SAVEETHA ENGINEERING COLLEGE
AUTONOMOUS
NAAC A GRADE
Affiliated to Anna University | Approved by AICTE

**REGULATIONS 2024**
**FLEXIBLE CHOICE BASED CREDIT SYSTEM**
**DEPARTMENT OF COMPUTER SCIENCE ENGINEERING**
**B.Tech., Artificial Intelligence and Machine Learning**
**CURRICULUM**

| S.No | Remarks | Category | Course Code R2024 | Course Code R2019 | Course Title | Prerequisite | Theory Credits | Practical Credits | Total Credits | CGPA / Non - CGPA | Course Type |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Any 1 | HS | SH1104 | 19EN104 | Technical Writing | - | 3 | 0 | 3 | CGPA | Theory |
| 2 | Any 1 | HS | SH1105 | 19EN105 | Public Speaking | - | 0 | 3 | 3 | CGPA | Practical (10 Expts) |
| 3 | Any 1 | HS | SH1101 | 19EN101 | Communicative English | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 4 | Exempted for LE, Any 2 for Regular | HS | SH9154 | 19MS154 | Basic Financial Accounting | - | 3 | 0 | 3 | CGPA | Theory |
| 5 | Exempted for LE, Any 2 for Regular | HS | SH9156 | 19MS156 | Human Resource Management and Team Building | - | 3 | 0 | 3 | CGPA | Theory |
| 6 | Exempted for LE, Any 2 for Regular | HS | SH9155 | 19MS155 | Stock Market and Company Operations | - | 3 | 0 | 3 | CGPA | Theory |
| 7 | Exempted for LE | HS | SH7101 | 22HS101 | தமிழர் மரபு/ Heritage of Tamils | - | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 8 | Exempted for LE | HS | SH7102 | 22HS102 | தமிழரும் தொழில்நுட்பமும்/ Tamils and Technology | - | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 9 | Exempted for LE | HS | SH7801 | NA | Human Values and Professional Ethics | - | 2 | 0 | 2 | CGPA | Theory |
| 10 | | HS | SH5624 | NA | Japanese Language N5 Basic | - | 0 | 2 | 2 | CGPA | Practical (10 Expts) |
| 11 | | HS | SH5625 | NA | Japanese Language N5 Advanced | SH5624 | 0 | 2 | 2 | CGPA | Practical (10 Expts) |
| 12 | | HS | SH5626 | NA | German Language A1 Basic | - | 0 | 2 | 2 | CGPA | Practical (10 Expts) |
| 13 | | HS | SH5627 | NA | German Language A1 Advanced | SH5626 | 0 | 2 | 2 | CGPA | Practical (10 Expts) |
| 14 | | BS | SH2222 | 19MA222 | Probability and Queueing Models | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 15 | | BS | SH2219 | 19MA219 | Transforms and Its Applications | - | 4 | 0 | 4 | CGPA | Theory |
| 16 | | BS | SH2220 | 19MA220 | Mathematics for Artificial Intelligence | - | 4 | 0 | 4 | CGPA | Theory |
| 17 | | BS | SH2221 | 19MA221 | Linear Algebra Laboratory | - | 0 | 2 | 2 | CGPA | Practical (10 Expts) |
| 18 | | BS | SH2211 | 19MA211 | Statistics and Numerical Methods | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |

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| 19 | Exempted for LE | BS | SH3214 | NA | Physics for Quantum Computing | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 20 | Exempted for LE | BS | SH4205 | 19CY205 | Principles of Chemistry in Engineering | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 21 | | BS | SH4801 | NA | Environmental Sciences and Sustainability | - | 2 | 0 | 2 | CGPA | Theory |
| 22 | | ES | CS3301 | 19AI301 | Python Programming | - | 1 | 2 | 3 | CGPA | Theory (Int Only) and Practical (10 Expts) |
| 23 | Exempted for LE | ES | CS3302 | 19AI302 | Engineering Design and Modelling | - | 0 | 3 | 3 | CGPA | Practical (10 Expts) |
| 24 | Exempted for LE | ES | CS3303 | 19AI303 | Engineering Mechanics and Product Development | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 25 | Option 1 | ES | CS3306 | 19AI306 | Object Oriented Programming using C++ | 19AI304 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 26 | Option 2 | ES | CS3307 | 19AI307 | Object Oriented Programming using Java | 19AI304 / CS3304 | 1 | 2 | 3 | CGPA | Theory (Int Only) and Practical (10 Expts) |
| 27 | Option 3 | ES | CS3308 | 19AI308 | Object Oriented Programming using C# | 19AI304 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 28 | Exempted for LE | ES | EC2404 | 19EE404 | Digital Electronics | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 29 | Exempted for LE | ES | EC2305 | 19EE305 | Basic Electrical, Electronics and Measurement Engineering | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 30 | Exempted for LE | ES | EC2309 | 19EE309 | Programming Microcontrollers | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 31 | | ES | CS3304 | 19AI304 | Fundamentals of C Programming | - | 1 | 2 | 3 | CGPA | Theory (Int Only) and Practical (10 Expts) |
| 32 | | ES | CS3305 | 19AI305 | Advanced C Programming | 19AI304 / CS3304 | 1 | 2 | 3 | CGPA | Theory (Int Only) and Practical (10 Expts) |
| 33 | | PC | CS1405 | 19CS405 | Operating System | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 34 | | PC | CS1406 | 19CS406 | Computer Networks | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 35 | | PC | CS1404 | 19CS404 | Database Management System and its Applications | 19AI301/19AI304/19CS301/19CS302/19CS30 | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 36 | | PC | CS3408 | 19AI408 | Data Structures | 19AI301 / 19AI304 / 19AI307 | 1 | 2 | 3 | CGPA | Theory (Int Only) and Practical (10 Expts) |
| 37 | | PC | CS3404 | 19AI404 | Analysis of Algorithms | 19AI301 / 19AI304 / 19AI307 | 1 | 2 | 3 | CGPA | Theory (Int Only) and Practical (10 Expts) |
| 38 | | PC | CS3414 | 19AI414 | Fundamentals of Web Application Development | - | 3 | 2 | 5 | CGPA | TIP (10 Expts) |
| 39 | | PC | CS3405 | 19AI405 | Fundamentals of Artificial Intelligence | 19CS301 / 19AI301 / CS3301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 40 | | PC | CS3550 | 19AI550 | Artificial Intelligence for Games | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 41 | | PC | CS3406 | 19AI406 | Digital Image Processing Techniques | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 42 | | PC | CS3409 | 19AI409 | Applied Artificial Intelligence | 19AI405/19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 43 | | PC | CS3410 | 19AI410 | Introduction to Machine Learning | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 44 | | PC | CS4401 | 19AM401 | Time Series Analysis and Forecasting | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |

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| 45 | | PC | CS3411 | 19AI411 | Neural Networks | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 46 | | PC | CS3505 | 19AI505 | Reinforcement Learning | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 47 | | PC | CS3413 | 19AI413 | Deep Learning and its Applications | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 48 | | PE | CS3562 | 19AI562 | Oracle Cloud Infrastructure and Operation | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 49 | | PE | CS3563 | 19AI563 | Oracle Cloud Infrastructure AI Foundations | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 50 | | PE | CS3565 | 19AI565 | Oracle Autonomous Database and Oracle Machine Learning Essentials | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 51 | | PE | CS3565 | 19AI565 | Oracle Autonomous Database and Oracle Machine Learning Essentials | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 52 | | PE | CS3566 | 19AI566 | Business Intelligence on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 53 | | PE | CS3567 | 19AI567 | Database Developer on Oracle Cloud (APEX) | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 54 | | PE | CS3568 | 19AI568 | Application Development on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 55 | | PE | CS3569 | 19AI569 | Java 11 Development on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 56 | | PE | CS3570 | 19AI570 | Java 17 Development on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 57 | | PE | CS3571 | 19AI571 | SQL on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 58 | | PE | CS3572 | 19AI572 | PL_SQL on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 59 | | PE | CS3573 | 19AI573 | MySQL for Data Scientist | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 60 | | PE | CS3574 | 19AI574 | Administer MySQL on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 61 | | PE | CS3575 | 19AI575 | Build MySQL Database for Applications on Oracle Cloud | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 62 | | PE | CS3509 | 19AI509 | Concepts of Virtual And Augmented Reality | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 63 | | PE | CS3602 | 19AI602 | CISCO Networking Certifications | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 64 | | PE | CS3603 | 19AI603 | Pega Platform | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 65 | | PE | CS3604 | 19AI604 | Rust Programming Language | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 66 | Any 1 | PE | CS1580 | 19CS580 | Enterprise Cyber Security and Threat Detection | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 67 | Any 1 | PE | CS3589 | 19CS589 | Enterprise Security and Cyber Threat Management | 19CS417 / CS1417 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 68 | | PE | CS1581 | 19CS581 | Network Infrastructure and Protocols | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 69 | | PE | CS1582 | 19CS582 | Enterprise Networking and Network Security | 19CS581 / CS1581 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 70 | | PE | CS1583 | 19CS583 | Network Switching, Routing and Wireless Technologies | 19CS581 / CS1581 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |

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| 71 | | PE (Honours - Vertical 1) | CS3526 | 19AI526 | Information Security and Access Control | 19AI527 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 72 | | PE (Honours - Vertical 1) | CS3527 | 19AI527 | Security Assessment and Risk Analysis | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 73 | | PE (Honours - Vertical 1) | CS3531 | 19AI531 | Cryptography and Security | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 74 | | PE (Honours - Vertical 1) | CS3532 | 19AI532 | Information Theory for Cyber Security | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 75 | | PE (Honours - Vertical 1) | CS3536 | 19AI536 | Steganography and Digital Watermarking | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 76 | | PE (Honours - Vertical 1) | CS3547 | 19AI547 | Blockchain for Business | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 77 | | PE (Honours - Vertical 1) | CS1417 | 19CS417 | Ethical Hacking Techniques | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 78 | | PE (Honours - Vertical 1) | CS1418 | 19CS418 | Cyber Law and Compliance | - | 3 | 0 | 3 | CGPA | Theory |
| 79 | | PE (Honours - Vertical 1) | CS4507 | 19AM507 | Security and Trust in IoT | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 80 | | PE (Honours - Vertical 1) | CS1558 | 19CS558 | Data Privacy and Protection | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 81 | | PE (Honours - Vertical 1) | CS1563 | 19CS563 | Bitcoin Mining | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 82 | | PE (Honours - Vertical 1) | CS1561 | 19CS561 | Blockchain and Fintech | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 83 | | PE (Honours - Vertical 1) | CS1415 | 19CS415 | Cryptography | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 84 | | PE (Honours - Vertical 1) | CS3526 | 19AI526 | Information Security and Access Control | 19AI527 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 85 | | PE (Honours - Vertical 1) | CS3527 | 19AI527 | Security Assessment and Risk Analysis | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 86 | | PE (Honours - Vertical 1) | CS1412 | 19CS412 | Cryptography and Network Security | 19CS406 | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 87 | | PE (Honours - Vertical 1) | CS1416 | 19CS416 | Cloud Security | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 88 | | PE (Honours - Vertical 1) | CS1419 | 19CS419 | Digital Forensics and Digital Investigations | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 89 | | PE (Honours - Vertical 1) | CS1422 | 19CS422 | Security for IoT Systems | - | 3 | 0 | 3 | CGPA | Theory |
| 90 | | PE (Honours - Vertical 1) | CS1533 | 19CS533 | Information Security Intelligence and Analytics using Big Data | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 91 | | PE (Honours - Vertical 1) | CS1534 | 19CS534 | Prevention Methodology for Cybersecurity | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 92 | | PE (Honours - Vertical 1) | CS1535 | 19CS535 | Trusted Network Systems | - | 3 | 0 | 3 | CGPA | Theory |
| 93 | | PE (Honours - Vertical 1) | CS1536 | 19CS536 | Firewalls and Intrusion Detection System | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 94 | | PE (Honours - Vertical 1) | CS1538 | 19CS538 | System Security | - | 3 | 0 | 3 | CGPA | Theory |
| 95 | | PE (Honours - Vertical 1) | CS1539 | 19CS539 | Hardware Security | - | 3 | 0 | 3 | CGPA | Theory |
| 96 | | PE (Honours - Vertical 1) | CS1553 | 19CS553 | Web Application Security | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |

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| 97 | | PE (Honours - Vertical 1) | CS2510 | 19IT510 | Ethical Hacking | - | 3 | 0 | 3 | CGPA | Theory |
| 98 | | PE (Honours - Vertical 2) | CS3508 | 19AI508 | Soft Computing Techniques | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 99 | | PE (Honours - Vertical 2) | CS3512 | 19AI512 | NoSQL Database Design | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 100 | | PE (Honours - Vertical 2) | CS3513 | 19AI513 | Game Programming | 19CS401 | 2 | 2 | 4 | CGPA | TIP (10 Expts) |
| 101 | | PE (Honours - Vertical 2) | NA | 19CS401 | Data Structures and Object Oriented Programming using C++ | 19CS302 | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 102 | | PE (Honours - Vertical 2) | CS2401 | 19IT401 | Information Technology Essentials | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 103 | | PE (Honours - Vertical 2) | CS2402 | 19IT402 | Game Development Technologies | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 104 | | PE (Honours - Vertical 2) | CS2405 | 19IT405 | Data Structures using Python | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 105 | | PE (Honours - Vertical 2) | CS2513 | 19IT513 | Free Open Source Software | - | 3 | 0 | 3 | CGPA | Theory |
| 106 | | PE (Honours - Vertical 2) | CS2514 | 19IT514 | Real Time Operating Systems | - | 3 | 0 | 3 | CGPA | Theory |
| 107 | | PE (Honours - Vertical 2) | CS3516 | 19AI516 | Big Data Mining and Analysis | 19AI408/ 19CS410/19IT405/19AI401 / | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 108 | | PE (Honours - Vertical 2) | CS4502 | 19AM502 | Genetic Algorithms | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 109 | | PE (Honours - Vertical 2) | CS1407 | 19CS407 | Theory of Computation | 19MA206 | 3 | 0 | 3 | CGPA | Theory |
| 110 | | PE (Honours - Vertical 2) | CS1409 | 19CS409 | Compiler Design | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 111 | | PE (Honours - Vertical 2) | CS3528 | 19AI528 | Advanced Graph Theory and Applications | 19CS402 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 112 | | PE (Honours - Vertical 2) | CS3529 | 19AI529 | Advanced Data Structures | 19CS401 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 113 | | PE (Honours - Vertical 2) | CS3538 | 19AI538 | Mathematical Modelling and Computer Aided Engineering | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 114 | | PE (Honours - Vertical 2) | CS3407 | 19AI407 | Parallel Computing Architecture | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 115 | | PE (Honours - Vertical 2) | CS1545 | 19CS545 | Open Source Operating System | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 116 | | PE (Honours - Vertical 2) | CS4502 | 19AM502 | Genetic Algorithms | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 117 | | PE (Honours - Vertical 2) | CS4505 | 19AM505 | Statistical Learning Theory | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 118 | | PE (Honours - Vertical 2) | CS4515 | 19AM515 | Advanced Java Programming | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 119 | | PE (Honours - Vertical 2) | CS1305 | 19CS305 | Computer Architecture | - | 3 | 0 | 3 | CGPA | Theory |
| 120 | | PE (Honours - Vertical 2) | CS1529 | 19CS529 | Quantum Computing | 19CS301/19CS303 | 3 | 0 | 3 | CGPA | Theory |
| 121 | | PE (Honours - Vertical 2) | CS3528 | 19AI528 | Advanced Graph Theory and Applications | 19CS402 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 122 | | PE (Honours - Vertical 2) | CS3529 | 19AI529 | Advanced Data Structures | 19CS401 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |

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| 123 | | PE (Honours - Vertical 2) | CS1301 | 19CS301 | Problem Solving and Python Programming | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 124 | | PE (Honours - Vertical 2) | NA | 19CS302 | Programming in C | - | 2 | 2 | 4 | CGPA | TIP (10 Expts) |
| 125 | | PE (Honours - Vertical 2) | NA | 19CS402 | Design and Analysis of Algorithms | 19CS401 | 3 | 0 | 3 | CGPA | Theory |
| 126 | | PE (Honours - Vertical 2) | NA | 19CS403 | Programming Paradigms | 19CS401 | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 127 | | PE (Honours - Vertical 2) | CS2501 | 19IT501 | Information Theory and Coding Techniques | - | 3 | 0 | 3 | CGPA | Theory |
| 128 | | PE (Honours - Vertical 2) | CS2508 | 19IT508 | TCP/IP Design and Implementation | - | 3 | 0 | 3 | CGPA | Theory |
| 129 | | PE (Honours - Vertical 2) | CS2509 | 19IT509 | Advanced Algorithms | - | 3 | 0 | 3 | CGPA | Theory |
| 130 | | PE (Honours - Vertical 3) | CS2515 | 19IT515 | Software Agents | - | 3 | 0 | 3 | CGPA | Theory |
| 131 | | PE (Honours - Vertical 3) | CS1408 | 19CS408 | Software Engineering | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 132 | | PE (Honours - Vertical 3) | CS3542 | 19AI542 | Agile Software Development | 19CS301 | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 133 | | PE (Honours - Vertical 3) | CS3543 | 19AI543 | Software Testing | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 134 | | PE (Honours - Vertical 3) | CS3543 | 19AI543 | Software Testing | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 135 | | PE (Honours - Vertical 3) | NA | 19CS308 | Software Testing Laboratory | 19CS410 /19AI401 / 19AI414 | 0 | 2 | 2 | CGPA | Practical (10 Expts) |
| 136 | | PE (Honours - Vertical 3) | CS1516 | 19CS516 | Software Testing and Quality Assurance | - | 3 | 0 | 3 | CGPA | Theory |
| 137 | | PE (Honours - Vertical 3) | CS1537 | 19CS537 | Secure Software Engineering | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 138 | | PE (Honours - Vertical 3) | CS1551 | 19CS551 | Software Testing and Automation | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 139 | | PE (Honours - Vertical 3) | CS1566 | 19CS566 | Software Project Management and Version Control | - | 3 | 0 | 3 | CGPA | Theory |
| 140 | | PE (Honours - Vertical 3) | CS1571 | 19CS571 | Software Development and Operations | - | 3 | 0 | 3 | CGPA | Theory |
| 141 | | PE (Honours - Vertical 3) | CS1574 | 19CS574 | Advanced Class Design and Object-Oriented Techniques | - | 3 | 0 | 3 | CGPA | Theory |
| 142 | | PE (Honours - Vertical 3) | CS1575 | 19CS575 | Low-Code App Development | - | 3 | 0 | 3 | CGPA | Theory |
| 143 | | PE (Honours - Vertical 3) | CS2505 | 19IT505 | Software Design Patterns | - | 3 | 0 | 3 | CGPA | Theory |
| 144 | | PE (Honours - Vertical 3) | CS2506 | 19IT506 | E-Learning Techniques | - | 3 | 0 | 3 | CGPA | Theory |
| 145 | | PE (Honours - Vertical 4) | CS3504 | 19AI504 | Mobile Robotics | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 146 | | PE (Honours - Vertical 4) | CS3509 | 19AI509 | Concepts of Virtual And Augmented Reality | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 147 | | PE (Honours - Vertical 4) | CS3510 | 19AI510 | Mobile VR And AI In Unity | 19AI410/19CS302 / 19IT404 / 19AI414 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 148 | | PE (Honours - Vertical 4) | CS3511 | 19AI511 | Scientific and Engineering Data Visualization | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |

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| 149 | | PE (Honours - Vertical 4) | CS2516 | 19IT516 | Business Intelligence and Analytics | - | 3 | 0 | 3 | CGPA | Theory |
| 150 | | PE (Honours - Vertical 4) | CS3412 | 19AI412 | Web Data Mining | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 151 | | PE (Honours - Vertical 4) | CS1557 | 19CS557 | Software Defined Networks | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 152 | | PE (Honours - Vertical 4) | CS1523 | 19CS523 | Information Retrieval | 19AI410/ 19CS501/19CS413 / 19AI414 | 3 | 0 | 3 | CGPA | Theory |
| 153 | | PE (Honours - Vertical 4) | CS3519 | 19AI519 | Distributed Database | 19CS404 | 3 | 0 | 3 | CGPA | Theory |
| 154 | | PE (Honours - Vertical 4) | CS3520 | 19AI520 | Data Mining and Warehousing | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 155 | | PE (Honours - Vertical 4) | CS3521 | 19AI521 | Expert Systems | - | 3 | 0 | 3 | CGPA | Theory |
| 156 | | PE (Honours - Vertical 4) | CS3522 | 19AI522 | Knowledge Engineering | 19CS410 / 19AI401 / 19AI414 / 19IT404 | 3 | 0 | 3 | CGPA | Theory |
| 157 | | PE (Honours - Vertical 4) | CS3523 | 19AI523 | Mobile Database | - | 3 | 0 | 3 | CGPA | Theory |
| 158 | | PE (Honours - Vertical 4) | CS3524 | 19AI524 | Multimedia Database | 19CS410 / 19AI401 / 19AI414 / 19IT404 | 3 | 0 | 3 | CGPA | Theory |
| 159 | | PE (Honours - Vertical 4) | CS4503 | 19AM503 | Data Modeling | - | 3 | 0 | 3 | CGPA | Theory |
| 160 | | PE (Honours - Vertical 4) | CS3537 | 19AI537 | Computer Graphics for Virtual Reality | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 161 | | PE (Honours - Vertical 4) | CS3539 | 19AI539 | Mobile User Interface Development | 19CS401 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 162 | | PE (Honours - Vertical 4) | CS3540 | 19AI540 | Programming Mobile Devices | 19CS401 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 163 | | PE (Honours - Vertical 4) | CS3541 | 19AI541 | Cloud Computing | 19CS406 | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 164 | | PE (Honours - Vertical 4) | CS3544 | 19AI544 | Virtualization and Containerization | 19CS405/19CS406 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 165 | | PE (Honours - Vertical 4) | CS3545 | 19AI545 | Modern Web Application Development | 19CS410 / 19AI401 / 19AI414 / 19IT404 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 166 | | PE (Honours - Vertical 4) | CS3546 | 19AI546 | Web Server Programming | 19CS401 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 167 | | PE (Honours - Vertical 4) | CS3553 | 19AI553 | Advanced Java Web Applications | 19AI307 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 168 | | PE (Honours - Vertical 4) | CS3552 | 19AI552 | Web Application User Interface Development | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 169 | | PE (Honours - Vertical 4) | CS3560 | 19AI560 | Augmented Reality and ARCore | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 170 | | PE (Honours - Vertical 4) | CS4503 | 19AM503 | Data Modeling | - | 3 | 0 | 3 | CGPA | Theory |
| 171 | | PE (Honours - Vertical 4) | CS1567 | 19CS567 | Cloud Native App Development | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 172 | | PE (Honours - Vertical 4) | NA | 19CS410 | Web Programming | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 173 | | PE (Honours - Vertical 4) | CS1421 | 19CS421 | Edge Computing | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 174 | | PE (Honours - Vertical 4) | CS1540 | 19CS540 | Fog Computing | - | 3 | 0 | 3 | CGPA | Theory |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 175 | | PE (Honours - Vertical 4) | CS1548 | 19CS548 | Cloud Services Management | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 176 | | PE (Honours - Vertical 4) | CS1549 | 19CS549 | UI and UX Design | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 177 | | PE (Honours - Vertical 4) | CS1552 | 19CS552 | DevOps | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 178 | | PE (Honours - Vertical 4) | CS1570 | 19CS570 | Entrepreneurship and Small Business Development | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 179 | | PE (Honours - Vertical 4) | CS1572 | 19CS572 | Serverless App Development | - | 3 | 0 | 3 | CGPA | Theory |
| 180 | | PE (Honours - Vertical 4) | CS1573 | 19CS573 | Enterprise Cloud Architecture | - | 3 | 0 | 3 | CGPA | Theory |
| 181 | | PE (Honours - Vertical 4) | CS1577 | 19CS577 | Cloud System Administration | - | 3 | 0 | 3 | CGPA | Theory |
| 182 | | PE (Honours - Vertical 4) | CS2406 | 19IT406 | Grid and Cloud Computing | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 183 | | PE (Honours - Vertical 4) | CS2408 | 19IT408 | Distributed Computing | - | 3 | 0 | 3 | CGPA | Theory |
| 184 | | PE (Honours - Vertical 4) | CS2502 | 19IT502 | Enterprise Resource Planning | - | 3 | 0 | 3 | CGPA | Theory |
| 185 | | PE (Honours - Vertical 4) | CS2503 | 19IT503 | User Interface Design | - | 3 | 0 | 3 | CGPA | Theory |
| 186 | | PE (Honours - Vertical 4) | CS2504 | 19IT504 | Information Storage Management | - | 3 | 0 | 3 | CGPA | Theory |
| 187 | | PE (Honours - Vertical 4) | CS2511 | 19IT511 | DHTML and XML | - | 3 | 0 | 3 | CGPA | Theory |
| 188 | | PE (Honours - Vertical 4) | CS2512 | 19IT512 | E-Commerce | - | 3 | 0 | 3 | CGPA | Theory |
| 189 | | PE (Honours - Vertical 5) | CS3502 | 19AI502 | Applied Natural Language Processing | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 190 | | PE (Honours - Vertical 5) | CS3503 | 19AI503 | Computer Vision | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 191 | | PE (Honours - Vertical 5) | CS3514 | 19AI514 | Self Driving Car | 19CS301/19AI410 / 19AI414 | 2 | 2 | 4 | CGPA | TIP (10 Expts) |
| 192 | | PE (Honours - Vertical 5) | CS3515 | 19AI515 | Smart Manufacturing Technology | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 193 | | PE (Honours - Vertical 5) | CS4504 | 19AM504 | Brain Computer Interaction | - | 3 | 0 | 3 | CGPA | Theory |
| 194 | | PE (Honours - Vertical 5) | CS3530 | 19AI530 | Control of Robotic Systems | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 195 | | PE (Honours - Vertical 5) | CS3533 | 19AI533 | Introduction to Robotics | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 196 | | PE (Honours - Vertical 5) | CS3534 | 19AI534 | Kinematics and Dynamics of Robots | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 197 | | PE (Honours - Vertical 5) | CS3535 | 19AI535 | Robotic Sensors | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 198 | | PE (Honours - Vertical 5) | CS4508 | 19AM508 | Introduction to IoT | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 199 | | PE (Honours - Vertical 5) | CS1420 | 19CS420 | Prototyping of IoT Systems | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 200 | | PE (Honours - Vertical 5) | CS1542 | 19CS542 | Embedded Board Design | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 201 | | PE (Honours - Vertical 5) | CS3548 | 19AI548 | Robot Programming | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 202 | | PE (Honours - Vertical 5) | CS3549 | 19AI549 | Drone Assembly and Applications | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 203 | | PE (Honours - Vertical 5) | CS3551 | 19AI551 | Drone Design and Control | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 204 | | PE (Honours - Vertical 5) | CS3561 | 19AI561 | Extended Reality | CS3307 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 205 | | PE (Honours - Vertical 5) | CS4504 | 19AM504 | Brain Computer Interaction | - | 3 | 0 | 3 | CGPA | Theory |
| 206 | | PE (Honours - Vertical 5) | CS4506 | 19AM506 | Sensors and Actuators for IoT | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 207 | | PE (Honours - Vertical 5) | CS4509 | 19AM509 | Industrial Internet of Things | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 208 | | PE (Honours - Vertical 5) | CS4510 | 19AM510 | Software for Embedded Systems | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 209 | | PE (Honours - Vertical 5) | CS4511 | 19AM511 | IoT Architecture and Protocols | - | 3 | 0 | 3 | CGPA | Theory |
| 210 | | PE (Honours - Vertical 5) | CS4512 | 19AM512 | Arduino for IoT | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 211 | | PE (Honours - Vertical 5) | CS4513 | 19AM513 | Raspberry Pi for IoT | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 212 | | PE (Honours - Vertical 5) | CS4514 | 19AM514 | Motion Planning Techniques | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 213 | | PE (Honours - Vertical 5) | CS3503 | 19AI503 | Computer Vision | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 214 | | PE (Honours - Vertical 5) | CS3502 | 19AI502 | Applied Natural Language Processing | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 215 | | PE (Honours - Vertical 5) | CS4516 | 19AM516 | Python Programming for IoT | - | 3 | 0 | 3 | CGPA | Theory |
| 216 | | PE (Honours - Vertical 5) | CS4517 | 19AM517 | Applications of IoT in Robotics | - | 3 | 0 | 3 | CGPA | Theory |
| 217 | | PE (Honours - Vertical 5) | CS4518 | 19AM518 | Programming for IoT Boards | - | 3 | 0 | 3 | CGPA | Theory |
| 218 | | PE (Honours - Vertical 5) | CS4519 | 19AM519 | Design of Smart Cities | - | 3 | 0 | 3 | CGPA | Theory |
| 219 | | PE (Honours - Vertical 5) | CS4520 | 19AM520 | IoT and Multimedia Technology | - | 3 | 0 | 3 | CGPA | Theory |
| 220 | | PE (Honours - Vertical 5) | CS4521 | 19AM521 | Mobile Application Development for IoT | - | 3 | 0 | 3 | CGPA | Theory |
| 221 | | PE (Honours - Vertical 5) | CS4522 | 19AM522 | Open Source Programming for IoT | - | 3 | 0 | 3 | CGPA | Theory |
| 222 | | PE (Honours - Vertical 5) | NA | 19CS525 | Industrial IOT | - | 3 | 0 | 3 | CGPA | Theory |
| 223 | | PE (Honours - Vertical 5) | CS1543 | 19CS543 | Embedded Board Manufacturing | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 224 | | PE (Honours - Vertical 5) | CS1565 | 19CS565 | Robotic Process Automation | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 225 | | PE (Honours - Vertical 6) | CS3501 | 19AI501 | Applications of Artificial Intelligence | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 226 | | PE (Honours - Vertical 6) | CS3506 | 19AI506 | Speech Analysis and Processing | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| 227 | | PE (Honours - Vertical 6) | CS3507 | 19AI507 | Special Topics in Artificial Intelligence | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 228 | | PE (Honours - Vertical 6) | CS3554 | 19AI554 | Fundamentals of Large Language Models | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 229 | | PE (Honours - Vertical 6) | CS4401 | 19AM401 | Time Series Analysis and Forecasting | - | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 230 | | PE (Honours - Vertical 6) | CS3403 | 19AI403 | Introduction to Data Science | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 231 | | PE (Honours - Vertical 6) | CS3517 | 19AI517 | Business Analytics | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 232 | | PE (Honours - Vertical 6) | CS3518 | 19AI518 | Cognitive Systems | - | 3 | 0 | 3 | CGPA | Theory |
| 233 | | PE (Honours - Vertical 6) | CS3525 | 19AI525 | Video Processing | 19CS301 | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 234 | | PE (Honours - Vertical 6) | CS4501 | 19AM501 | Machine Learning for Bioinformatics | - | 3 | 0 | 3 | CGPA | Theory |
| 235 | | PE (Honours - Vertical 6) | CS3550 | 19AI550 | Artificial Intelligence for Games | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 236 | | PE (Honours - Vertical 6) | CS3555 | 19AI555 | Exploratory Data Analysis | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 237 | | PE (Honours - Vertical 6) | CS3559 | 19AI559 | Image and Video Analytics | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 238 | | PE (Honours - Vertical 6) | CS3557 | 19AI557 | Neural Networks and Deep Learning | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 239 | | PE (Honours - Vertical 6) | CS3556 | 19AI556 | Recommender Systems | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 240 | | PE (Honours - Vertical 6) | CS3558 | 19AI558 | Text and Speech Analysis | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 241 | | PE (Honours - Vertical 6) | CS4501 | 19AM501 | Machine Learning for Bioinformatics | - | 3 | 0 | 3 | CGPA | Theory |
| 242 | | PE (Honours - Vertical 6) | CS1550 | 19CS550 | AI and Ethics | - | 3 | 0 | 3 | CGPA | Theory |
| 243 | | PE (Honours - Vertical 6) | CS1559 | 19CS559 | Blockchain Platforms and Its Use Cases | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 244 | | PE (Honours - Vertical 6) | CS1411 | 19CS411 | Virtualization and Cloud Computing | 19CS406 | 3 | 1 | 4 | CGPA | TIP (6 Expts) |
| 245 | | PE (Honours - Vertical 6) | CS1579 | 19CS579 | Generative AI Application Development | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 246 | | PE (Honours - Vertical 6) | CS1568 | 19CS568 | Fine Tuning Large Language Models | - | 3 | 0 | 3 | CGPA | Theory |
| 247 | | PE (Honours - Vertical 6) | CS1569 | 19CS569 | Applied Data Science | - | 2 | 1 | 3 | CGPA | TIP (6 Expts) |
| 248 | | PE (Honours - Vertical 6) | CS1578 | 19CS578 | Machine Learning Operations | - | 3 | 0 | 3 | CGPA | Theory |
| 249 | | OE | XXXXXX | 19XXXXX | Open Electives | - | 0 | 0 | 0 | CGPA | Theory |
| 250 | | OE | XXXXXX | 19XXXXX | Online Courses | - | 0 | 0 | 0 | CGPA | Experiential Learning |
| 251 | | EEC | CS3701 | 19AI701 | Mini Project | - | 0 | 1 | 1 | CGPA | Project |
| 252 | Option 1 | EEC | CS3702 | 19AI702 | Project Work I | - | 0 | 3 | 3 | CGPA | Project (Int Only) |

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| 253 | Option 1 | EEC | CS3703 | 19AI703 | Project Work II | 19AI702 | 0 | 6 | 6 | CGPA | Project |
| 254 | Option 2 | EEC | SH6802 | NA | Start Up | - | 0 | 8 | 8 | CGPA | Project |
| 255 | | EEC | SH6708 | 19EY708 | Career Development Skills | NIL | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 256 | | EEC | SH6709 | 19EY709 | Reasoning Ability | NIL | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 257 | | EEC | SH6710 | 19EY710 | Quantitative Ability I | NIL | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 258 | | EEC | SH6711 | 19EY711 | Quantitative Ability II | SH6710 /19EY710 | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 259 | | EEC | SH6712 | 19EY712 | Employment Enrichment Skills | 19EY702 / 19EY709 / SH6709 | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 260 | Any 1 | EEC | NA | 19EY706 | Company Specific Assessments For Employability | - | 0 | 1 | 1 | CGPA | Practical (6 Expts) |
| 261 | Any 1 | EEC | SH6713 | 19EY713 | Placement Readiness Assessment | 19EY704 / 19EY711/SH6711 | 1 | 0 | 1 | CGPA | Theory (Int Only) |
| 262 | | EEC | SH6707 | 19EY707 | Paper Publication | - | 0 | 0 | 1 | NON-CGPA | Experiential Learning (Int Only) |
| 263 | | MC | SH8801 | NA | Constitutionalism and Artificial Intelligence Policies in India | - | 1 | 0 | 1 | NON-CGPA | Theory (Int Only) |
| 264 | Any 1 | MC | SH8802 | NA | Internship | - | 0 | 0 | 2 | NON-CGPA | Experiential Learning (Int Only) |
| 265 | Any 1 | MC | SH8803 | NA | Entrepreneurship | - | 0 | 0 | 2 | NON-CGPA | Experiential Learning (Int Only) |
| 266 | Any 1 | MC | SH6803 | 19MC807 | National Service Scheme | - | 0 | 0 | 0 | NON-CGPA | Experiential Learning (Int Only) |
| 267 | Any 1 | MC | SH8807 | 19MC808 | National Sports Organization | - | 0 | 0 | 0 | NON-CGPA | Experiential Learning (Int Only) |
| 268 | Any 1 | MC | SH8808 | 19MC809 | Youth Red Cross | - | 0 | 0 | 0 | NON-CGPA | Experiential Learning (Int Only) |

| CREDIT SUMMARY | | |
|---|---|---|
| **Category** | **Credits to be Earned (Regular)** | **Credits to be Earned (Lateral Entry)** |
| **HS** | 14 | 3 |
| **BS** | 27 | 20 |
| **ES** | 28 | 12 |
| **PC** | 51 | 43 |
| **PE** | 16 | 16 |
| **OE** | 12 | 12 |
| **EEC** | 16 | 16 |
| **MC** | 3 | 3 |
| **TOTAL** | 167 | 125 |