



# EXCEL ENGINEERING COLLEGE

(Autonomous)

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai  
Accredited by NBA, NAAC with "A+" and Recognised by UGC (2f &12B)  
KOMARAPALAYAM - 637303

## B.TECH. - INFORMATION TECHNOLOGY REGULATION 2023 CHOICE BASED CREDIT SYSTEM I TO VIII SEMESTERS CURRICULUM AND SYLLABI

| I – SEMESTER                           |   |          |                |          |          |           |               |            |            |
|--|---|----------|----------------|----------|----------|-----------|---------------|------------|------------|
| Code No.                               | Course                                  | Category | Periods / Week |          |          | C         | Maximum Marks |            |            |
|  |   |          | L              | T        | P        |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b>                |   |          |                |          |          |           |               |            |            |
| 23MA102                                | Matrices and Calculus                   | BS       | 3              | 1        | 0        | 4         | 40            | 60         | 100        |
| 23CS102                                | Problem Solving using Python            | ES       | 3              | 0        | 0        | 3         | 40            | 60         | 100        |
| 23LET07                                | Heritage of Tamils<br>(தமிழர் மரபு)     | HSS      | 2              | 0        | 0        | 1         | 100           | 0          | 100        |
| <b>Theory with Practical Course(s)</b> |   |          |                |          |          |           |               |            |            |
| 23LEEXX                                | Language Elective – I                   | HSS      | 2              | 0        | 2        | 3         | 50            | 50         | 100        |
| 23PH102                                | Physics for Computing Sciences          | BS       | 3              | 0        | 2        | 4         | 50            | 50         | 100        |
| 23IT101                                | Computer Hardware and Networking        | ES       | 3              | 0        | 2        | 4         | 50            | 50         | 100        |
| <b>Practical Course(s)</b>             |   |          |                |          |          |           |               |            |            |
| 23CS103                                | Problem Solving using Python Laboratory | ES       | 0              | 0        | 4        | 2         | 60            | 40         | 100        |
| <b>Mandatory Course</b>                |   |          |                |          |          |           |               |            |            |
| 23MC001                                | Induction Programme                     | MC       | 2 Weeks        |          |          | 0         | 100           | 0          | 100        |
| <b>TOTAL</b>                           |   |          | <b>16</b>      | <b>1</b> | <b>8</b> | <b>21</b> | <b>490</b>    | <b>310</b> | <b>800</b> |

| Language Electives – I |                                |          |                |   |   |   |               |    |       |
|------------------------|--------------------------------|----------|----------------|---|---|---|---------------|----|-------|
| Code No.               | Course                         | Category | Periods / Week |   |   | C | Maximum Marks |    |       |
|                        |                                |          | L              | T | P |   | CA            | FE | Total |
| 23LEE01                | Communicative English          | HSS      | 2              | 0 | 2 | 3 | 50            | 50 | 100   |
| 23LEE02                | Advanced Communicative English | HSS      | 2              | 0 | 2 | 3 | 50            | 50 | 100   |

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| II- SEMESTER                           |  |          |               |          |           |           |               |            |            |
|--|--|----------|---------------|----------|-----------|-----------|---------------|------------|------------|
| Code No.                               | Course   | Category | Periods /Week |          |           | C         | Maximum Marks |            |            |
|  |  |          | L             | T        | P         |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b>                |  |          |               |          |           |           |               |            |            |
| 23MA202                                | Mathematical Foundation for Engineering          | BS       | 3             | 1        | 0         | 4         | 40            | 60         | 100        |
| 23CS201                                | Programming in C and Data Structures             | ES       | 3             | 0        | 0         | 3         | 40            | 60         | 100        |
| 23LET08                                | Tamils and Technology (தமிழரும் தொழில்நுட்பமும்) | HSS      | 2             | 0        | 0         | 1         | 100           | 0          | 100        |
| <b>Theory with Practical Course(s)</b> |  |          |               |          |           |           |               |            |            |
| 23LEEXX                                | Language Elective – II                           | HSS      | 2             | 0        | 2         | 3         | 50            | 50         | 100        |
| 23CH201                                | Chemistry for Computing Sciences                 | BS       | 3             | 0        | 2         | 4         | 50            | 50         | 100        |
| 23ME101                                | Engineering Graphics                             | ES       | 1             | 0        | 4         | 3         | 50            | 50         | 100        |
| <b>Practical Course(s)</b>             |  |          |               |          |           |           |               |            |            |
| 23CS202                                | Programming in C and Data Structures Laboratory  | ES       | 0             | 0        | 4         | 2         | 60            | 40         | 100        |
| <b>Mandatory Course</b>                |  |          |               |          |           |           |               |            |            |
| 23MC003                                | Interpersonal Skills                             | MC       | 0             | 0        | 2         | 0         | 100           | 0          | 100        |
| <b>Total</b>                           |  |          | <b>14</b>     | <b>1</b> | <b>14</b> | <b>20</b> | <b>490</b>    | <b>310</b> | <b>800</b> |

| Language Electives – II |                                |          |               |   |   |   |               |    |       |
|-------------------------|--------------------------------|----------|---------------|---|---|---|---------------|----|-------|
| Code No.                | Course                         | Category | Periods /Week |   |   | C | Maximum Marks |    |       |
|                         |                                |          | L             | T | P |   | CA            | FE | Total |
| 23LEE02                 | Advanced Communicative English | HSS      | 2             | 0 | 2 | 3 | 50            | 50 | 100   |
| 23LEH03                 | Hindi                          | HSS      | 2             | 0 | 2 | 3 | 50            | 50 | 100   |
| 23LEF04                 | French                         | HSS      | 2             | 0 | 2 | 3 | 50            | 50 | 100   |
| 23LEG05                 | German                         | HSS      | 2             | 0 | 2 | 3 | 50            | 50 | 100   |
| 23LEJ06                 | Japanese                       | HSS      | 2             | 0 | 2 | 3 | 50            | 50 | 100   |



| III- SEMESTER                          |   |          |               |          |          |           |               |            |            |
|--|---|----------|---------------|----------|----------|-----------|---------------|------------|------------|
| Code No.                               | Course  | Category | Periods /Week |          |          | C         | Maximum Marks |            |            |
|  |   |          | L             | T        | P        |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b>                |   |          |               |          |          |           |               |            |            |
| 23MA302                                | Probability and Statistics                        | BS       | 3             | 2        | 0        | 4         | 40            | 60         | 100        |
| 23IT301                                | Object Oriented Programming using Java            | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT302                                | Computer Architecture and Organization            | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT303                                | Database Management Systems                       | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23UH001                                | Universal Human Values                            | HSS      | 2             | 1        | 0        | 3         | 100           | 0          | 100        |
| <b>Theory with Practical Course(s)</b> |   |          |               |          |          |           |               |            |            |
| 23EC306                                | Digital Logics and Microprocessor                 | ES       | 3             | 0        | 2        | 4         | 50            | 50         | 100        |
| <b>Practical Course(s)</b>             |   |          |               |          |          |           |               |            |            |
| 23IT304                                | Object Oriented Programming using Java Laboratory | PC       | 0             | 0        | 2        | 1         | 60            | 40         | 100        |
| 23IT305                                | Database Management Systems Laboratory            | PC       | 0             | 0        | 2        | 1         | 60            | 40         | 100        |
| <b>Mandatory Course</b>                |   |          |               |          |          |           |               |            |            |
| 23MC002                                | Environmental Sciences                            | MC       | 2             | 0        | 0        | 0         | 100           | 0          | 100        |
| <b>Total</b>                           |   |          | <b>22</b>     | <b>3</b> | <b>8</b> | <b>22</b> | <b>530</b>    | <b>370</b> | <b>900</b> |

| IV- SEMESTER                           |   |          |               |          |          |           |               |            |            |
|--|---|----------|---------------|----------|----------|-----------|---------------|------------|------------|
| Code No.                               | Course  | Category | Periods /Week |          |          | C         | Maximum Marks |            |            |
|  |   |          | L             | T        | P        |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b>                |   |          |               |          |          |           |               |            |            |
| 23MA401                                | Numerical Methods                                   | BS       | 3             | 2        | 0        | 4         | 40            | 60         | 100        |
| 23IT401                                | Data communication and Computer Networks            | ES       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT402                                | Computational Intelligence                          | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| <b>Theory with Practical Course(s)</b> |   |          |               |          |          |           |               |            |            |
| 23IT403                                | Operating Systems                                   | PC       | 3             | 0        | 2        | 4         | 50            | 50         | 100        |
| 23IT404                                | Web Technology                                      | PC       | 3             | 0        | 2        | 4         | 50            | 50         | 100        |
| 23IT405                                | Wireless Sensor Networks and Architecture           | PC       | 3             | 0        | 2        | 4         | 50            | 50         | 100        |
| <b>Practical Course(s)</b>             |   |          |               |          |          |           |               |            |            |
| 23IT406                                | Data communication and Computer Networks Laboratory | ES       | 0             | 0        | 2        | 1         | 60            | 40         | 100        |
| <b>Mandatory Course</b>                |   |          |               |          |          |           |               |            |            |
| 23MC006                                | Soft Skills   | MC       | 2             | 0        | 0        | 0         | 100           | 0          | 100        |
| <b>Total</b>                           |   |          | <b>20</b>     | <b>2</b> | <b>8</b> | <b>23</b> | <b>430</b>    | <b>370</b> | <b>800</b> |



| V- SEMESTER                            |  |          |               |          |          |           |               |            |            |
|--|--|----------|---------------|----------|----------|-----------|---------------|------------|------------|
| Code No.                               | Course   | Category | Periods /Week |          |          | C         | Maximum Marks |            |            |
|  |  |          | L             | T        | P        |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b>                |  |          |               |          |          |           |               |            |            |
| 23IT501                                | Software Engineering and Testing Methodologies | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT502                                | Data Analytics                                 | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT503                                | Machine Learning techniques                    | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23ITEXX                                | Professional Elective I                        | PE       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23YYOXX                                | Open Elective I                                | OE       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| <b>Theory with Practical Course(s)</b> |  |          |               |          |          |           |               |            |            |
| 23IT504                                | Internet of Things                             | PC       | 3             | 0        | 2        | 4         | 50            | 50         | 100        |
| <b>Practical Course(s)</b>             |  |          |               |          |          |           |               |            |            |
| 23IT505                                | Machine Learning Laboratory                    | PC       | 0             | 0        | 2        | 1         | 60            | 40         | 100        |
| 23IT506                                | Data Analytics Laboratory                      | PC       | 0             | 0        | 2        | 1         | 60            | 40         | 100        |
| <b>Mandatory Course</b>                |  |          |               |          |          |           |               |            |            |
| 23MCXXX                                | Mandatory Course-V                             | MC       | 2             | 0        | 0        | 0         | 100           | 0          | 100        |
| <b>Total</b>                           |  |          | <b>20</b>     | <b>0</b> | <b>6</b> | <b>21</b> | <b>470</b>    | <b>430</b> | <b>900</b> |

| VI- SEMESTER                           |   |          |              |          |          |           |               |            |            |
|--|---|----------|--------------|----------|----------|-----------|---------------|------------|------------|
| Code No.                               | Course                                    | Category | Periods/Week |          |          | C         | Maximum Marks |            |            |
|  |   |          | L            | T        | P        |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b>                |   |          |              |          |          |           |               |            |            |
| 23IT601                                | Computer Graphics and Multimedia          | PC       | 3            | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT602                                | Mobile Application Development            | PC       | 3            | 0        | 0        | 3         | 40            | 60         | 100        |
| 23ITEXX                                | Professional Elective – II                | PE       | 3            | 0        | 0        | 3         | 40            | 60         | 100        |
| 23YYOXX                                | Open Elective – II                        | OE       | 3            | 0        | 0        | 3         | 40            | 60         | 100        |
| <b>Theory with Practical Course(s)</b> |   |          |              |          |          |           |               |            |            |
| 23IT603                                | Cryptography and Network Security         | PC       | 3            | 0        | 2        | 4         | 50            | 50         | 100        |
| 23IT604                                | Object Oriented Analysis and Design       | PC       | 3            | 0        | 2        | 4         | 50            | 50         | 100        |
| <b>Practical Course(s)</b>             |   |          |              |          |          |           |               |            |            |
| 23IT605                                | Mobile Application Development Laboratory | PC       | 0            | 0        | 2        | 1         | 60            | 40         | 100        |
| 23IT606                                | Design Thinking & Mini Project            | EEC      | 0            | 0        | 3        | 2         | 60            | 40         | 100        |
| 23IT607                                | Internship                                | EEC      | 2 Weeks      |          |          | 1         | 100           | 0          | 100        |
| <b>Total</b>                           |   |          | <b>18</b>    | <b>0</b> | <b>9</b> | <b>24</b> | <b>480</b>    | <b>420</b> | <b>900</b> |



| VII- SEMESTER              |  |          |               |          |          |           |               |            |            |
|----------------------------|--|----------|---------------|----------|----------|-----------|---------------|------------|------------|
| Code No.                   | Course   | Category | Periods /Week |          |          | C         | Maximum Marks |            |            |
|                            |  |          | L             | T        | P        |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b>    |  |          |               |          |          |           |               |            |            |
| 23IT701                    | Principles of Management and Professional Ethics | HSS      | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT702                    | Cloud Computing and Virtualization               | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23IT703                    | Management Information systems                   | PC       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23ITEXX                    | Professional Elective – III                      | PE       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23ITEXX                    | Professional Elective – IV                       | PE       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| 23YYOXX                    | Open Elective – III                              | OE       | 3             | 0        | 0        | 3         | 40            | 60         | 100        |
| <b>Practical Course(s)</b> |  |          |               |          |          |           |               |            |            |
| 23IT704                    | Cloud Computing Laboratory                       | PC       | 0             | 0        | 2        | 1         | 60            | 40         | 100        |
| 23IT705                    | Design Project                                   | EEC      | 0             | 0        | 2        | 1         | 60            | 40         | 100        |
| <b>Total</b>               |  |          | <b>18</b>     | <b>0</b> | <b>6</b> | <b>20</b> | <b>360</b>    | <b>440</b> | <b>800</b> |

| VIII- SEMESTER          |                            |          |               |          |           |           |               |            |            |
|-------------------------|----------------------------|----------|---------------|----------|-----------|-----------|---------------|------------|------------|
| Code No.                | Course                     | Category | Periods /Week |          |           | C         | Maximum Marks |            |            |
|                         |                            |          | L             | T        | P         |           | CA            | FE         | Total      |
| <b>Theory Course(s)</b> |                            |          |               |          |           |           |               |            |            |
| 23ITEXX                 | Professional Elective – V  | PE       | 3             | 0        | 0         | 3         | 40            | 60         | 100        |
| 23ITEXX                 | Professional Elective – VI | PE       | 3             | 0        | 0         | 3         | 40            | 60         | 100        |
| 23IT801                 | Major Project              | EEC      | 0             | 0        | 16        | 8         | 60            | 40         | 100        |
| <b>Total</b>            |                            |          | <b>6</b>      | <b>0</b> | <b>16</b> | <b>14</b> | <b>140</b>    | <b>160</b> | <b>300</b> |

| MANDATORY COURSES (MC) |  |          |               |   |   |   |               |    |       |
|------------------------|--|----------|---------------|---|---|---|---------------|----|-------|
| Code No.               | Course                                   | Category | Periods /Week |   |   | C | Maximum Marks |    |       |
|                        |  |          | L             | T | P |   | CA            | FE | Total |
| 23MC001                | Induction Programme                      | MC       | 2             | 0 | 0 | 0 | 100           | -  | 100   |
| 23MC002                | Environmental Sciences                   | MC       | 2             | 0 | 0 | 0 | 100           | -  | 100   |
| 23MC003                | Interpersonal Skills                     | MC       | 2             | 0 | 0 | 0 | 100           | -  | 100   |
| 23MC004                | Indian Constitution                      | MC       | 2             | 0 | 0 | 0 | 100           | -  | 100   |
| 23MC005                | Yoga and Values for Holistic Development | MC       | 2             | 0 | 0 | 0 | 100           | -  | 100   |
| 23MC006                | Soft Skills                              | MC       | 2             | 0 | 0 | 0 | 100           | -  | 100   |



**PROFESSIONAL ELECTIVES (PE)**

| <b>STREAM 1 ARTIFICIAL INTELLIGENCE</b> |  |          |               |   |   |   |               |    |       |
|---|--|----------|---------------|---|---|---|---------------|----|-------|
| Code No.                                | Course                                       | Category | Periods /Week |   |   | C | Maximum Marks |    |       |
|   |  |          | L             | T | P |   | CA            | FE | Total |
| 23ITE01                                 | Soft Computing Techniques                    | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE02                                 | Natural Language Processing                  | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE03                                 | Social Intelligence                          | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE04                                 | Business Intelligence                        | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE05                                 | Social Network Analysis                      | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE06                                 | Computational Neuroscience                   | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE07                                 | Deep Learning Techniques                     | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE08                                 | Cognitive Science                            | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE09                                 | Cybernetics and brain simulation             | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE10                                 | Computer Vision                              | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE11                                 | Motion analysis and Object tracking          | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE12                                 | Optimization Techniques for Machine Learning | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |

| <b>STREAM 2 CYBER SECURITY</b> |   |          |               |   |   |   |               |    |       |
|--------------------------------|---|----------|---------------|---|---|---|---------------|----|-------|
| Code No.                       | Course  | Category | Periods /Week |   |   | C | Maximum Marks |    |       |
|                                |   |          | L             | T | P |   | CA            | FE | Total |
| 23ITE21                        | Information Security                                | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE22                        | Cyber forensics                                     | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE23                        | Quantum cryptography                                | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE24                        | Ethical Hacking and network defense                 | PE       | 2             | 0 | 2 | 3 | 40            | 60 | 100   |
| 23ITE25                        | Wireless security                                   | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE26                        | Machine learning for cyber security                 | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE27                        | Secure Data Management                              | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE28                        | Advanced cryptology                                 | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE29                        | Mobile application Security and Penetration testing | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE30                        | Block chain Technology                              | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE31                        | Cyber law & Ethics                                  | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE32                        | Malware analysis and its security                   | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |

| <b>STREAM 3 DATA SCIENCE</b> |                               |          |               |   |   |   |               |    |       |
|------------------------------|-------------------------------|----------|---------------|---|---|---|---------------|----|-------|
| Code No.                     | Course                        | Category | Periods /Week |   |   | C | Maximum Marks |    |       |
|                              |                               |          | L             | T | P |   | CA            | FE | Total |
| 23ITE41                      | Data science with python      | PE       | 2             | 0 | 2 | 3 | 40            | 60 | 100   |
| 23ITE42                      | Big data for Data Engineering | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE43                      | R Programming                 | PE       | 2             | 0 | 2 | 3 | 40            | 60 | 100   |
| 23ITE44                      | Data analytics and Hadoop     | PE       | 2             | 0 | 2 | 3 | 40            | 60 | 100   |
| 23ITE45                      | Predictive analytics          | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |
| 23ITE46                      | Data mining                   | PE       | 3             | 0 | 0 | 3 | 40            | 60 | 100   |

|         |  |    |   |   |   |   |    |    |     |
|---------|--|----|---|---|---|---|----|----|-----|
| 23ITE47 | Information retrieval Techniques           | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE48 | Online And Real Time Systems               | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE49 | Optimization based data analysis           | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE50 | Web database and information systems       | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE51 | Deploying Machine Learning Models on Cloud | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE52 | Data Visualization                         | PE | 2 | 0 | 2 | 3 | 40 | 60 | 100 |

**STREAM 4 INTERNET OF THINGS**

|         |                                     |    |   |   |   |   |    |    |     |
|---------|-------------------------------------|----|---|---|---|---|----|----|-----|
| 23ITE61 | Programming the IoT                 | PE | 2 | 0 | 2 | 3 | 40 | 60 | 100 |
| 23ITE62 | Developing industrial IoT           | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE63 | IoT and Embedded systems            | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE64 | Edge computing technologies         | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE65 | IoT and AI Cloud                    | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE66 | Industrial IoT Markets and Security | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE67 | Developing Solutions with Azure     | PE | 2 | 0 | 2 | 3 | 40 | 60 | 100 |
| 23ITE68 | Data Analytics and Storage          | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE69 | IoT Communication Technologies      | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE70 | Cyber security in IOT               | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE71 | Medical IOT                         | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITE72 | Wearable Computing                  | PE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |

**OPEN ELECTIVE COURSES (For Other Branches)**

|         |   |    |   |   |   |   |    |    |     |
|---------|---|----|---|---|---|---|----|----|-----|
| 23ITO01 | Smart Agriculture                             | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO02 | Application of machine learning in industries | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO03 | Deep learning fundamentals                    | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO04 | Data Analytics for IOT                        | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO05 | Robot learning                                | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO06 | Augmented and Virtual Reality                 | OE | 2 | 0 | 2 | 3 | 40 | 60 | 100 |
| 23ITO07 | Web database development                      | OE | 2 | 0 | 2 | 3 | 40 | 60 | 100 |
| 23ITO08 | Service Oriented Architecture                 | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO09 | Pattern and Anomaly Detection                 | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO10 | Big Data and Food Security                    | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO11 | Full Stack Development                        | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |
| 23ITO12 | Industrial IOT                                | OE | 3 | 0 | 0 | 3 | 40 | 60 | 100 |

**ONE CREDIT COURSES**

|         |   |     |   |   |   |   |     |   |     |
|---------|---|-----|---|---|---|---|-----|---|-----|
| 23ITA01 | Embedded C Programming                  | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA02 | Linux Shell programming                 | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA03 | Programming for the Web with JavaScript | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA04 | CMS web development                     | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA05 | R Programming                           | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |

|         |                                   |     |   |   |   |   |     |   |     |
|---------|-----------------------------------|-----|---|---|---|---|-----|---|-----|
| 23ITA06 | Network simulation                | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA07 | C# and .net Programming           | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA08 | Machine Learning with Tensor Flow | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA09 | Explore animation                 | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA10 | Entrepreneurship                  | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |
| 23ITA11 | Embedded Systems in Python        | EEC | 0 | 0 | 2 | 1 | 100 | 0 | 100 |

**CREDITS DISTRIBUTION – SEMESTER WISE**

| S. No        | CATEGORY | CREDITS PER SEMESTER |           |           |           |           |           |           |           | TOTAL CREDIT<br>(AICTE) | CREDITS<br>in % |
|--------------|----------|----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-------------------------|-----------------|
|              |          | I                    | II        | III       | IV        | V         | VI        | VII       | VIII      |                         |                 |
| 1            | HSS      | 4                    | 4         | 3         |           |           |           | 3         |           | 14<br>(10-14)           | 8.48%           |
| 2            | BS       | 8                    | 8         | 4         | 4         |           |           |           |           | 24<br>(22-28)           | 14.54%          |
| 3            | ES       | 9                    | 8         | 4         | 4         |           |           |           |           | 25<br>(24)              | 15.15%          |
| 4            | PC       |                      |           | 11        | 15        | 15        | 15        | 7         |           | 63<br>(48)              | 38.18%          |
| 5            | PE       |                      |           |           |           | 3         | 3         | 6         | 6         | 18<br>(18)              | 10.90%          |
| 6            | OE       |                      |           |           |           | 3         | 3         | 3         |           | 9                       | 5.45%           |
| 7            | EEC      |                      |           |           |           |           | 3         | 1         | 8         | 12<br>(12-16)           | 7.27%           |
| 8            | MC       | 0                    | 0         | 0         | 0         | -         | -         | -         | -         | 0                       | 0.00%           |
| <b>Total</b> |          | <b>21</b>            | <b>20</b> | <b>22</b> | <b>23</b> | <b>21</b> | <b>24</b> | <b>20</b> | <b>14</b> | <b>165</b>              | <b>100.00 %</b> |

HSS - Humanities and Social Sciences

BS - Basic Sciences

ES - Engineering Sciences

PC - Professional Core

PE - Professional Electives

OE - Open Electives

EEC - Employability Enhancement Courses

MC - Mandatory Courses (Non-Credit Courses)

CA - Continuous Assessment

FE - Final Examination

