

**UNIVERSITY SCHOOL
OF
INFORMATION AND COMMUNICATION TECHNOLOGY**

Department Of Computer Science & Engineering

**COURSE STRUCTURE
B. Tech. (CSE)
Specialization: Cyber Security**

2022-2026



**GAUTAM BUDDHA UNIVERSITY
GAUTAM BUDH NAGAR, GREATER NOIDA
UP (INDIA)**

1/ 6

29th BOS | Mar 25, 2023

SEMESTER I

| S.No | Course Code | Course Name | L-T-P | Credits |
|----------------------------|-------------|----------------------------------|------------------|---------|
| 1 | MA101 | Engineering Mathematics-I | 3-1-0 | 4 |
| 2 | PH102 | Engineering Physics | 3-1-0 | 4 |
| 3 | EE102 | Basic Electrical Engineering | 3-1-0 | 4 |
| 4 | ME101 | Engineering Mechanics | 3-1-0 | 4 |
| 5 | ES101 | Environmental Studies | 3-1-0 | 4 |
| 6 | PH104 | Engineering Physics Lab | 0-0-2 | 1 |
| 7 | EE104 | Basic Electrical Engineering Lab | 0-0-2 | 1 |
| 8 | EN151 | Language Lab | 0-0-2 | 1 |
| 9 | ME102 | Workshop Practice | 1-0-2 | 2 |
| 10 | GP | General Proficiency | Non Credit | |
| Total Credits | | | 25 | |
| Total Contact Hours | | | 16-5-8=29 | |

SEMESTER II

| S.No | Course Code | Course Name | L-T-P | Credits |
|----------------------------|-------------|--------------------------------------|------------------|---------|
| 1 | CS101 | Fundamentals of Computer Programming | 3-1-0 | 4 |
| 2 | CC102 | Introduction to Cyber Security | 2-0-0 | 2 |
| 3 | MA102 | Engineering Mathematics-II | 3-1-0 | 4 |
| 4 | EC101 | Basic Electronics Engineering | 3-1-0 | 4 |
| 5 | CS102 | Computer Organization & Architecture | 3-1-0 | 4 |
| 6 | EN101 | English Proficiency | 2-0-0 | 2 |
| 7 | CE103 | Engineering Graphics | 1-0-2 | 2 |
| 8 | CS181 | Computer Programming Lab | 0-0-2 | 1 |
| 9 | CC182 | Cyber Security Lab | 0-0-2 | 1 |
| 10 | EC181 | Basic Electronics Engineering Lab | 0-0-2 | 1 |
| 11 | GP | General Proficiency | Non Credit | |
| Total Credits | | | 25 | |
| Total Contact Hours | | | 17-4-8=29 | |

SEMESTER III

| Sr.No | Course Code | Courses | L-T-P | Credits |
|---------------------|-------------|---------------------------------|------------|---------|
| 1 | CC201 | Internet Technology | 3-0-0 | 3 |
| 2 | CC203 | Operating Systems | 3-0-0 | 3 |
| 3 | CC205 | Data Structure & Algorithms | 3-0-0 | 3 |
| 4 | CC207 | Introduction to Python | 3-0-0 | 3 |
| 5 | CC209 | Information Retrieval Systems | 3-0-0 | 3 |
| 6 | MA201 | Engineering Mathematics-III | 3-1-0 | 4 |
| | | | | |
| 7 | CC281 | Internet Technology Lab | 0-0-3 | 2 |
| 8 | CC283 | Data Structure & Algorithms Lab | 0-0-3 | 2 |
| 9 | CC285 | Python Programming Lab | 0-0-3 | 2 |
| 10 | GP | General Proficiency | Non Credit | |
| Total Credits | | | 25 | |
| Total Contact Hours | | | 18-1-9=28 | |

SEMESTER IV

| Sr.No | Course Code | Courses | L-T-P | Credits |
|---------------------|-------------|---------------------------------|------------|---------|
| 1 | CC202 | Software Engineering | 3-0-0 | 3 |
| 2 | CC204 | Database Management System | 3-0-0 | 3 |
| 3 | CC206 | Java Programming | 3-0-0 | 3 |
| 4 | CC208 | Artificial Intelligence | 3-0-0 | 3 |
| 5 | CC210 | Information Theory & Coding | 3-0-0 | 3 |
| 6 | CC212 | Theory of Automata | 3-1-0 | 4 |
| | | | | |
| 7 | CC282 | Database Management System Lab | 0-0-3 | 2 |
| 8 | CC284 | Java Programming Lab | 0-0-3 | 2 |
| 9 | CC286 | Information Theory & Coding Lab | 0-0-3 | 2 |
| 10 | GP | General Proficiency | Non Credit | |
| Total Credits | | | 25 | |
| Total Contact Hours | | | 18-1-9=28 | |

Handwritten signatures and initials in blue ink, including a large signature on the left, a checkmark-like signature in the center, and several smaller signatures on the right.

29th BOS | Mar 25, 2023

SEMESTER V

| Sr.No | Course Code | Courses | L-T-P | Credits |
|---------------------|-------------|------------------------------------|------------|---------|
| 1 | CC301 | Compiler Design | 3-1-0 | 4 |
| 2 | CC303 | Soft Computing Techniques | 3-0-0 | 3 |
| 3 | CC305 | Analysis & Design of Algorithms | 3-0-0 | 3 |
| 4 | CC307 | Cryptography & Data Privacy | 3-0-0 | 3 |
| 5 | CC309 | Machine Learning | 3-0-0 | 3 |
| 6 | | Elective I | 3-0-0 | 3 |
| | | | | |
| 7 | CC381 | Analysis& Design of Algorithms Lab | 0-0-3 | 2 |
| 8 | CC383 | Cryptography & Data Privacy Lab | 0-0-3 | 2 |
| 9 | CC385 | Machine Learning using Python Lab | 0-0-3 | 2 |
| 10 | GP | General Proficiency | Non Credit | |
| Total Credits | | | | 25 |
| Total Contact Hours | | | 18-1-9=28 | |

SEMESTER VI

| Sr.No | Course Code | Courses | L-T-P | Credits |
|---------------------|-------------|--|------------|---------|
| 1 | CC302 | Web Development using PHP | 3-0-0 | 3 |
| 2 | CC304 | Network Defense for Cyber Security | 3-0-0 | 3 |
| 3 | CC306 | Risk Management and Audit | 3-1-0 | 4 |
| 4 | CC308 | Digital Forensic, Audit & Investigations | 3-0-0 | 3 |
| 5 | CC310 | Data Privacy and Database Security | 3-0-0 | 3 |
| 6 | | Elective 2 | 3-0-0 | 3 |
| | | | | |
| 7 | CC382 | Web Development using PHP Lab | 0-0-3 | 2 |
| 8 | CC384 | Network Defense for Cyber Security Lab | 0-0-3 | 2 |
| 9 | CC386 | Data Privacy and Database Security Lab | 0-0-3 | 2 |
| 10 | GP | General Proficiency | Non Credit | |
| Total Credits | | | | 25 |
| Total Contact Hours | | | 18-1-9=28 | |

- Industrial training will be done after third year during the summer break and it will be of minimum 4 weeks. It will be evaluated at the end of VII Semester.



SEMESTER VII

| Sr.No | Course Code | Courses | L-T-P | Credits |
|---------------------|-------------|-------------------------------|------------|---------|
| 1 | MA401 | Modeling & Simulation | 3-1-0 | 4 |
| 2 | CC401 | Blockchain Technology | 3-0-0 | 3 |
| 2 | CC403 | AI Enabled Cyber Security | 2-0-0 | 2 |
| 3 | | Elective3 | 3-0-0 | 3 |
| 5 | | Elective4 | 3-0-0 | 3 |
| 6 | CC481 | AI Enabled Cyber Security Lab | 0-0-3 | 2 |
| 7 | CC491 | Minor Project | 0-0-10 | 5 |
| 8 | CS 493 | Industrial Training | 0-0-6 | 3 |
| 9 | GP | General Proficiency | Non Credit | |
| Total Credits | | | | 25 |
| Total Contact Hours | | | 14-1-19=34 | |

SEMESTER VIII

| Sr.No | Course Code | Courses | L-T-P | Credits |
|---------------------|-------------|---------------------|------------|---------|
| 1 | CC490 | Seminar | 0-0-3 | 2 |
| 2 | CS492 | Major Project | 0-0-16 | 8 |
| 3 | CS494 | Internship | 0-0-30 | 15 |
| 4 | GP | General Proficiency | Non Credit | |
| Total Credits | | | | 25 |
| Total Contact Hours | | | 0-0-49=35 | |

GRAND TOTAL OF CREDITS = 200

- In the **Seminar**, student need to study and present individually, on latest research paper of their specialized area and It will be evaluated as per University Examination Rules.
- The **Internship** in Industry will be done by candidate individually during the 8th semester and it will be for 4-6 months. It will be evaluated as per University Examination Rules.

Minor and Major Project will be in a group and It will be evaluated as per University Examination Rules. USICT will provide a mentor/supervisor for industrial training, seminar, internship, minor and major projects.








ELECTIVES

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|-------|-------------|--|---|---|---|---------|-------|
| 1 | CC311 | Security Information and Event Management | 3 | 0 | 0 | 3 | E1 |
| 2 | CC313 | Intrusion Detection and Prevention System | 3 | 0 | 0 | 3 | E1 |
| 3 | CC315 | Cryptography | 3 | 0 | 0 | 3 | E1 |
| 4 | CC317 | Biometric System and Security | 3 | 0 | 0 | 3 | E1 |
| 5 | CC319 | Ethical Hacking | 3 | 0 | 0 | 3 | E2 |
| 6 | CC312 | Mobile Security | 3 | 0 | 0 | 3 | E2 |
| 7 | CC314 | Cloud Architecture and Security | 3 | 0 | 0 | 3 | E2 |
| 8 | CC316 | Principle of Secure Coding | 3 | 0 | 0 | 3 | E2 |
| 9 | CC318 | Information Warfare | 3 | 0 | 0 | 3 | E2 |
| 10 | CC320 | Social Network Security | 3 | 0 | 0 | 3 | E3 |
| 11 | CC405 | Physical Security of IT Infrastructure | 3 | 0 | 0 | 3 | E3 |
| 12 | CC407 | NISTA 800-53 Security Control | 3 | 0 | 0 | 3 | E3 |
| 13 | CC409 | Operating System Security | 3 | 0 | 0 | 3 | E3 |
| 14 | CC411 | Mobile and Wireless Network Security | 3 | 0 | 0 | 3 | E3 |
| 15 | CC413 | Enterprise Security and Management | 3 | 0 | 0 | 3 | E3 |
| 16 | CC415 | Malware Analysis | 3 | 0 | 0 | 3 | E4 |
| 17 | CC417 | Android Security Design and Internals | 3 | 0 | 0 | 3 | E4 |
| 18 | CC419 | Data and Database Management Security | 3 | 0 | 0 | 3 | E4 |
| 19 | CC421 | Web application and Penetration Testing | 3 | 0 | 0 | 3 | E4 |
| 20 | CC423 | Access Control and Identity Management Systems | 3 | 0 | 0 | 3 | E4 |