**ECE A-22 COURSE STRUCTURE**

**I Year I Semester**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | BS | S&H | 9HC07 | Engineering Physics | 2 | 1 | 0 | 3 | 40 | 60 |
| 2 | ES | IT | 9FC01 | Problem Solving using C | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | BS | S&H | 9HC11 | Matrix Algebra and Calculus | 2 | 1 | 0 | 3 | 40 | 60 |
| 4 | HS | S&H | 9HC01 | Essential English Language Skills | 2 | 0 | 0 | 2 | 40 | 60 |
| 5 | ES | S&H | 9BC01 | Engineering Graphics | 1 | 0 | 4 | 3 | 40 | 60 |
| 6 | HS | S&H | 9HC61 | Oral communication Lab – I | 0 | 0 | 2 | 1 | 40 | 60 |
| 7 | BS | S&H | 9HC66 | Engineering Physics Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 8 | ES | IT | 9FC61 | Problem Solving using C Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 9 | ES | S&H |  | Induction Program | - | - | - | - | - | - |
| **Total** | | | | | **10** | **2** | **12** | **18** | **320** | **480** |

**I Year II Semester ECE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | BS | S&H | 9HC04 | Engineering Chemistry | 2 | 1 | 0 | 3 | 40 | 60 |
| 2 | ES | CSE | 9EC01 | Data Structures | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | BS | S&H | 9HC12 | Advanced Calculus | 2 | 1 | 0 | 3 | 40 | 60 |
| 4 | ES | EEE | 9AC42 | Electrical Circuits & Networks Analysis | 2 | 1 | 0 | 3 | 40 | 60 |
| 5 | HS | S&H | 9HC62 | Oral communication Lab - II | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 6 | BS | S&H | 9HC64 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 7 | ES | CSE | 9EC61 | Data Structures using CLab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 8 | ES | S&H | 9BC61 | Workshop/Manufacturing Processes Lab | 0 | 1 | 3 | 2.5 | 40 | 60 |
| ***Total*** | | | | | ***9*** | **4** | **12** | **19** | **320** | **480** |

**II Year I Semester ECE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | PC | ECE | 9CC01 | Electronic Devices and Circuits | 3 | 0 | 0 | 3 | 40 | 60 |
| 2 | PC | ECE | 9CC02 | Signals and Systems | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | BS | ECE | 9CC03 | Probability Theory and Stochastic Process | 2 | 1 | 0 | 3 | 40 | 60 |
| 4 | BS | S&H | 9HC14 | Complex Variable and Transform Techniques | 2 | 1 | 0 | 3 | 40 | 60 |
| 5 | HS | MBA | 9ZC01 | Business Economics and Financial Analysis | 3 | 0 | 0 | 3 | 40 | 60 |
| 6 | HS | S&H | 9HC03 | Universal Human Values | 3 | 0 | 0 | 3 | 40 | 60 |
| 7 | HS | S&H | 9HC63 | Soft Skills Lab | 0 | 1 | 2 | 2 | 40 | 60 |
| 8 | PC | ECE | 9CC71 | Electronic Devices and Circuits Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 9 | PC | EEE | 9AC72 | Electrical Circuits & Networks AnalysisLab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| **Total** | | | | | **16** | **3** | **8** | **23** | **360** | **540** |

**II Year II Semester ECE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | PC | ECE | 9CC04 | Analog Circuits | 3 | 0 | 0 | 3 | 40 | 60 |
| 2 | PC | ECE | 9CC05 | Digital Logic Design | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | PC | ECE | 9CC06 | Analog& Digital Communications | 2 | 1 | 0 | 3 | 40 | 60 |
| 4 | PC | ECE | 9C407 | Electromagnetic Waves and Transmission Lines | 3 | 0 | 0 | 3 | 40 | 60 |
| 5 | BS | S&H | 9HC16 | Quantitative Aptitude and Logical Reasoning | 3 | 0 | 0 | 3 | 40 | 60 |
| 6 | MC | S&H | 9HC05 | Environmental Science | 3 | - | - | - | Pass/ Fail | |
|  |  |  |  |  |  |  |
| 7 | PC | ECE | 9CC72 | Analog Circuits Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 8 | PC | ECE | 9C473 | Basic Simulation and Digital Logic Design Lab | 0 | 0 | 4 | 2 | 40 | 60 |
| 9 | PC | ECE | 9CC74 | Analog& Digital Communication Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 10 | PW | ECE | 9C461 | Technical seminar | 0 | 1 | 0 | 1 | 100 | - |
| **Total** | | | | | **17** | **2** | **10** | **21** | **420** | **480** |

**Note: Summer Industry Internship-I is to be carried out during the summer vacation between**

**4thand 5thsemestersand Evaluation of Summer Industry Internship - I will be done along with III-I courses**

**III Year I Semester ECE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S**l. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | PC | ECE | 9CC08 | Digital Signal Processing | 2 | 1 | 0 | 3 | 40 | 60 |
| 2 | PC | ECE | 9CC09 | IC Applications | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | PC | ECE | 9C510 | Antennas and Wave Propagations | 3 | 0 | 0 | 3 | 40 | 60 |
| 4 | PE | ECE |  | Professional Elective- I | 3 | 0 | 0 | 3 | 40 | 60 |
| 5 | ES | EEE | 9AC07 | Linear Control systems | 3 | 0 | 0 | 3 | 40 | 60 |
| 6 | MC | CSE | 9EC41 | Artificial Intelligence | 2 | - | - | - | Pass/ Fail | |
| 7 | PC | ECE | 9CC75 | Digital Signal Processing Lab | 0 | 0 | 4 | 2 | 40 | 60 |
| 8 | PC | ECE | 9CC76 | IC Applications Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 9 | PC | ECE | 9C578 | Antenna Simulation Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
|  | PW | ECE | 9C591 | Summer Industry Internship-I | 0 | 0 | 2 | 1 | 40 | 60 |
| **Total** | | | | | **16** | **1** | **12** | **21** | **360** | **540** |

**III Year II Semester ECE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | PC | ECE | 9C611 | Microwave and Optical Communications | 3 | 0 | 0 | 3 | 40 | 60 |
| 2 | PC | ECE | 9C612 | VLSI Technology and Design | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | PC | ECM | 9CC15 | Microprocessors and Microcontrollers | 2 | 1 | 0 | 3 | 40 | 60 |
| 4 | PE | ECE |  | Professional Elective- II | 3 | 0 | 0 | 3 | 40 | 60 |
| 5 | OE |  |  | Open Elective- I | 3 | 0 | 0 | 3 | 40 | 60 |
| 6 | MC | IT | 9FC78 | Cyber Security | 2 | - | - | - | Pass/ Fail | |
| 7 | PC | ECE | 9C679 | Microwave and Optical Communications Lab | 0 | 0 | 4 | 2 | 40 | 60 |
| 8 | PC | ECE | 9C677 | VLSI Technology and Design Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 9 | PC | ECM | 9CC85 | Microprocessors and Microcontrollers Lab | 0 | 0 | 3 | 1.5 | 40 | 60 |
| 10 | ES | ECE | 9C662 | Comprehensive Viva Voce | 0 | 1 | 0 | 1 | 100 | - |
| **Total** | | | | | **16** | **2** | **10** | **21** | **420** | **480** |

**Note: Summer Industry Internship-II is to be carried out during the summer vacation between**

**6thand 7thsemestersand Evaluation of Summer Industry Internship - II will be done along with IV-I courses**

**IV Year I Semester ECE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | PC | ECE | 9C713 | Internet of Things and Applications | 2 | 1 | 0 | 3 | 40 | 60 |
| 2 | PC | ECE | 9C714 | Advanced Communications and Networks | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | ES | CSE | 9EC05 | Computer Networks | 3 | 0 | 0 | 3 | 40 | 60 |
| 4 | PE | ECE |  | Professional Elective- III | 3 | 0 | 0 | 3 | 40 | 60 |
| 5 | PE | ECE |  | Professional Elective –IV | 3 | 0 | 0 | 3 | 40 | 60 |
| 6 | OE |  |  | Open Elective – II | 3 | 0 | 0 | 3 | 40 | 60 |
| 7 | PC | ECE | 9C780 | Internet of Things and Applications Lab | 0 | 0 | 2 | 1 | 40 | 60 |
| 8 | PC | ECE | 9C781 | Advanced Communications and Networks Lab | 0 | 0 | 2 | 1 | 40 | 60 |
| 9 | PW | ECE | 9C792 | Summer Industry Internship - II | 0 | 0 | 2 | 1 | 40 | 60 |
| **TOTAL** | | | | | **17** | **1** | **6** | **21** | **360** | **540** |

**IV Year II Semester ECE**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Sl. No** | **Course Type** | **Dept Course** | **Code** | **Name of the Course** | **L** | **T** | **P** | **C** | **CIE** | **SEE** |
| 1 | PE | ECE |  | Professional Elective –V | 3 | 0 | 0 | 3 | 40 | 60 |
| 2 | OE |  |  | Open Elective –III | 3 | 0 | 0 | 3 | 40 | 60 |
| 3 | PW | ECE | 9C893 | Project | 0 | 0 | 20 | 10 | 40 | 60 |
| **TOTAL** | | | | | **6** | **0** | **20** | **16** | **120** | **180** |

**Professional Electives**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **S. No** | **Stream** | **PE-I** | **PE- II** | **PE-III** | **PE-IV** | **PE-V** |
| 1 |  |  |  |  |  |  |
| **Code** | **9C516** | **9C620** | **9C724** | **9C728** | **9C832** |
| **Communications** | Software Defined Radio | **Satellite Communication** | Ad hoc and Wireless Sensor Networks | MIMO OFDM System | 5G Communications |
| 2 | **Code** | **9C517** | **9C621** | **9C725** | **9C729** | **9C833** |
| **Signal Processing** | Artificial Neural Networks | Digital Image Processing | **Electronics & Instrumentation** | **Machine Learning&Deep Learning**  **Techniques** | **Radar Signal Processing** |
| 3 | **Code** | **9C518** | **9C622** | **9C726** | **9C730** | **9C834** |
| **VLSI** | CMOS Analog IC Design | VLSI Physical Design | Design Verification using System Verilog | Low Power VLSI Design | **Design of Fault Tolerant System** |
| 4 | **Code** | **9C519** | **9C623** | **9C727** | **9C731** | **9C835** |
| **Embedded System** | **Computer Organization &Architecture** | Embedded C Programming | Embedded System Design using ARM | Embedded Real Time Operating Systems | SystemonChip Architecture |

**Open Electives**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sl. No** | **Stream** | **OE-I** | **OE-II** | **OE-III** |
| 1 | **Code** | **9ZC05** | **9ZC15** | **9ZC19** |
| Finance | Banking Operations and Insurance | Financial Markets and services | Project and Risk Management |
| 2 | **Code** | **9ZC22** | **9ZC23** | **9ZC24** |
| Entrepreneurship | Basics of Entrepreneurship | Advanced Entrepreneurship | Product and Services |
| 3 | **Code** | **9ZC08** | **9ZC09** | **9ZC10** |
| Innovation and Design Thinking | Design literacy and Design Thinking | Co-Creation and Product Design | Entrepreneurship & Business Design |
| 4 | **Code** | **9EC42** | **9FC79** | **9EC43** |
| Computer Science | Programming in Java | Database Systems Concepts | Operating Systems Concepts |
| 5 | **Code** | **9CC36** | **9CC37** | **9CC38** |
| ECE Stream | Fundamentals of digital circuits and Microprocessors | Fundamentals of Communication | Embedded Systems |
| 6 | **Code** | **9AC44** | **9AC45** | **9AC47** |
| EEE stream | Fundamentals of Measurements and Instrumentation | Fundamentals of Renewable energy sources | Power Electronic Devices and Converters |
| 7 | **Code** | **9BC51** | **9BC52** | **9BC53** |
| Mechanical Stream | Introduction To Additive Manufacturing Processes | Principles of Operations Research | Principles of Automation and Robotics |

**Service Coursesoffered by ECE**

|  |  |  |  |
| --- | --- | --- | --- |
| **Sl. No** | **Code** | **Name of Subject** | **Offered to Dept** |
| 1 | 9CC01 | Electronic Devices and Circuits | ECM, EEE |
| 2 | 9CC05 | Digital Logic Design | ECM, EEE |
| 3 | 9CC02 | Signals and Systems | ECM, EEE |
| 4 | 9CC71 | Electronic Devices and Circuits Lab | ECM, EEE |
| 5 | 8CC73 | Basic Simulation and Digital Logic Design Lab | ECM |
| 6 | 9CC04 | Analog Circuits | ECM, EEE |
| 7 | 9CC06 | Analog& Digital Communications | ECM |
| 8 | 9CC09 | IC Applications | ECM, EEE |
| 9 | 9CC72 | Analog Circuits Lab | ECM, EEE |
| 10 | 9CC74 | Analog& Digital Communication Lab | ECM |
| 11 | 9CC76 | IC Applications Lab | ECM, EEE |
| 12 | 9CC08 | Digital Signal Processing | ECM, EEE |
| 13 | 9CC75 | Digital Signal Processing Lab | ECM |
| 14 | 9CC51 | Digital Electronics- **3 credits** | CSE, IT, IOT |
| 15 | 9CC82 | Digital Electronics Lab-**2 credits** | CSE, IT |
| 16 | 9CC52 | Electronic Circuits- 3 credits | EEE |
| 17 | 9CC53 | Communication Theory- **3 credits** | EEE |
| 18 | 9CC54 | Computer Organization- **3 credits** | CSE-AIML, CSE-DS |
| 19 | 9CC83 | Computer Organization Lab – **1 credit** | CSE-IOT, CSE-AIML (Half), CSE-DS (Half) |
| 20 | 9CC56 | Computer Organization and Architectures - **2 credits** | CSE-CS, CSE-IOT |
| 21 | 9CC84 | Computer Organization and Architectures Lab– **1 credit** | CSE-CS, CSE-IOT |

**A22- Total Credits   
(Semester-wise Credit Distribution)**

|  |  |  |
| --- | --- | --- |
| **SL. NO** | **SEMESTER** | **CREDITS** |
| 1. | I-I | 18 |
| 2 | I-II | 19 |
| 3 | II-I | 23 |
| 4. | II-II | 21 |
| 5 | III-I | 21 |
| 6 | III-II | 21 |
| 7 | IV-I | 21 |
| 8 | IV-II | 16 |
|  | **Total** | **160** |

|  |  |  |  |
| --- | --- | --- | --- |
| **SL.NO** | **CATEGORY** | **MODEL CURRICULUM** | **SNIST** |
| **1.** | **Humanities and Social Sciences including Management** | **12** | **12.5** |
| **2** | **Basic Science courses** | **25** | **24** |
| **3** | **Engineering sciences** | **24** | **24.5** |
| **4.** | **Professional core courses** | **48** | **62** |
| **5** | **Professional Elective courses** | **18** | **15** |
| **6** | **Open Electives** | **18** | **9** |
| **7** | **Project work, Seminar and Internship** | **15** | **13** |
|  | **Total** | **160** | **160** |