

**SCHOOL  
OF  
INFORMATION AND COMMUNICATION  
TECHNOLOGY**

**COURSE STRUCTURE**

**5 YEARS DUAL DEGREE B.TECH. - M. TECH. (ICT)**

**SPECIALIZATION:  
SOFTWARE ENGINEERING**



**GAUTAM BUDDHA UNIVERSITY  
GAUTAM BUDH NAGAR, GREATER NOIDA  
2023-2028**

## 5 Year Dual Degree B. Tech. - M.Tech. (ICT)

## SEMESTER I

1	CY101 / PH102	Engineering Chemistry / Engineering Physics	3-1-0	4
2	MA101	Mathematics – I	3-1-0	4
3	CE101	Engineering Mechanics	2-1-0	3
4	CS101	Computer Programming – I	2-0-0	2
5	EC101 / EE102	Basic Electronics / Electrical Technology	2-0-0	2
6	HU101	English Proficiency	2-0-0	2
7	SS101	Human Values & Buddhist Ethics	2-0-0	2
8	CY103 / PH104	Engg. Chemistry Lab / Engg. Physics Lab	0-0-2	1
9	CE103	Engineering Graphics Lab	0-0-3	2
10	CS181	Computer Programming Lab - I	0-0-3	2
11	EC181 / EE104	Basic Electronics Lab / Electrical Technology Lab	0-0-2	1
12	GP101	General Proficiency	-----	1
			<b>Total Credits</b>	<b>26</b>
			<b>Total Contact Hours</b>	<b>16-3-19 = 29</b>

## SEMESTER II

1	PH102 / CY101	Engineering Physics/ Engineering Chemistry	3-1-0	4
2	MA102	Mathematics – II	3-1-0	4
3	CE106	Ecology and Environment	2-1-0	3
4	CS102	Computer Programming – II	2-0-0	2
5	EE102 / EC101	Electrical Technology / Basic Electronics	2-0-0	2
6	HU102	Professional Communication	2-0-0	2
7	SS102	History of Science & Technology	2-0-0	2
8	PH104 / CY103	Engg. Physics Lab/ Engg. Chemistry Lab	0-0-2	1
9	CS182	Computer Programming Lab - II	0-0-3	2
10	EE104 / EC181	Electrical Technology Lab/ Basic Electronics Lab	0-0-2	1
11	ME102	Workshop Practices	0-0-3	2
12	GP102	General Proficiency	-----	1
			<b>Total Credits</b>	<b>26</b>
			<b>Total Contact Hours</b>	<b>16-3-10 = 29</b>

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**SEMESTER – III**

1	MA201	Quantitative Techniques	3-1-0	4
2	EC201 / EC431	Digital Electronics	3-0-0	3
3	CS201	Internet Technology	3-0-0	3
4	CS203 / CS431	Operating Systems	3-0-0	3
5	CS205	Data Structure & Algorithms	2-1-0	3
6	CS207	System Analysis and Design	3-0-0	3
7	EC281 / EC483	Digital Electronics Lab	0-0-3	2
8	CS281	Internet Technology Lab	0-0-3	2
9	CS283	Data Structure and Algorithms Lab	0-0-3	2
10	GP201	General Proficiency	-----	1
			<b>Total Credits</b>	<b>26</b>
			<b>Total Contact Hours</b>	<b>17-2-9 = 28</b>

**SEMESTER – IV**

1	MA202	Numerical Methods of Analysis	3-1-0	4
2	EC210	Principles of Communication	2-1-0	3
3	CS202 / CS433	Software Engineering	3-0-0	3
4	CS204	Discrete Structure	3-1-0	4
5	CS206 / CS436	Data Base Management System	3-0-0	3
6	CS208	Principles of Programming Language	2-0-0	2
7	EC282	Analog Communication Lab	0-0-3	2
8	CS282	Software Engineering Lab	0-0-3	2
9	CS284	Database Management System Lab	0-0-3	2
10	GP202	General Proficiency	-----	1
			<b>Total Credits</b>	<b>26</b>
			<b>Total Contact Hours</b>	<b>16-3-9 = 28</b>

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## SEMESTER – V

1	CS301	Theory of Automata	3-1-0	4
2	CS303	Web Development	3-1-0	4
3	CS305	Computer Graphics	3-1-0	4
4	CS307	Analysis and Design of Algorithms	3-1-0	4
5	CS309 / CS438	Computer Organization & Architecture	3-0-0	3
6	ME311	Principles of Technology Management	2-0-0	2
7	CS381	Web Development Lab	0-0-3	2
8	CS383	Computer Graphics Lab	0-0-3	2
9	GP301	General Proficiency	-----	1
<b>Total Credits</b>				<b>26</b>
<b>Total Contact Hours</b>			<b>17-4-6 =</b>	<b>27</b>

## SEMESTER – VI

Sr. No.	Courses Code	Courses	L-T-P	Credits
1	CS302	Distributed Operating System	3-1-0	4
2	CS304	Concepts of Artificial Intelligence	3-1-0	4
3	CS306	Advanced Computer Architecture	3-1-0	4
4	CS308	Computer Networks	3-1-0	4
5	EC304 / EC559	Microprocessor and Interfacing	3-0-0	3
6	ME312	Entrepreneurship & Innovation	2-0-0	2
7	EC384/EC587	Microprocessor and Interfacing Lab	0-0-3	2
8	CS382	Computer Networks Lab	0-0-3	2
9	GP302	General Proficiency	-----	1
<b>Total Credits</b>				<b>26</b>
<b>Total Contact Hours</b>			<b>17-4-6 =</b>	<b>27</b>

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## SEMESTER – VII

Sr. No.	Courses Code	Courses	L-T-P	Credits
1	SS401	Social Aspects of Engineering	2-1-0	3
2	CS401	Compiler Design	3-1-0	4
3	CS403	Object-Oriented Analysis	3-0-0	3
4	CS405	Formal Methods	3-1-0	4
5		<b>Elective – 1</b>	3-0-0	3
6	CS481	Compiler Design Lab	0-0-3	2
7	CS491	Seminar	0-0-2	2
8	CS493	Minor Project	0-0-8	4
9	GP401	General Proficiency	-----	1
			<b>Total Credits</b>	<b>26</b>
			<b>Total Contact Hours</b>	<b>14-3-13 = 30</b>

Electives – 1				
Sr. No.	Courses Code	Courses		
1	CS441 / CS541	Software Project Management		
2	CS443 / CS543	Object-Oriented Software Engineering		
3	CS445 / CS545	Information Security		
4	CS447 / CS547	Multimedia Techniques		
5	CS449 / CS561	Soft Computing		
6	CS451 / CS551	Natural Language Processing		
7	CS457 / CS557	Machine Translation and Learning		
8	EC542	Quality of Services in Networks		
9	EC447	Digital Image Processing		
10	EC465 / EC555	Principles of VLSI Design		
11	EC441	Design with Microcontrollers		
12	EC564	Wireless Technologies		

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## SEMESTER VIII

Sr. No.	Courses Code	Courses	L-T-P	Credits
1	MA402	Simulation & Modeling	3-1-0	4
2	CS402 / CS532	Software Architecture and Design	3-0-0	3
3	CS404 / CS534	Open Source Software Systems	3-0-0	3
4		<b>Elective-2</b>	3-0-0	3
5		<b>Elective-3</b>	3-0-0	3
6	CS482 / CS582	Open Source Software Systems Lab	0-0-3	2
7	CS492 / CS592	Major Project	0-0-10	5
8	GP402 / GP532	General Proficiency	-----	1
			<b>Total Credits</b>	<b>24</b>
			<b>Total Contact Hours</b>	<b>15-1-13 = 29</b>

## Electives ( 2 &amp; 3 )

Sr. No.	Courses Code	Courses
1	CS442 / CS542	Component-Based Software Engineering
2	CS444 / CS544	Aspect-Oriented Software Engineering
3	CS446 / CS546	Software Re-Engineering
4	CS448 / CS548	Software Reusability
5	CS450 / CS550	Web-Based Software Engineering
6	CS452 / CS552	Software Agents

Summer Semester ( After 8<sup>th</sup> Semester )

Sr. No.	Courses Code	Courses	L-T-P	Credits
1	CS490	Project	0-0-20	10
			<b>Total Credits</b>	<b>10</b>
			<b>Total Contact Hours</b>	<b>0-0-20 = 20</b>

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SEMESTER IX

Sr. No.	Courses Code	Courses	L-T-P	Credits
1	CS501 / CS631	Software Testing	3-0-0	3
2	CS503 / CS633	Research Techniques in ICT	3-0-0	3
3		<b>Electives – 4</b>	3-0-0	3
4		<b>Electives – 5</b>	3-0-0	3
5	CS581 / CS681	Software Testing Lab	0-0-3	2
6	CS591 / CS691	Dissertation Part - I	0-0-14	7
7	GP501 / GP631	General Proficiency	-----	1
			<b>Total Credits</b>	<b>22</b>
			<b>Total Contact Hours</b>	<b>12-0-17 = 29</b>

Electives (4 & 5)				
Sr. No.	Courses Code	Courses		
1	CS545 / CS641	Software Measurement and Estimation		
2	CS547 / CS643	Software Reliability and Fault Tolerant Systems		
3	CS549 / CS645	Software Quality Assurance and Engineering		
4	CS553 / CS647	Software Maintenance		
5	CS555 / CS649	Software Performance		

SEMESTER X

Sr. No.	Courses Code	Courses	L-T-P	Credits
1	CS590 / CS690	Dissertation Part – II	-----	21
2	GP502 / GP632	General Proficiency	-----	1
			<b>Total Credits</b>	<b>22</b>

**GRAND TOTAL CREDITS = 260**