

**COEP Technological University**

# **Department of Computer Science and Engineering**

**Curriculum Structure**

**B. Tech. Computer Science and Engineering**

**(Effective from: A.Y. 2025-26)**

### List of Abbreviations

| <b>Abbreviation</b> | <b>Title</b>                                      | <b>Credits</b> | <b>Percentage</b> |
|---------------------|---------------------------------------------------|----------------|-------------------|
| BSC                 | Basic Science Course                              | 14             | 8.75              |
| ESC                 | Engineering Science Course                        | 16             | 10.00             |
| PCC                 | Programme Core Course (PCC)                       | 55             | 34.37             |
| PEC                 | Programme Elective Course (PEC)                   | 17             | 10.62             |
| OE                  | Open Elective - other than particular program     | 6              | 3.75              |
| MDM                 | Multidisciplinary Minor (MDM)                     | 14             | 8.75              |
| VSEC                | Vocational and Skill Enhancement Course (VSEC)    | 12             | 7.50              |
| HSMC                | Humanities Social Science and Management          | 5              | 3.13              |
| AEC                 | Ability Enhancement Course                        | 4              | 2.50              |
| IKS                 | Indian Knowledge System (IKS)                     | 2              | 1.25              |
| VEC                 | Value Education Course (VEC)                      | 2              | 1.25              |
| RM                  | Research Methodology (RM)                         | 2              | 1.25              |
| OJT                 | Internship                                        | 7              | 4.38              |
| CEA                 | Community Engagement Activity (CEA)/Field Project | 2              | 1.25              |
| CCA                 | Co-curricular & Extracurricular Activities (CCA)  | 2              | 1.25              |
|                     | <b>Total</b>                                      | <b>160</b>     | <b>100</b>        |

**F.Y. B. Tech.**  
**Computer Science and Engineering**  
**[Level 4.5, UG Certificate] Semester -I**

| Sr. No.      | Course Type | Course Code   | Course Name                                      | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|--------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                                                  |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                                                  |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | BSC         | PH-23001      | Engineering Physics                              | 2         | 0         | 2         | 1         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 02           | BSC         | MA-23002      | Linear Algebra                                   | 2         | 1         | 0         | 1         | 3         | 30                                  | 10 | 60  | --         | --  |
| 03           | BSC         | AS-23001      | Biology for Engineers                            | 2         | 0         | 0         | 1         | 2         | 30                                  | 20 | 50  | --         | --  |
| 04           | ESC         | EE-23001      | Basics of Electrical and Electronics Engineering | 2         | 0         | 2         | 1         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 05           | ESC         | CTS-24002     | Problem Solving using Procedural Programming     | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 06           | ESC         | CTS-24001     | Computer Lab                                     | 0         | 0         | 4         | 0         | 2         | --                                  | -- | --  | 100        | --  |
| 07           | AEC         | HS-23002      | Indian Knowledge System                          | 2         | 0         | 0         | 0         | 2         | CIE: 100                            |    |     | --         | --  |
| 08           | CCA         | As per course | Liberal Learning -1                              | 0         | 0         | 2         | 0         | 1         | --                                  | -- | --  | 100        | --  |
| <b>Total</b> |             |               |                                                  | <b>13</b> | <b>01</b> | <b>12</b> | <b>05</b> | <b>20</b> |                                     |    |     |            |     |

**[Level 4.5, UG Certificate] Semester -II**

| Sr. No.      | Course Type | Course Code   | Course Name                      | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|----------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                                  |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                                  |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | BSC         | MA-23005      | Probability and Statistics       | 2         | 0         | 2         | 1         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 02           | BSC         | PH-23002      | Quantum Physics                  | 2         | 0         | 2         | 1         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 03           | ESC         | CTS-24003     | Digital Logic Design             | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 04           | ESC         | ME-23001      | Engineering Drawing and Graphics | 1         | 0         | 4         | 1         | 3         | CIE: 100                            |    |     | 100        | --  |
| 05           | PCC         | CTS-24004     | Discrete Structures              | 2         | 0         | 0         | 1         | 2         | 30                                  | 20 | 50  | --         | --  |
| 06           | VSEC        | CTS-24005     | Web Design                       | 1         | 0         | 2         | 1         | 2         | CIE: 100                            |    |     | 100        | --  |
| 07           | IKS         | HS-23001      | Communication Skills             | 2         | 0         | 0         | 0         | 2         | CIE: 100                            |    |     | --         | --  |
| 08           | CCA         | As per course | Liberal Learning -2              | 0         | 0         | 2         | 0         | 1         | --                                  | -- | --  | 100        | --  |
| <b>Total</b> |             |               |                                  | <b>13</b> | <b>00</b> | <b>12</b> | <b>06</b> | <b>20</b> |                                     |    |     |            |     |

Legends: **L**-Lecture, **T**-Tutorial, **P**-Practical, **S**-Self Study, **Cr**-Credits  
**ISE**-In-Semester-Evaluation, **ESE**-End-Semester-Evaluation, **MSE**-Mid-Semester Evaluation, **TA**-Teachers' Assessment, **CIE**-Continuous-Internal-Evaluation

**\*\* Exit option to qualify for Certification: 2 Courses on Web Technologies**

**S.Y. B. Tech.**  
**Computer Science and Engineering**  
**[Level 5, UG Diploma] Semester -III**

| Sr. No.      | Course Type | Course Code   | Course Name                                       | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|---------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                                                   |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                                                   |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PCC         | CTS-24008     | Microprocessors                                   | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PCC         | CTS-24007     | Principles of Programming Languages               | 2         | 0         | 2         | 1         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 03           | PCC         | CTS-24006     | Data Structures and Algorithms                    | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 04           | OE          | As per course | Open Elective-1                                   | 2         | 0         | 0         | 1         | 2         | 30                                  | 20 | 50  | --         | --  |
| 05           | AEC         | As per course | Language                                          | 2         | 0         | 0         | 1         | 2         | CIE: 100                            |    |     | --         | --  |
| 06           | HSMC        | HS-24001      | Entrepreneurship                                  | 1         | 0         | 0         | 1         | 1         | CIE: 100                            |    |     | --         | --  |
| 07           | VEC         | CTS-24012     | Constitution of India and Universal Human Values  | 1         | 0         | 0         | 2         | 1         | CIE: 100                            |    |     | --         | --  |
| 08           | CEA         | AS-24004      | Community Engagement Activity (CEA)/Field Project | 0         | 0         | 0         | 0         | 2         | --                                  |    |     | 100        | --  |
| <b>Total</b> |             |               |                                                   | <b>14</b> | <b>00</b> | <b>06</b> | <b>08</b> | <b>19</b> |                                     |    |     |            |     |

**[Level 5, UG Diploma] Semester -IV**

| Sr. No.      | Course Type | Course Code   | Course Name                            | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|----------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                                        |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                                        |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PCC         | CTS-24010     | Object Oriented Programming and Design | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PCC         | CTS-24009     | Computer Organization                  | 3         | 0         | 0         | 1         | 3         | 30                                  | 20 | 50  | --         | --  |
| 03           | PCC         | CTS-24011     | Theory of Computation                  | 3         | 1         | 0         | 1         | 4         | 30                                  | 20 | 50  | --         | --  |
| 04           | VSEC        | CTS-25006     | Development Tools Laboratory           | 0         | 0         | 2         | 0         | 1         | --                                  |    |     | 100        | --  |
| 05           | OE          | As per course | Open Elective-2                        | 2         | 0         | 0         | 1         | 2         | 30                                  | 20 | 50  | --         | --  |
| 06           | MDM         | As per course | Multidisciplinary Minor-1              | 3         | 0         | 0         | 1         | 3         | 30                                  | 20 | 50  | --         | --  |
| 07           | VEC         | AS-24002      | Environmental studies                  | 1         | 0         | 0         | 2         | 1         | CIE: 100                            |    |     | --         | --  |
| 08           | HSMC        | CTS-24013     | Design Thinking                        | 1         | 0         | 0         | 1         | 1         | CIE: 100                            |    |     | --         | --  |
| 09           | HSMC        | HS-25005      | Economics                              | 2         | 0         | 0         | 1         | 2         | CIE: 100                            |    |     | --         | --  |
| <b>Total</b> |             |               |                                        | <b>18</b> | <b>01</b> | <b>04</b> | <b>09</b> | <b>21</b> |                                     |    |     |            |     |

**Legends:** **L**-Lecture, **T**-Tutorial, **P**-Practical, **S**-Self Study, **Cr**-Credits, **ISE**-In-Semester-Evaluation, **ESE**-End-Semester-Evaluation, **MSE**-Mid-Semester-Evaluation, **TA**-Teachers' Assessment, **CIE**-Continuous-Internal Evaluation

**\*\* Exit option to qualify for UG Diploma:** Two courses of 3 Credits each

**S.Y. B. Tech. (Lateral Entry)**  
**Computer Science and Engineering**  
**[Level 5, UG Diploma] Semester -III**

| Sr. No.      | Course Type | Course Code   | Course Name                                     | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|-------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                                                 |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                                                 |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PCC         | CTS-24008     | Microprocessors                                 | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PCC         | CTS-24007     | Principles of Programming Languages             | 2         | 0         | 2         | 1         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 03           | PCC         | CTS-24006     | Data Structures and Algorithms                  | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 04           | OE          | As per course | Open Elective-1                                 | 2         | 0         | 0         | 1         | 2         | 30                                  | 20 | 50  | --         | --  |
| 05           | AEC         | As per course | Language                                        | 2         | 0         | 0         | 1         | 2         | CIE: 100                            |    |     | --         | --  |
| 06           | HSMC        | HS-24001      | Entrepreneurship                                | 1         | 0         | 0         | 1         | 1         | CIE: 100                            |    |     | --         | --  |
| 07           | VEC         | CTS-24012     | Constitution of India                           | 1         | 0         | 0         | 2         | 1         | CIE: 100                            |    |     | --         | --  |
| 08           | PCC         | MA-24001      | Matrices, Differential Calculus and Probability | 3         | 0         | 0         | 1         | 3         | 30                                  | 20 | 50  | --         | --  |
| <b>Total</b> |             |               |                                                 | <b>17</b> | <b>00</b> | <b>06</b> | <b>09</b> | <b>20</b> |                                     |    |     |            |     |

**[Level 5, UG Diploma] Semester -IV**

| Sr. No.      | Course Type | Course Code   | Course Name                            | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|----------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                                        |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                                        |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PCC         | CTS-24010     | Object Oriented Programming and Design | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PCC         | CTS-24009     | Computer Organization                  | 3         | 0         | 0         | 1         | 3         | 30                                  | 20 | 50  | --         | --  |
| 03           | PCC         | CTS-24011     | Theory of Computation                  | 3         | 1         | 0         | 1         | 4         | 30                                  | 20 | 50  | --         | --  |
| 04           | VSEC        | CTS-25006     | Development Tools Laboratory           | 0         | 0         | 2         | 0         | 1         | --                                  |    |     | 100        | --  |
| 05           | OE          | As per course | Open Elective-2                        | 2         | 0         | 0         | 1         | 2         | 30                                  | 20 | 50  | --         | --  |
| 06           | MDM         | As per course | Multidisciplinary Minor-1              | 3         | 0         | 0         | 1         | 3         | 30                                  | 20 | 50  | --         | --  |
| 07           | VEC         | AS-24002      | Environmental studies                  | 1         | 0         | 0         | 2         | 1         | CIE: 100                            |    |     | --         | --  |
| 08           | HSMC        | CTS-24013     | Design Thinking                        | 1         | 0         | 0         | 1         | 1         | CIE: 100                            |    |     | --         | --  |
| 09           | HSMC        | HS-25005      | Economics                              | 2         | 0         | 0         | 1         | 2         | CIE: 100                            |    |     | --         | --  |
| 10           | IKS         | HS-24007      | Communication Skills                   | 2         | 0         | 0         | 0         | 2         | CIE: 100                            |    |     | --         | --  |
| 11           | PCC         | CTS-24004     | Discrete Structures                    | 2         | 0         | 0         | 1         | 2         | CIE: 100                            |    |     | --         | --  |
| <b>Total</b> |             |               |                                        | <b>22</b> | <b>01</b> | <b>04</b> | <b>10</b> | <b>25</b> |                                     |    |     |            |     |

**Legends:** L-Lecture, T-Tutorial, P-Practical, S-Self Study, Cr-Credits, ISE-In-Semester-Evaluation, ESE-End-Semester-Evaluation, MSE-Mid-Semester-Evaluation, TA-Teachers' Assessment, CIE-Continuous-Internal Evaluation

**\*\* Exit option to qualify for UG Diploma:** Two courses of 3 Credits each

**T.Y. B. Tech.**  
**Computer Science and Engineering**  
**[Level 5.5, B. Voc.] Semester -V**

| Sr. No.      | Course Type | Course Code   | Course Name                 | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|-----------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                             |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                             |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PCC         | CT-25001      | Software Engineering        | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PCC         | CT-25002      | Database Management Systems | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 03           | PCC         | CT-25003      | Operating Systems           | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 04           | PEC         | As per course | Programme Elective-1        | 2         | 0         | 2         | 1         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 05           | OE          | As per course | Open Elective-3             | 2         | 0         | 0         | 1         | 2         | 30                                  | 20 | 50  | --         | --  |
| 06           | OJT         | CT-25004      | Internship                  | --        | --        | 2         | --        | 1         | --                                  | -- | --  | 100        | --  |
| 07           | VSEC        | CT-25005      | Project Stage-1             | --        | --        | 4         | --        | 2         | --                                  | -- | --  | 100        | --  |
| 08           | MDM         | As per course | Multidisciplinary Minor-2   | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| <b>Total</b> |             |               |                             | <b>16</b> | <b>00</b> | <b>16</b> | <b>06</b> | <b>24</b> |                                     |    |     |            |     |

**[Level 5.5, B. Voc.] Semester -VI**

| Sr. No.      | Course Type | Course Code   | Course Name                       | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|---------------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |               |                                   |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |               |                                   |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PCC         | CT-25006      | Computer Networks                 | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PCC         | CT-25007      | Design and Analysis of Algorithms | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 03           | PCC         | CT-25008      | Artificial Intelligence           | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 04           | PEC         | As per course | Programme Elective-2              | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 05           | RM          | CT-25009      | Research Methodology              | 2         | 0         | 0         | 1         | 2         | --                                  | -- | --  | --         | --  |
| 06           | VSEC        | CT-25010      | Project Stage-2                   | 0         | 0         | 4         | --        | 2         | --                                  | -- | --  | 100        | --  |
| 07           | MDM         | As per course | Multidisciplinary Minor-3         | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| <b>Total</b> |             |               |                                   | <b>17</b> | <b>00</b> | <b>14</b> | <b>06</b> | <b>24</b> |                                     |    |     |            |     |

**\*\* Exit option to qualify for B.Voc.:** Mini Project / Internship (8 weeks)

**Final Year B. Tech.**  
**Computer Science and Engineering**  
**[Level 6, UG Degree] Semester -VII**

| Sr. No.      | Course Type | Course Code | Course Name                       | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|-------------|-----------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |             |                                   |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |             |                                   |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PCC         | <TBD>       | Compiler Construction             | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PCC         | <TBD>       | Cryptography and Network Security | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 03           | PEC         | <TBD>       | Programme Elective-3              | 3         | 0         | 2         | 1         | 4         | 30                                  | 20 | 50  | 100        | --  |
| 04           | OJT         | <TBD>       | Internship                        | 0         | 0         | 0         | 0         | 1         | --                                  | -- | --  | 100        | --  |
| 05           | VSEC        | <TBD>       | Project Stage-3                   | 0         | 0         | 10        | 0         | 5         | --                                  | -- | --  | 60         | 40  |
| 06           | MD M        | <TBD>       | Multidisciplinary Minor-4         | 3         | 0         | 0         | 1         | 3         | 30                                  | 20 | 50  | --         | --  |
| <b>Total</b> |             |             |                                   | <b>12</b> | <b>00</b> | <b>16</b> | <b>04</b> | <b>21</b> |                                     |    |     |            |     |

**[Level 6, UG Degree] Semester -VIII**

**Scheme A**

| Sr. No.      | Course Type | Course Code | Course Name          | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|-------------|----------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |             |                      |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |             |                      |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PEC         | <TBD>       | Programme Elective-4 | 2         | 0         | 2         | 0         | 3         | 30                                  | 20 | 50  | 100        | --  |
| 02           | PEC         | <TBD>       | Programme Elective-5 | 3         | 0         | 0         | 0         | 3         | 30                                  | 20 | 50  | --         | --  |
| 03           | OJT         | <TBD>       | In-house Internship  | 0         | 0         | 0         | 0         | 5         | --                                  | -- | --  | 100        | --  |
| <b>Total</b> |             |             |                      | <b>05</b> | <b>00</b> | <b>02</b> | <b>00</b> | <b>11</b> |                                     |    |     |            |     |

**Scheme B**

| Sr. No.      | Course Type | Course Code | Course Name         | L         | T         | P         | S         | Cr        | Evaluation Scheme (Weightages in %) |    |     |            |     |
|--------------|-------------|-------------|---------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|----|-----|------------|-----|
|              |             |             |                     |           |           |           |           |           | Theory                              |    |     | Laboratory |     |
|              |             |             |                     |           |           |           |           |           | MSE                                 | TA | ESE | CIE        | ESE |
| 01           | PEC         | <TBD>       | MOOC-1              | 3         | 0         | 0         | 0         | 3         | --                                  | 25 | 75  | --         | --  |
| 02           | PEC         | <TBD>       | MOOC-2              | 3         | 0         | 0         | 0         | 3         | --                                  | 25 | 75  | --         | --  |
| 03           | OJT         | <TBD>       | Industry Internship | 0         | 0         | 0         | 0         | 5         | --                                  | -- | --  | 100        | --  |
| <b>Total</b> |             |             |                     | <b>06</b> | <b>00</b> | <b>00</b> | <b>00</b> | <b>11</b> |                                     |    |     |            |     |

## DEPARTMENT ELECTIVES

|                                      | <b>PEC-1</b>                                     | <b>PEC-2</b>                                                          | <b>PEC-3</b>                                     | <b>PEC-4</b>                              | <b>PEC-5</b>                                       |
|--------------------------------------|--------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------|----------------------------------------------------|
| <b>Tracks</b>                        | <b>Sem-5</b>                                     | <b>Sem-6</b>                                                          | <b>Sem-7</b>                                     | <b>Sem-8</b>                              | <b>Sem-8</b>                                       |
| <b>System Software/<br/>Hardware</b> | Cloud Computing<br><br>Parallel Computing        | Kernel Design and Kernel Internals<br><br>Advanced System programming | System Administration<br><br>GPU Computing       | Multicore Technology<br><br>DevOps        | Embedded Systems<br><br>Storage and Virtualization |
| <b>Networking and Security</b>       | Mobile and Ad-hoc Networks<br><br>Remote Sensing | Block Chain Technologies<br><br>Geographical Information Systems      | Internet of Things                               | Distributed Systems<br><br>Cyber Security | Computer Forensics and Data Recovery               |
| <b>Artificial Intelligence</b>       | Data-Science                                     | Machine Learning                                                      | Deep Learning<br><br>Natural Language Processing | Large Language Model                      | Generative AI                                      |
| <b>Algorithms and Programming</b>    | Advanced Data Structures                         | Functional Programming<br><br>Advanced Database Management Systems    | Parallel Algorithms                              | Graphics and Multimedia                   | Software Design Patterns                           |

## MULTIDISCIPLINARY MINORS

| Semester | Course Code | Course Title                                                                                                   | L | T | P | S | Cr |
|----------|-------------|----------------------------------------------------------------------------------------------------------------|---|---|---|---|----|
| IV       | MDM-01      | Data Structures, Files and Algorithms                                                                          | 3 | 0 | 0 | 1 | 3  |
| V        | MDM-02      | Artificial Intelligence (Machine Learning and Deep Learning Mastery)                                           | 3 | 0 | 2 | 1 | 4  |
| V        | MDM-02      | Introduction to Quantum Computing                                                                              | 3 | 0 | 2 | 1 | 4  |
| V        | MDM-02      | Object oriented Programming                                                                                    | 3 | 0 | 2 | 1 | 4  |
| VI       | MDM-03      | Artificial Intelligence (Natural Language Processing (NLP) and Computer Vision (CV) Mastery, Capstone Project) | 3 | 0 | 2 | 1 | 4  |
| VI       | MDM-03      | Quantum Algorithms and Applications                                                                            | 3 | 0 | 2 | 1 | 4  |
| VI       | MDM-03      | Fundamentals of Database Management Systems                                                                    | 3 | 0 | 2 | 1 | 4  |
| VII      | MDM-04      | Large Language Models Theory and Deployment                                                                    | 3 | 0 | 0 | 1 | 3  |
| VII      | MDM-04      | Quantum Programming and Project                                                                                | 3 | 0 | 0 | 1 | 3  |
| VII      | MDM-04      | Advanced Database Management Systems                                                                           | 3 | 0 | 0 | 1 | 3  |

## OPEN ELECTIVES

| Semester | Course Code | Course Title                                                  | L | T | P | S | Cr |
|----------|-------------|---------------------------------------------------------------|---|---|---|---|----|
| III      | OE-01       | Data Analytics                                                | 2 | 0 | 0 | 1 | 2  |
| IV       | OE-02       | Fundamentals of Operating Systems/ Fundamentals of Algorithms | 2 | 0 | 0 | 1 | 2  |
| V        | OE-03       | Fundamentals of Machine Learning                              | 2 | 0 | 0 | 1 | 2  |

## HONORS

### Data Science

| Sem          | Course Type | Course Code | Course Name            | L         | T         | P         | S         | Cr        | Evaluation Scheme |    |     |            |     |
|--------------|-------------|-------------|------------------------|-----------|-----------|-----------|-----------|-----------|-------------------|----|-----|------------|-----|
|              |             |             |                        |           |           |           |           |           | Theory            |    |     | Laboratory |     |
|              |             |             |                        |           |           |           |           |           | MSE               | TA | ESE | ISE        | ESE |
| III          | HON-01      |             | Making Sense of Data   | 3         | 0         | 0         | 1         | 3         | 30                | 20 | 50  | --         | --  |
| IV           | HON-02      |             | Big Data Analytics     | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| V            | HON-03      |             | Data Mining            | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| VI           | HON-04      |             | Reinforcement Learning | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| VII          | HON-05      |             | Explainable AI         | 3         | 0         | 0         | 1         | 3         | 30                | 20 | 50  | --         | --  |
| <b>Total</b> |             |             |                        | <b>15</b> | <b>00</b> | <b>06</b> | <b>05</b> | <b>18</b> |                   |    |     |            |     |

### Cyber Security

| Sem          | Course Type | Course Code | Course Name                                   | L         | T         | P         | S         | Cr        | Evaluation Scheme |    |     |            |     |
|--------------|-------------|-------------|-----------------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------|----|-----|------------|-----|
|              |             |             |                                               |           |           |           |           |           | Theory            |    |     | Laboratory |     |
|              |             |             |                                               |           |           |           |           |           | MSE               | TA | ESE | ISE        | ESE |
| III          | HON-01      |             | Fundamentals of Information and Coding Theory | 3         | 0         | 0         | 1         | 3         | 30                | 20 | 50  | --         | --  |
| IV           | HON-02      |             | Ethical Hacking                               | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| V            | HON-03      |             | Malware Analysis                              | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| VI           | HON-04      |             | IOT Security                                  | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| VII          | HON-05      |             | Cyber Laws                                    | 3         | 0         | 0         | 1         | 3         | 30                | 20 | 50  | --         | --  |
| <b>Total</b> |             |             |                                               | <b>15</b> | <b>00</b> | <b>06</b> | <b>05</b> | <b>18</b> |                   |    |     |            |     |

## INTERDISCIPLINARY MINOR

### Computer Engineering

| Sem          | Course Type | Course Code | Course Name                                | L         | T         | P         | S         | Cr        | Evaluation Scheme |    |     |            |     |
|--------------|-------------|-------------|--------------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------|----|-----|------------|-----|
|              |             |             |                                            |           |           |           |           |           | Theory            |    |     | Laboratory |     |
|              |             |             |                                            |           |           |           |           |           | MSE               | TA | ESE | ISE        | ESE |
| III          | IDP-01      |             | Fundamentals of Software Engineering       | 3         | 0         | 0         | 1         | 3         | 30                | 20 | 50  | --         | --  |
| IV           | IDP-02      |             | Fundamentals of Programming and Algorithms | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| V            | IDP-03      |             | Fundamentals of Computer Networks          | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| VI           | IDP-04      |             | Fundamentals of System Programming         | 3         | 0         | 2         | 1         | 4         | 30                | 20 | 50  | 50         | 50  |
| VII          | IDP-05      |             | Fundamentals of Cyber Security             | 3         | 0         | 0         | 1         | 3         | 30                | 20 | 50  | --         | --  |
| <b>Total</b> |             |             |                                            | <b>15</b> | <b>00</b> | <b>06</b> | <b>05</b> | <b>18</b> |                   |    |     |            |     |