a. The candidates shall be selected for admission to the LL.M. Programme on the basis of their *inter se* merit as announced in the result of the entrance (written) test to be conducted by the GBU.
- b. The minimum eligibility requirement for appearing in the test shall be Law Degree or an equivalent degree from any University recognized by the UGC with not less than 50% marks in aggregate (45% in case of SC/ST and Physical challenged candidates of Uttar Pradesh). However, those who are appearing in the final examination of the aforesaid Degree course or whose results are awaited may also appear, provided such candidates shall have to produce a proof of having qualified the aforesaid degree course examination with the required percentage of marks on the date of their admission.
- c. All other conditions for admission will be applicable as per GBU admission rules.

5. FOREIGN NATIONALS/NON-RESIDENTIAL INDIANS/NRI SPONSORED:

- a. Foreign Nationals/Non-Resident Indians (NRI) may be admitted to the LL.M. Programme, provided that they fulfill the prescribed minimum eligibility requirements. They may be exempted from the written test.
- b. Only those foreign nationals/NRI shall be admitted to the course, who have a valid visa to stay in India.
- c. The number of supernumerary seats for this category shall not be more than five.

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10.11.2016
Prof. G.S. Tewari



6. INTAKE AND RESERVATION

There shall be 30 seats for the LL.M. Programme. Reservation shall be given as per rule Uttar Pradesh Government rules.

7. FEE STRUCTURE: Fee shall be decided by the University time to time.

8. DURATION OF THE PROGRAMME:- The duration of the programme shall be of two years in four semester. However, the candidate has to complete the course within maximum period of four years from the date of registration in LL.M. programme. The details are as follows:

- a. There shall be five papers in the every semester.
- b. Each paper is of four credits including Elective papers.
- c. All papers from 1st Semester to 3rd Semester are mandatory and 4th Semester deals with specialization.
- d. Allotment of Speciliasation group and electives will be subject to availability of the faculty members which will be allotted by the Head of Department.
- e. There shall be three optional areas of specializations i.e Corporate Law , Constitutional & Administrative Law and Criminal Law. More areas of specialization can be added as and when required.
- f. The students have to prepare a project on specified areas as allotted by the concerned faculty members and make a presentation before the students and faculty members under Seminar paper.
- g. A Committee comprises of Chairperson and Members will be constituted by the Head of Department to ensure the proper evaluation of seminar papers.
- h. There shall be no written test in Seminar papers.
- i. The Students have to take classes in BA LLB/UG in their 4th semester under 'Teaching paper' by preparing a lecture notes as an assignment work.

9. SCHEME OF STUDY OF LL.M. PROGRAMME: See Annexure 1

10. CRITERIA FOR YEARLY PROMOTION:

- a. There shall be full carry over system from 1st Semester to 2nd Semester provided the students must have, complied with the attendance requirement as well as, applied for 1st Semester Examination.
- b. A candidate must qualify at least six papers with aggregate of minimum 50% marks in 1st Year for the purpose of promotion from 1st year to 2nd Year. Minimum passing marks in individual paper shall be 45%.

11. TEACHING:

- a. Only approved courses shall be offered during any Semester.
- b. Each course so offered shall be conducted by the assigned teacher. The teacher shall be responsible to conduct the course and its related components including, group discussion or field work if required.
- c. Medium of instruction and examinations shall be English.
- d. The contents of the course may be modified/updated from time to time with the prior approval of the Board of studies as per UGC norms.

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12. ATTENDANCE:

As per GBU rules,

13. EXAMINATION & EVALUATION:

- a. As per GBU rules and CBCS system.
- b. Notwithstanding anything in GBU Regulation, the distribution of 100 marks of each paper, except as provided in S.No. 3,4,and 5, shall be as follows:
- I. Mid Term – 25 Marks
 - II. End Term – 50 Marks
 - III. Project and its Presentation- 20 Marks (15 Marks for Project and 05 Marks for Presentation. The student will adhere to Research Methodology in preparing the project.
 - IV. Attendance- 5 Marks : Distribution of the 05 marks as under:
5 Marks for 90% to 100%
3 Marks for 80% to 89%
2 marks for 70% to 79%

14. SYLLABUS OF ENTRANCE EXAMINATION FOR LL. M PROGRAMME :

Constitutional Law of India, Jurisprudence, Indian Penal Code, Law of Contract, Family Law (Hindu Law and Muslim Law).

15. **DECLARATION OF DIVISION:** A candidate who has passed in all the papers/courses of 1st to 4th Semesters of the LL.M. Programme taken together shall be declared as 'Passed' with the Division in accordance with the following criteria:

(i)	First Division	60% and above
(ii)	Second Division	50% to below 60%
(iv)	Fail	Below 50%

16. **FULL TIME COURSE:** No student shall be allowed to pursue his/her LL.M. Programme in the University who is in job or pursuing other courses elsewhere. Appropriate action including cancelation of admission/degree or any other action, as per law for the time being in force, will be taken.
17. **REMOVAL OF DIFFICULTY:** The Vice Chancellor shall have power to decide the cases of ambiguity in the provisions of this regulation. The powers to be exercise by the Vice Chancellor shall be in conformity with the Act, Statutes and Ordinances of Gautam Buddha University.

[Handwritten signatures and dates]



ANNEXURE

SCHEME OF STUDY OF LL.M. PROGRAMME: The course for the LL.M. Programme shall be as follows:

First Semester: Compulsory papers

S.No	Course Code	Course Title	Marks	Credit
1	LM101	Advance Legal Theory	100	4
2	LM103	Constitutional Law	100	4
3	LM105	Legal Research Methodology	100	4
4	LM107	Environmental Law	100	4
5		Generic Elective Paper-	100	4
	LME101	Local Governance		
	LME103	OR Law of Investment		

Second Semester: Compulsory papers

S.No	Course Code	Course Title	Marks	Credit
1	LM102	Administrative Law	100	4
2	LM104	General Principles of Criminal Law	100	4
3	LM106	Administration of Criminal Justice	100	4
4	LM108	International Law	100	4
5		Generic Elective Paper-	100	4
	LME102	Public Policy and Judicial Review		
	LME104	OR Criminal Psychology		
	LME106	OR Law of Insurance		

Third Semester: Compulsory papers

S.No	Course Code	Course Title	Marks	Credit
1	LM201	Family law	100	4
2	LM203	Interpretation of Statutes	100	4
3	LM205	Alternative Dispute Resolution	100	4

4	LM207	Human Rights	100	4
5	LME201 LME203 LME205	Elective Paper – National Security, Public Order and Rule of Law OR Cyber Law OR Intellectual Property Right	100	4

Fourth Semester: Specialized Group (Optional)

S.No	Course Code	Course Title			Marks	Credit
		Constitutional & Administrative Law	Criminal Law	Business Law		
1	LM202	Principles of Constitutional Law	Criminology and Penology	Competition Law	100	4
2	LM204	Comparative Constitutional Law	International Criminal Law	Corporate Law and Governance	100	4
3	LM206	Teaching in UG classes	Teaching in UG classes	Teaching in UG classes	50	2
4	LM208	Seminar	Seminar	Seminar	100	4
5	LM210	Dissertation & Viva-Voce	Dissertation & Viva-Voce	Dissertation & Viva-Voce	150	6

Shindh
10/11/16

Susmi

Adhant
10.11.2016

Kamlesh
10/11/2016

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