## B Tech in Computer Science & Engineering (Cyber Security) (Academic Year 2021)

| Year | THIRD SEMESTER | | | | | | FOURTH SEMESTER | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Sub. Code | Subject Name | L | T | P | C | Sub. Code | Subject Name | L | T | P | C |
| II | MAT_ 2155 | Engineering Mathematics – III | 2 | 1 | 0 | 3 | MAT _2256 | Engineering Mathematics – IV | 2 | 1 | 0 | 3 |
| | CSE _2151 | Computer Organization & Architecture | 3 | 1 | 0 | 4 | CSE_ 2251 | Database Systems | 2 | 1 | 0 | 3 |
| | CSE _2152 | Data Structures and Applications | 3 | 1 | 0 | 4 | CSE _2252 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| | CSE _2153 | Digital System Design | 3 | 1 | 0 | 4 | CSE_ 2253 | Embedded Systems | 3 | 1 | 0 | 4 |
| | CSE _2154 | Object Oriented Programming | 3 | 1 | 0 | 4 | CSE _2254 | Formal Languages & Automata Theory | 2 | 1 | 0 | 3 |
| | CSE_ 2161 | Data Structures Lab | 0 | 0 | 3 | 1 | **** | Open Elective – I | | | | 3 |
| | CSE _2162 | Digital System Design Lab | 0 | 0 | 3 | 1 | CSE_ 2261 | Algorithms Lab | 0 | 0 | 3 | 1 |
| | CSE _2163 | Object Oriented Programming Lab | 0 | 0 | 3 | 1 | CSE _2262 | Database Systems Lab | 0 | 0 | 6 | 2 |
| | CSE _2164 | Open Source Technologies Lab | 1 | 0 | 3 | 2 | CSE _2263 | Embedded Systems Lab | 0 | 0 | 3 | 1 |
| | | | 15 | 5 | 12 | 24 | | | 12 | 5 | 9 | 24 |
| | **Total Contact Hours (L + T + P)** | | **32** | | | | **Total Contact Hours (L + T + P) + OE** | | **26 + 3 = 29** | | | |
| III | **FIFTH SEMESTER** | | | | | | **SIXTH SEMESTER** | | | | | |
| | HUM_ 3152 | Essentials of Management | 2 | 1 | 0 | 3 | HUM_ 3151 | Engg Economics &Financial Mgmt | 2 | 1 | 0 | 3 |
| | CSE_ 3111 | Number Theory and Cryptography | 3 | 1 | 0 | 4 | CSE _3231 | Applied Cryptography | 3 | 1 | 0 | 4 |
| | CSE _3152 | Computer Networks | 2 | 1 | 0 | 3 | CSE_ 3232 | Essentials of Cyber Security | 2 | 1 | 0 | 3 |
| | CSE_ 3153 | Operating Systems | 2 | 1 | 0 | 3 | CSE **** | Program Elective – I | 3 | 0 | 0 | 3 |
| | CSE_ 3114 | Digital Forensics | 2 | 1 | 0 | 3 | CSE **** | Program Elective – II | 3 | 0 | 0 | 3 |
| | **** | Open Elective – II | | | | 3 | **** | Open Elective – III | | | | 3 |
| | CSE _3121 | Number Theory and Cryptography Lab | 0 | 0 | 3 | 1 | CSE_ 3241 | Essentials of Cyber Security Lab | 0 | 0 | 3 | 1 |
| | CSE_ 3162 | Computer Networks Lab | 0 | 0 | 6 | 2 | CSE_ 3262 | Internet Technologies Lab | 1 | 0 | 3 | 2 |
| | CSE_ 3163 | Operating Systems Lab | 0 | 0 | 6 | 2 | CSE_ 3243 | Applied Cryptography-Lab | 0 | 0 | 3 | 1 |
| | | | **11** | **5** | **9** | **24** | | | **14** | **3** | **9** | **23** |
| | **Total Contact Hours (L + T + P) + OE** | | **27 + 3 = 30** | | | | **Total Contact Hours (L + T + P) + OE** | | **26 + 3 = 29** | | | |
| IV | **SEVENTH SEMESTER** | | | | | | **EIGHTH SEMESTER** | | | | | |
| | CSE **** | Program Elective – III | 3 | 0 | 0 | 3 | CSE_ 4298 | Industrial Training | | | | 1 |
| | CSE **** | Program Elective – IV | 3 | 0 | 0 | 3 | CSE_ 4299 | Course/Project Work/Practice School | | | | 12 |
| | CSE **** | Program Elective – V | 3 | 0 | 0 | 3 | CSE _4296 | Project Work ( for B.Tech honours) | | | | 20 |
| | CSE **** | Program Elective – VI | 3 | 0 | 0 | 3 | | | | | | |
| | CSE **** | Program Elective – VII | 3 | 0 | 0 | 3 | | | | | | |
| | **** | Open Elective – IV | | | | 3 | | | | | | |
| | | | **15** | **0** | **0** | **18** | | | | | | **13** |
| | **Total Contact Hours (L + T + P) +OE** | | **15 + 3 = 18** | | | | | | | | | |

| Minor Specializations | Other Programme Electives | Open Electives |
|---|---|---|
| **I. Advanced Security Systems**<br>CSE_ 4059: Advanced Cryptography<br>CSE_ 4015 :Distributed Cloud Security<br>CSE _4051:Cyber Law and Ethics<br>CSE_ 4027: AI in Cyber Security<br><br>**II. Computational Intelligence**<br>CSE_ 4053: Artificial Intelligence<br>CSE_4032: Machine Learning<br>CSE_ 4054: Soft Computing Paradigms<br>CSE_4036: Pattern Recognition<br><br>**III. Data Analytics**<br>CSE_4037: Big Data Analytics<br>CSE_4061: Natural Language Processing<br>CSE_4038: Machine Learning for Data Analytics<br>CSE_4039: Pattern Classification | CSE_ 4016: Software Engineering<br>CSE _4083: Distributed Systems<br>CSE_ 4055: Advanced Computer Networks<br>CSE_ 4062: Android Application Development<br>CSE_ 4066: Ethical Hacking and Cyber Security<br>CSE_ 4034: Data Warehousing and Advanced Data Mining<br>CSE_ 4064: Deep Learning<br>CSE_ 4029: Cognitive Systems<br>CSE_ 4037: Robotics and Intelligent Systems<br>CSE_ 4074: Social Network Analysis<br>CSE_ 4052: Digital Image Processing<br>CSE_ 4078: Wireless Networks<br>CSE_ 4079: Software Defined Networks<br>CSE_ 4080: Cryptanalysis<br>CSE_4033: Block Chain Technology<br>CSE_4035: Mobile Security and Privacy<br>CSE_4020: Parallel Computer Architecture and Programming<br>CSE_4040 Object Oriented System Design<br>CSE_4041: Information Security | CSE_ 4301: Essentials of Industrial Computing<br>CSE_ 4302: Essentials of IT<br>CSE_ 4303: Linux Programming<br>CSE_ 4304: Principles of Database Systems<br>CSE_ 4305: Principles of Soft computing<br>CSE_ 4306: Principles of Software Engineering<br>CSE_ 4307: Programming in C#<br>CSE_ 4308: Programming in Java<br>CSE_ 4309: Python Programming<br>CSE_4310: Principles of Cryptography<br>CSE_4311: Introduction to Machine Learning<br><br>**Note:** B Tech Honours students must take 3 additional theory courses of 12 credits and an additional research project of 8 credits to accumulate 20 credits.<br><br>**The additional theory for BTech Honours courses:**<br>CSE_5020 Information Security Management.<br>CSE_5021 Internet of Things Security<br>CSE_5022 Advanced Machine Learning |