# Bachelor of Technology in 'Computer Science and Engineering- (2022-23)

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| **Sem** | **Semester Course Code, Course Name (L-T-P)Credits** | | | | | | | **GP** | **Community Services** | **Hrs.**  **Per week** | | | **Credits** |
| **L** | **T** | **P** |
| 1 | MAL151  Engg Maths-I (3-0-2)4 | CSL106 FOCP-I (2-0-4)4 | CHL150  Engg Chemistry (2-0-2)3 | CLL101  Effective Communication-I (2-1-0)2.5 | MEP110  Engineering Graphics & Drawing  (1-0-4)3 | CSL110  Problem Solving and Design Thinking  (2-0-2)3 |  | CSR118 GP  1 Credit | CSS101 CS-I | 12 | 1 | 14 | 19.5+1  =20.5 |
| 2 | MAL152  Engg Maths-II (3-0-2)4 | CSL108 FOCP-II (2-0-4)4 | PYL150  Engineering Physics  (3-0-2)4 | CLL102  Effective Communication-II (2-1-0)2.5 | MEL160  Basic of Mechanical Engg.  (2-0-2)3 | ECL110  Basic of Electrical &  Electronics  Engineering (2-0-2)3 |  | CSR119 GP  1 Credit | CSS102 CS-II  (140 Hrs)\*\*  2 Credits | 14 | 1 | 12 | 20.5+3  =23.5 |
| **Summer** |  | | | | | | |  |  |  | | |  |
| 3 | CSL209  Data Structures (3-0-2)4 | ECL255 DE & CA (3-0-2)4 | CSL240  Computer Networks  (3-0-2)4 | CSL223  Discrete Mathematics  (3-0-0)3 | Program Elective - I (2-0-4)4 | CSV201  Skill Development\*  (1-0-2)2 |  | CSR218 GP  1 Credit | CSS201 CS-III | 15 |  | 12 | 21+1  =22 |
| 4 | CSL422  Cyber Security (3-0-2)4 | CSL214 DBMS (3-0-2)4 | CSL230  Analysis and Design of Algorithms  (3-0-2)4 | Program Elective- 2  (2-0-4)4 | SML300  Entrepreneurs hip  (3-0-0)3 | Open Elective – 1 (MOOC)  (3-0-0)3 |  | CSR219G P  1 Credit | CSS202 CS-IV  (140 Hrs)\*\*  2 Credits | 17 |  | 10 | 22+3  =25 |
| **Summer** | CST201 Industrial Training/internship | | | | | | |  |  |  | | | 2 |
| 5 | CSL236  Introduction to AI & ML / CSL242 AI for  Games (3-0-2)4 | CSL303  Operating System (3-0-2)4 | Program Elective-3 (2-0-4)4 | Program Elective- 4  (2-0-4)4 | Open Elective – 2 (MOOC)  (3-0-0)3 | CLL120 HVPE (2-0-0-)2 |  | CSR318 GP  1 Credit | CSS301 CS-V | 15 |  | 12 | 21+1  =22 |
| 6 | CSL229 SEPM (3-0-2)4 | Program Elective-5 (2-0-4)4 | Program Elective-6 (2-0-4)4 | CSL318  Theory of Computation (3-0-2)4 | Open Elective-3  (3-0-0)3 | CLP300  Campus to Corporate (1-0-0)1 | CSC301  Seminar 1 Credit | CSR319 GP  1 Credit | CSS302 CS-VI  (140 Hrs)\*\*  2 Credits | 14 |  | 12 | 21+3  =24 |
| **Summer** | **CST301 Industrial Training** | | | | | | |  |  |  | | | 03 |
| 7 | Program Elective- 7  (2-0-4)4 | Program Elective- 8  (2-0-4)4 | CSD401  Project # 1  4 Credits | Open Elective – 4 (MOOC)  (3-0-0)3 | CHL100 EVS  (3-0-0)3 | Foreign Language (3-0-0)3 |  |  | CSS401 CS-VII | 13 |  | 8 | 21 |
| 8 | SML170 Liberal Arts  (3-0-0-)3 | Open Elective – 5 (MOOC)  (3-0-0)3 | CSD402  Project # 2  /Internship 6 Credits |  |  |  |  |  | CSS402 CS-VIII (140 Hrs)  2 Credits | 6 |  |  | 12+2  =14 |
|  | **Total** | | | | | | |  |  | 106 | 2 | 80 | **163+14=**  **177** |

\* CSV201 Skill Development (Python to be taught to students with Cyber Security specialization)

\*\* Students can utilize the summer/winter break period to complete the remaining 140 Community Service hours every year.

# Program Electives for each track

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| **Tracks** | **Data Science** | **Cloud Computing** | **Full Stack** | **Game Tech** | **Cyber Security** | **Blockchain** | **AI & ML** | **Other Electives** | **Internet of Things & 5G** |
| **Program Elective-1** | CSL 225  Programming for Data Science | CSL225  Programming for Data Science | CSL273 Enterprise Web Applications | CSL243 Game Design & Asset Creation | CSL 281 Secure Communication and Cryptography | CSL239  Mathematics of Modern Cryptography | CSL 225  Programming for Data Science and AI | MAL270  Numerical Methods | ECL256  Embedded Systems |
| **Program Elective-2** | CSL227 Applied  Computational Statistics | CSL238 Introduction to Cloud Computing | CSL274 Middleware Frameworks and ORM | CSL245 Programing for Games | CSL 283 Secure  Coding and Vulnerabilities | CSL247 Intro. to  blockchain technologies | CSL227 Applied  Computational Statistics | CSL223 Web  Development Technologies | CSL238 Introduction to Cloud Computing |
| **Program Elective-3** | CSL234 Data Engineering | CSL337 Cloud Architecture | CSL276 No SQL  Databases | CSL244 Advanced Programming for Games | CSL 284 Digital Forensics and Malware Analysis | CSL355 Bitcoin and Cryptocurrency  Technologies | CSL347 Applied Artificial Intelligence and Expert Systems | MAL280 Linear Algebra and its Applications | ECL252  Micro Controllers & Sensors |
| **Program Elective-4** | CSL232 Business Intelligence and  Data Visualization | CSL338  Virtualization & Cloud Computing | CSL253 Web  Frameworks | CSL343 Designing Human Computer  Interfaces | CSL 383 Network security | CSL356 Smart Contracts | CSL348  Reinforcement Learning | MAL260  Probability and Statistics | ECL316  Wireless & Mobile Communication |
| **Program Elective-5** | CSL313 Machine Learning | CSL339 Big Data on Cloud | CSL371 Mobile  Application Development | CSL246 Cross  Platform Game Development | CSL387 Web and Mobile Security | CSL357  Blockchain for Cyber Security | CSL349 Artificial  Intelligence for Robotics |  | ECL352  Design for IOT |
| **Program Elective-6** | CSL311 Big Data | CSL346 Artificial Intelligence & Machine Learning on  Cloud | CSL373 Devops | CSL341 AR  Development | CSL385 Risk Analysis and Assessment | CSL358  Blockchain  Technology in Web Development | CSL312 Deep Learning |  | Introduction to 5G Technologies |
| **Program Elective-7** | CSL316  Introduction to  Image Processing and Recognition | CSL445 Cloud Application Development &  Deployment | CSL311 Big Data | CSL345 VR  Development | CSL384 Cloud Security Essentials | CSL449 Security and Privacy for Big Data Analytics | CSL447 Computer Vision |  | Security in IoT |
| **Program Elective-8** | CSL312 Deep Learning | CSL446 Cloud Security | CSL374 Micro service Based Applications | CSL342 XR Studio | CSL382 Blockchain | CSL455 Cloud Infrastructure and Services | CSL448  Computational Linguistics and Natural Language  Processing |  | Mobile Networks |