

**UNIVERSITY SCHOOL
OF
INFORMATION AND COMMUNICATION TECHNOLOGY**

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAMME STRUCTURE

**B.Tech. in Computer Science and Engineering
2020-2024**



**GAUTAM BUDDHA UNIVERSITY
GAUTAM BUDH NAGAR, GREATER NOIDA, U.P.**

SEMESTER I

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|----------------------------------|------------|----------|----------|-----------|-------|
| 1 | MA101 | Engineering Mathematics-I | 3 | 1 | 0 | 4 | GE1 |
| 2 | PH102 | Engineering Physics | 3 | 1 | 0 | 4 | GE2 |
| 3 | EE102 | Basic Electrical Engineering | 3 | 1 | 0 | 4 | GE3 |
| 4 | ME101 | Engineering Mechanics | 3 | 1 | 0 | 4 | GE4 |
| 5 | ES101 | Environmental Studies | 3 | 1 | 0 | 4 | GE5 |
| 6 | PH104 | Engineering Physics Lab | 0 | 0 | 2 | 1 | GE L1 |
| 7 | EE104 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 | GE L2 |
| 8 | EN151 | Language Lab | 0 | 0 | 2 | 1 | GE L3 |
| 9 | ME102 | Workshop Practice | 1 | 0 | 2 | 2 | GE L4 |
| 10 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 16 | 5 | 8 | 25 | |

SEMESTER II

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|---|------------|----------|----------|-----------|-------|
| 1 | MA102 | Engineering Mathematics-II | 3 | 1 | 0 | 4 | GE6 |
| 2 | CY101 | Engineering Chemistry | 3 | 1 | 0 | 4 | GE7 |
| 3 | CS101 | Fundamentals of Computer Programming | 3 | 1 | 0 | 4 | C1 |
| 4 | EC101 | Basic Electronics Engineering | 3 | 1 | 0 | 4 | GE8 |
| 5 | CS105 | Introduction of Artificial Intelligence | 2 | 0 | 0 | 2 | C2 |
| 6 | EN101 | English Proficiency | 2 | 0 | 0 | 2 | GE9 |
| 7 | CE103 | Engineering Graphics | 1 | 0 | 2 | 2 | GE10 |
| 8 | CY103 | Engineering Chemistry Lab | 0 | 0 | 2 | 1 | GE L5 |
| 9 | CS181 | Computer Programming Lab | 0 | 0 | 2 | 1 | L1 |
| 10 | EC181 | Basic Electronics Engineering Lab | 0 | 0 | 2 | 1 | GE L6 |
| 11 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 17 | 4 | 8 | 25 | |

SEMESTER III

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|---------------------------------|------------|----------|----------|-----------|-------|
| 1 | CS201 | Internet Technology | 3 | 0 | 0 | 3 | C3 |
| 2 | CS203 | Operating Systems | 3 | 0 | 0 | 3 | C4 |
| 3 | CS205 | Data Structure & Algorithms | 3 | 0 | 0 | 3 | C5 |
| 4 | CS207 | Problem Solving using C++ | 3 | 0 | 0 | 3 | C6 |
| 5 | EC201 | Digital Electronics | 3 | 0 | 0 | 3 | GE11 |
| 6 | MA201 | Engineering Mathematics-III | 3 | 1 | 0 | 4 | GE12 |
| 7 | EC281 | Digital Electronics Lab | 0 | 0 | 3 | 2 | GE L7 |
| 8 | CS283 | Data Structure & Algorithms Lab | 0 | 0 | 3 | 2 | L2 |
| 9 | CS285 | Object-Oriented Programming Lab | 0 | 0 | 3 | 2 | L3 |
| 10 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 18 | 1 | 9 | 25 | |

SEMESTER IV

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|--------------------------------|------------|----------|----------|-----------|-------|
| 1 | CS202 | Software Engineering | 3 | 0 | 0 | 3 | C7 |
| 2 | CS204 | Database Management System | 3 | 0 | 0 | 3 | C8 |
| 3 | CS206 | Java Programming | 3 | 0 | 0 | 3 | C9 |
| 4 | CS208 | Artificial Intelligence | 3 | 0 | 0 | 3 | C10 |
| 5 | CS210 | Theory of Automata | 3 | 0 | 0 | 3 | C11 |
| 6 | CS212 | Discrete Structure | 3 | 1 | 0 | 4 | C12 |
| 7 | CS282 | Software Engineering Lab | 0 | 0 | 3 | 2 | L4 |
| 8 | CS284 | Database Management System Lab | 0 | 0 | 3 | 2 | L5 |
| 9 | CS286 | Java Programming Lab | 0 | 0 | 3 | 2 | L6 |
| 10 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 18 | 1 | 9 | 25 | |

SEMESTER V

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|------------------------|------------|----------|----------|-----------|-------|
| 1 | CS301 | Computer Networks | 3 | 0 | 0 | 3 | C13 |
| 2 | CS303 | Compiler Design | 3 | 0 | 0 | 3 | C14 |
| 3 | CS305 | Software Testing | 3 | 0 | 0 | 3 | C15 |
| 4 | CS307 | Python | 3 | 1 | 0 | 4 | C16 |
| 5 | | Elective 1 | 3 | 0 | 0 | 3 | E1 |
| 6 | | Elective 2 | 3 | 0 | 0 | 3 | E2 |
| 7 | CS381 | Computer Networks Lab | 0 | 0 | 3 | 2 | L7 |
| 8 | CS383 | Compiler Design Lab | 0 | 0 | 3 | 2 | L8 |
| 9 | CS385 | Python Programming Lab | 0 | 0 | 3 | 2 | L9 |
| 10 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 18 | 1 | 9 | 25 | |

SEMESTER VI

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|---------------------------------|------------|----------|----------|-----------|-------|
| 1 | CS302 | Web Development using PHP | 3 | 0 | 0 | 3 | C17 |
| 2 | CS304 | Internet of Things | 3 | 0 | 0 | 3 | C18 |
| 3 | CS306 | Analysis & Design of Algorithms | 3 | 1 | 0 | 4 | C19 |
| 4 | CS308 | Cyber Security | 3 | 0 | 0 | 3 | C20 |
| 5 | | Elective 3 | 3 | 0 | 0 | 3 | E3 |
| 6 | | Elective 4 | 3 | 0 | 0 | 3 | E4 |
| 7 | CS382 | Internet of Things Lab | 0 | 0 | 3 | 2 | L10 |
| 8 | CS384 | Web Development using PHP Lab | 0 | 0 | 3 | 2 | L11 |
| 9 | CS386 | Cyber Security Lab | 0 | 0 | 3 | 2 | L12 |
| 10 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 18 | 1 | 9 | 25 | |

Industrial Training will be done by candidate after third year during the summer break and it will be of minimum 4 weeks. It will be evaluated as per University Examination in VII semester.

SEMESTER VII

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|-------------------------------|------------|----------|-----------|-----------|-------|
| 1 | MA402 | Modeling and Simulation | 3 | 0 | 0 | 3 | GE13 |
| 2 | CS401 | Wireless Communication | 3 | 0 | 0 | 3 | C21 |
| 3 | CS403 | Soft Computing Techniques | 3 | 0 | 0 | 3 | C22 |
| 4 | CS405 | Machine Learning | 3 | 0 | 0 | 3 | C23 |
| 5 | | Elective 5 | 3 | 0 | 0 | 3 | E5 |
| 6 | CS481 | Soft Computing Techniques Lab | 0 | 0 | 3 | 2 | L13 |
| 7 | CS491 | Industrial Training | 0 | 0 | 6 | 3 | IT1 |
| 8 | CS493 | Minor Project | 0 | 0 | 10 | 5 | MP1 |
| 9 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 15 | 0 | 19 | 25 | |

SEMESTER VIII

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|--------------------------------|-------------|---------------------|------------|----------|-----------|-----------|-------|
| 1 | CS490 | Seminar | 0 | 0 | 3 | 2 | S1 |
| 2 | CS492 | Internship | 0 | 0 | 30 | 15 | I1 |
| 3 | CS494 | Major Project | 0 | 0 | 16 | 8 | MP2 |
| 4 | GP | General Proficiency | Non Credit | | | | |
| Total Hours and Credits | | | 0 | 0 | 49 | 25 | |

GRAND TOTAL OF CREDITS = 200

In the **Seminar**, students need to study and present in the group, any latest topic of their specialized area and it will be evaluated as per University Examination Rules.

The **Internship** in Industry will be done by candidate during the 8th semester and it will be for a minimum of 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 FROM USICT

| S.No. | Course Code | Course Name | L | T | P | Credits | Types |
|-------|-------------|---|---|---|---|---------|-------|
| 1 | CS309 | Computer Graphics | 3 | 0 | 0 | 3 | E1 |
| 2 | CS311 | Computer Organization & Architecture | 3 | 0 | 0 | 3 | E1 |
| 3 | CS313 | Android Operating System | 3 | 0 | 0 | 3 | E1 |
| 4 | CS315 | Computer Based Numerical & Statistical Techniques | 3 | 0 | 0 | 3 | E1 |
| 5 | CS317 | Data Mining | 3 | 0 | 0 | 3 | E1 |
| 6 | CS319 | System Analysis & Design | 3 | 0 | 0 | 3 | E2 |
| 7 | CS321 | Software Project Management | 3 | 0 | 0 | 3 | E2 |
| 8 | CS323 | Information Retrieval System | 3 | 0 | 0 | 3 | E2 |
| 9 | CS325 | Graph Theory | 3 | 0 | 0 | 3 | E2 |
| 10 | CS327 | Knowledge Engineering | 3 | 0 | 0 | 3 | E2 |
| 11 | CS310 | Digital Image Processing | 3 | 0 | 0 | 3 | E3 |
| 12 | CS312 | Adhoc & Sensor Networks | 3 | 0 | 0 | 3 | E3 |
| 13 | CS314 | Expert Systems | 3 | 0 | 0 | 3 | E3 |
| 14 | CS316 | Fault Tolerant System | 3 | 0 | 0 | 3 | E3 |
| 15 | CS318 | Mobile Computing | 3 | 0 | 0 | 3 | E3 |
| 16 | CS320 | Computer Security | 3 | 0 | 0 | 3 | E4 |
| 17 | CS322 | Management Information System | 3 | 0 | 0 | 3 | E4 |
| 18 | CS324 | Evolutionary Computation | 3 | 0 | 0 | 3 | E4 |
| 19 | CS326 | Fuzzy logic | 3 | 0 | 0 | 3 | E4 |
| 20 | CS328 | Distributed Operating System | 3 | 0 | 0 | 3 | E4 |
| 21 | CS407 | Pattern Recognition | 3 | 0 | 0 | 3 | E5 |
| 22 | CS409 | Robotics | 3 | 0 | 0 | 3 | E5 |
| 23 | CS411 | Optimization Techniques | 3 | 0 | 0 | 3 | E5 |
| 24 | CS413 | Cloud Computing | 3 | 0 | 0 | 3 | E5 |
| 25 | CS415 | Big Data Analytics | 3 | 0 | 0 | 3 | E5 |

CS Computer Science**GE** General Elective from other Deptt./School**GE L** General Elective Lab from other Deptt./School**C** Compulsary Course from USICT**E** Elective from USICT**L** Lab from USICT**IT1** Industrial Training**MP** Minor / Major Project**S1** Seminar**I1** Internship