

**SCHEME OF INSTRUCTION**  
**BE (COMPUTER SCIENCE AND ENGINEERING)**  
**AICTE MODEL CURRICULUM**  
**Proposed from the Academic year 2018-19**

**CSE: SEMESTER – I (2018-19)**

| S. No.                       | Course Code                    | Course Title                     | Scheme of Instructions |    |            |                           | Scheme of Examination |     |                      | Credits |
|------------------------------|--------------------------------|----------------------------------|------------------------|----|------------|---------------------------|-----------------------|-----|----------------------|---------|
|                              |                                |                                  | L                      | T  | Pr/<br>Drg | Contact<br>Hours/<br>Week | CIE                   | SEE | Duration<br>in Hours |         |
| Theory Course                |                                |                                  |                        |    |            |                           |                       |     |                      |         |
| 1                            | Three Week Induction Programme |                                  |                        |    |            |                           | -                     | -   | -                    | -       |
| 2                            | BS101MT                        | Mathematics-I                    | 3                      | 1  | -          | 4                         | 30                    | 70  | 3                    | 4       |
| 3                            | BS103PH                        | Physics                          | 3                      | 1  | -          | 4                         | 30                    | 70  | 3                    | 4       |
| 4                            | ES101EE                        | Basic Electrical Engineering     | 3                      | 1  | -          | 4                         | 30                    | 70  | 3                    | 4       |
| Practical/ Laboratory Course |                                |                                  |                        |    |            |                           |                       |     |                      |         |
| 5                            | BS153PH                        | Physics Lab                      | -                      | -  | 3          | 3                         | 25                    | 50  | 3                    | 1.5     |
| 6                            | ES151EE                        | Basic Electrical Engineering Lab | -                      | -  | 2          | 2                         | 25                    | 50  | 3                    | 1       |
| 7                            | ES153CE                        | Engineering Graphics & Design    | 1                      | -  | 4          | 5                         | 50                    | 50  | 3                    | 3       |
| Total                        |                                |                                  | 10                     | 03 | 09         | 22                        | 190                   | 360 |                      | 17.5    |

**CSE: SEMESTER – II**

| S. No             | Course Code | Course Title                    | Scheme of Instruction |          |           |                | Scheme of Examination |            |             |
|-------------------|-------------|---------------------------------|-----------------------|----------|-----------|----------------|-----------------------|------------|-------------|
|                   |             |                                 | L                     | T        | P         | Contact Hrs/Wk | CIE                   | SEE        | Credits     |
| 1.                | HS101EG     | English                         | 2                     | -        | -         | 2              | 30                    | 70         | 2           |
| 2.                | BS102MT     | Mathematics-II                  | 3                     | 1        | -         | 4              | 30                    | 70         | 4           |
| 3.                | BS104CH     | Chemistry                       | 3                     | 1        | -         | 4              | 30                    | 70         | 4           |
| 4.                | ES102CS     | Programming for Problem Solving | 3                     | -        | -         | 3              | 30                    | 70         | 3           |
| <b>Practicals</b> |             |                                 |                       |          |           |                |                       |            |             |
| 5.                | HS151EG     | English Lab                     |                       |          | 2         |                | 25                    | 50         | 1           |
| 6.                | BS154CH     | Chemistry Lab                   |                       |          | 3         | 3              | 25                    | 50         | 1.5         |
| 7                 | ES152CS     | Programming for Problem Solving |                       |          | 4         | 4              | 25                    | 50         | 2           |
| 8.                | ES154ME     | Workshop/ Manufacturing Process | 1                     | -        | 4         | 5              | 50                    | 50         | 3           |
| <b>Total</b>      |             |                                 | <b>12</b>             | <b>2</b> | <b>13</b> | <b>25</b>      | <b>245</b>            | <b>480</b> | <b>20.5</b> |

**CSE: SEMESTER – III (2019-2020)**

| S. No.                        | Course Code | Course Title                            | Scheme of Instruction |   |     |                | Scheme of Examination |     |                 | Credits |
|-------------------------------|-------------|-----------------------------------------|-----------------------|---|-----|----------------|-----------------------|-----|-----------------|---------|
|                               |             |                                         | L                     | T | P/D | Contact Hrs/Wk | CIE                   | SEE | Duration in Hrs |         |
| Theory Courses                |             |                                         |                       |   |     |                |                       |     |                 |         |
| 1                             | MC112CE     | Environmental Science                   | 2                     | - | -   | 2              | 30                    | 70  | 3               | -       |
| 2                             | MC113PY     | Essence of Indian Traditional Knowledge | 2                     | - | -   | 2              | 30                    | 70  | 3               | -       |
| 3                             | HS204ME     | Operations Research                     | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 4                             | BS206BZ     | Biology for Engineers                   | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 5                             | ES214EC     | Basic Electronics                       | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 6                             | ES216EC     | Digital Electronics                     | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 7                             | PC221CS     | Data Structures and Algorithms          | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 8                             | PC222CS     | Discrete Mathematics                    | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 9                             | PC223CS     | Programming Languages                   | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| Practical/ Laboratory Courses |             |                                         |                       |   |     |                |                       |     |                 |         |
| 10                            | ES251EC     | Basic Electronics Lab                   | -                     | - | 2   | 2              | 25                    | 50  | 3               | 1       |
| 11                            | PC252CS     | Data Structures and Algorithms Lab      | -                     | - | 2   | 2              | 25                    | 50  | 3               | 1       |
| 12                            | PC253CS     | Advanced Computer Skills Lab            | -                     | - | 2   | 2              | 25                    | 50  | 3               | 1       |
|                               |             |                                         | 25                    | - | 06  | 31             | 345                   | 780 |                 | 24      |

**CSE: SEMESTER – IV (2019-20)**

| S. No.                        | Course Code | Course Title                                 | Scheme of Instruction |   |     |                | Scheme of Examination |     |                 | Credits |
|-------------------------------|-------------|----------------------------------------------|-----------------------|---|-----|----------------|-----------------------|-----|-----------------|---------|
|                               |             |                                              | L                     | T | P/D | Contact Hrs/Wk | CIE                   | SEE | Duration in Hrs |         |
| Theory Courses                |             |                                              |                       |   |     |                |                       |     |                 |         |
| 1                             | MC111PO     | Indian Constitution                          | 2                     | - | -   | 2              | 30                    | 70  | 3               | -       |
| 2                             | HS201EG     | Effective Technical Communication in English | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 3                             | HS202CM     | Finance and Accounting                       | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 4                             | BS207MT     | Mathematics – III (Probability & Statistics) | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 5                             | ES215EC     | Signals and Systems                          | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 6                             | PC231CS     | OOP using JAVA                               | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 7                             | PC232CS     | Computer Organization                        | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 8                             | PC233CS     | Database Management Systems                  | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| Practical/ Laboratory Courses |             |                                              |                       |   |     |                |                       |     |                 |         |
| 9                             | PC261CS     | Computer Organization Lab                    | -                     | - | 2   | 2              | 25                    | 50  | 3               | 1       |
| 10                            | PC262CS     | OOP using JAVA Lab                           | -                     | - | 2   | 2              | 25                    | 50  | 3               | 1       |
| 11                            | PC263CS     | Database Management Systems Lab              | -                     | - | 2   | 2              | 25                    | 50  | 3               | 1       |
|                               |             |                                              | 23                    | - | 06  | 29             | 315                   | 710 |                 | 24      |

**CSE - SEMESTER - V (Proposed for the academic year 2020-21)**

| S. No.                      | Course Code         | Course Title                     | Scheme of Instruction |    |     |                | Scheme of Examination |     |                 | Credits |
|-----------------------------|---------------------|----------------------------------|-----------------------|----|-----|----------------|-----------------------|-----|-----------------|---------|
|                             |                     |                                  | L                     | T  | D/P | Contact Hrs/Wk | CIE                   | SEE | Duration in Hrs |         |
| Theory Course               |                     |                                  |                       |    |     |                |                       |     |                 |         |
| 1.                          | PC 501 CS<br>Core-7 | Software Engineering             | 3                     | 1  | -   | 4              | 30                    | 70  | 3               | 3       |
| 2.                          | PC 502 CS<br>Core-8 | Operating Systems                | 3                     | 1  | -   | 4              | 30                    | 70  | 3               | 3       |
| 3.                          | PC 503 CS<br>Core-9 | Automata Languages & Computation | 3                     | 1  | -   | 4              | 30                    | 70  | 3               | 3       |
| 4.                          | PE-I                | Professional Elective-I          | 3                     | -  | -   | 3              | 30                    | 70  | 3               | 3       |
| 5.                          | PE-II               | Professional Elective-II         | 3                     | -  | -   | 3              | 30                    | 70  | 3               | 3       |
| 6.                          | PE-III              | Professional Elective-III        | 3                     | -  | -   | 3              | 30                    | 70  | 3               | 3       |
| Practical/Laboratory Course |                     |                                  |                       |    |     |                |                       |     |                 |         |
| 7.                          | PC531 CS            | Software Engineering Lab         | -                     | -  | 2   | 2              | 25                    | 50  | 3               | 1.5     |
| 8.                          | PC532 CS            | Operating Systems Lab            | -                     | -  | 2   | 2              | 25                    | 50  | 3               | 1.5     |
| 9.                          | PW 533 CS           | Mini Project                     | -                     | -  | 2   | 2              | 25                    | 50  | 3               | 1       |
| Total                       |                     |                                  | 18                    | 03 | 06  | 27             | 255                   | 570 |                 | 22      |

| Profession Elective – I |                                |
|-------------------------|--------------------------------|
| Course Code             | Course Title                   |
| PE 511 CS               | Artificial Intelligence        |
| PE 512 CS               | Advanced Computer Architecture |
| PE 513 CS               | Image Processing               |

| Profession Elective – II |                  |
|--------------------------|------------------|
| Course Code              | Course Title     |
| PE 527 CS                | Web Technologies |
| PE 528 CS                | Embedded Systems |
| PE 529 CS                | Graph Theory     |
| PE 530 CS                | Data Analytics   |

| Profession Elective – III |                               |
|---------------------------|-------------------------------|
| Course Code               | Course Title                  |
| PE 523 CS                 | Block Chain Technologies      |
| PE 524 CS                 | Information Retrieval Systems |
| PE 525 CS                 | Soft Computing                |
| PE 526 CS                 | Computer Graphics             |

**CSE - SEMESTER - VI (Proposed for the academic year 2020-21)**

| S. No                       | Course Code          | Course Title                          | Scheme of Instruction |   |     |                | Scheme of Examination |     |                    | Credits |
|-----------------------------|----------------------|---------------------------------------|-----------------------|---|-----|----------------|-----------------------|-----|--------------------|---------|
|                             |                      |                                       | L                     | T | D/P | Contact Hrs/Wk | CIE                   | SEE | Duration in Hrs/Wk |         |
| Theory Course               |                      |                                       |                       |   |     |                |                       |     |                    |         |
| 1.                          | PC 601 CS<br>Core-10 | Compiler Design                       | 3                     | 1 | -   | 4              | 30                    | 70  | 3                  | 3       |
| 2.                          | PC 602 CS<br>Core-11 | Computer Networks                     | 3                     | 1 | -   | 4              | 30                    | 70  | 3                  | 3       |
| 3.                          | PC 603 CS<br>Core 12 | Design and Analysis of Algorithms     | 3                     | 1 | -   | 3              | 30                    | 70  | 3                  | 3       |
| 4.                          | PE –IV               | Professional Elective -IV             | 3                     | - | -   | 3              | 30                    | 70  | 3                  | 3       |
| 5                           | PE –V                | Professional Elective -V              | 3                     | - | -   | 3              | 30                    | 70  | 3                  | 3       |
| 6                           | OE-I                 | Open Elective-I                       | 3                     | - | -   | -              | 30                    | 70  | 3                  | 3       |
| 7                           | MC                   | Gender Sensitization                  | 3                     | - | -   | 3              | 30                    | 70  | 3                  | -       |
| Practical/Laboratory Course |                      |                                       |                       |   |     |                |                       |     |                    |         |
| 8                           | PC631 CS             | Compiler Design Lab                   | -                     | - | 2   | 2              | 25                    | 50  | 3                  | 1       |
| 9                           | PC632 CS             | Computer Networks Lab                 | -                     | - | 2   | 2              | 25                    | 50  | 3                  | 1       |
| 10                          | PC 633 CS            | Design and Analysis of Algorithms Lab | -                     | - | 2   | 2              | 25                    | 50  | 3                  | 1       |
| 11                          | SI 671 IT            | Summer Internship*                    | -                     | - | -   | -              | -                     | -   | -                  | -       |
| Total                       |                      |                                       | 18                    | 3 | 6   | 27             | 205                   | 570 |                    | 21      |

| Profession Elective – IV |                             |
|--------------------------|-----------------------------|
| Course Code              | Course Title                |
| PE 627CS                 | Advanced Operating Systems  |
| PE 628 CS                | Cloud Computing             |
| PE 629 CS                | Natural Language Processing |
| PE 630 CS                | Machine Learning            |

| Profession Elective – V |                            |
|-------------------------|----------------------------|
| Course Code             | Course Title               |
| PE 723 CS               | Data Mining                |
| PE 724 CS               | Human Computer Interaction |
| PE 725 CS               | Digital Forensics          |
| PE 726 CS               | Internet of things         |

| Open Elective - I |                                                         |
|-------------------|---------------------------------------------------------|
| Course Code       | Course Title                                            |
| OE 601            | Soft Skills & Interpersonal Skills                      |
| OE 602            | Human Resource Development and Organizational Behaviour |
| OE 601            | Cyber Law and Ethics                                    |

## CSE - SEMESTER - VII

| S. No.                        | Course Code       | Course Title               | Scheme of Instruction |    |     |                | Scheme of Examination |     |                 | Credits |
|-------------------------------|-------------------|----------------------------|-----------------------|----|-----|----------------|-----------------------|-----|-----------------|---------|
|                               |                   |                            | L                     | T  | P/D | Contact Hrs/Wk | CIE                   | SEE | Duration in Hrs |         |
| Theory Courses                |                   |                            |                       |    |     |                |                       |     |                 |         |
| 1                             | PC 701 CS Core-13 | Information Security       | 3                     | -  | -   | 4              | 30                    | 70  | 3               | 3       |
| 2                             | PC 702 CS Core-14 | CORE-14                    | 3                     | 1  | -   | 4              | 30                    | 70  | 3               | 3       |
| 3                             | PC 703 CS Core-15 | Distributed Systems        | 3                     | 1  | -   | 3              | 30                    | 70  | 3               | 3       |
| 4                             | PE-VI             | Professional Elective – VI | 3                     | -  | -   | 3              | 30                    | 70  | 3               | 3       |
| 5.                            | MC                | NSS/Sports/Yoga            | -                     | -  | 3   | 3              | 50                    | -   | -               | 0       |
| Practical/ Laboratory Courses |                   |                            |                       |    |     |                |                       |     |                 |         |
| 5                             | PC 751 CS         | Distributed Systems Lab    | -                     | -  | 3   | 3              | 25                    | 50  | 3               | 1       |
| 6                             | PC 752 CS         | Data Mining Lab            | -                     | -  | 3   | 3              | 25                    | 50  | 3               | 1       |
| 7                             | PW 761 CS         | Project Work – I           | -                     | -  | 4   | 4              | 50                    | -   | -               | 2       |
| 8                             | SI 762 CS         | Summer Internship          | `                     | -  | -   | -              | 50                    | -   | -               | 2       |
|                               |                   |                            | 12                    | 02 | 13  | 28             | 290                   | 310 |                 | 18      |

| Professional Elective – VI |                              |
|----------------------------|------------------------------|
| Course Code                | Course Title                 |
| PE 727 CS                  | Mobile Computing             |
| PE 728 CS                  | Semantic Web                 |
| PE 729 CS                  | Web Security /Cyber Security |

**CS - SEMESTER - VIII**

| S. No.                        | Course Code | Course Title        | Scheme of Instruction |   |     |                | Scheme of Examination |     |                 | Credits |
|-------------------------------|-------------|---------------------|-----------------------|---|-----|----------------|-----------------------|-----|-----------------|---------|
|                               |             |                     | L                     | T | P/D | Contact Hrs/Wk | CIE                   | SEE | Duration in Hrs |         |
| Theory Courses                |             |                     |                       |   |     |                |                       |     |                 |         |
| 1                             | OE-II       | Open Elective – II  | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| 2                             | OE-III      | Open Elective – III | 3                     | - | -   | 3              | 30                    | 70  | 3               | 3       |
| Practical/ Laboratory Courses |             |                     |                       |   |     |                |                       |     |                 |         |
| 3                             | PW861 CS    | Project Work – II   | -                     | - | 16  | 16             | 50                    | 100 | -               | 8       |
|                               |             |                     | 06                    | - | 16  | 22             | 160                   | 240 | 06              | 14      |

| Open Elective – II |                    |                                  | Open Elective – III |                    |                                            |
|--------------------|--------------------|----------------------------------|---------------------|--------------------|--------------------------------------------|
| S. No.             | Course Code        | Course Title                     | S. No.              | Course Code        | Course Title                               |
| 1                  | <b>OE 771 CE</b>   | Green Building Technologies      | 1                   | <b>OE 781 CE</b>   | Road Safety Engineering                    |
| 2                  | <b>OE 772 CS**</b> | Data Science Using R Programming | 2                   | <b>OE 782 IT**</b> | Software Engineering                       |
| 3                  | <b>OE 773 EC</b>   | Fundamentals of IoT              | 3                   | <b>OE 783 EC</b>   | Principles of Electronic Communications    |
| 4                  | <b>OE 774 EE</b>   | Non-Conventional Energy Sources  | 4                   | <b>OE 784 EE</b>   | Illumination and Electric Traction systems |
| 5                  | <b>OE 775 ME</b>   | Entrepreneurship                 | 5                   | <b>OE 785 ME</b>   | Mechatronics                               |
| 6                  | <b>OE 876 IT</b>   | Cyber Security                   |                     |                    |                                            |

| S.No | Course Work-<br>Subject Area                                                   | Credits/Semester  |                   |                    |                    |                    |                    |                    |                 | Total Credits |
|------|--------------------------------------------------------------------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------|---------------|
|      |                                                                                | I                 | II                | III                | IV                 | V                  | VI                 | VII                | VIII            |               |
| 1.   | Humanities and<br>Social Sciences<br>(HS) -<br><b>AICTE -12</b>                | -                 | <b>3</b><br>(1+1) | <b>6</b><br>(3+3)  | <b>3</b><br>(1)    |                    | -                  | -                  | -               | <b>11</b>     |
| 2.   | Basic Sciences<br>(BS)<br><b>AICTE -24</b>                                     | 9.5<br>(2+1)      | 9.5<br>(2+1)      | <b>3</b><br>(1)    | <b>3</b><br>(1)    | -                  | -                  | -                  | -               | <b>25</b>     |
| 3.   | Engineering<br>Sciences (ES)<br><b>AICTE-29</b>                                | <b>8</b><br>(2+1) | <b>8</b><br>(1+2) | <b>7</b><br>(2+1)  | <b>3</b><br>(1)    | -                  | -                  | -                  | -               | <b>26</b>     |
| 4.   | Professional<br>Subjects- Core<br>(PC)<br><b>AICTE-49</b>                      | -                 | -                 | <b>11</b><br>(3+2) | <b>12</b><br>(3+3) | <b>12</b><br>(3+3) | <b>12</b><br>(3+3) | <b>11</b><br>(3+2) |                 | <b>58</b>     |
| 5.   | Professional<br>Subject-<br>Electives (PE*)<br><b>AICTE-18</b>                 | -                 | -                 | -                  | -                  | 9<br>(3)           | <b>6</b><br>(2)    | <b>3</b><br>(1)    |                 | <b>18</b>     |
| 6.   | Open Subjects-<br>Electives (OE)<br><b>AICTE-12</b>                            | -                 | -                 | -                  | -                  | -                  | <b>3</b><br>(1)    | -                  | <b>6</b><br>(2) | <b>09</b>     |
| 7.   | Mini Project,<br>Project Work-I<br>and II and<br>Internship<br><b>AICTE-15</b> | -                 | -                 | -                  | -                  | 1                  | -                  | <b>4</b>           | <b>8</b>        | <b>13</b>     |
|      | <b>TOTAL</b>                                                                   | <b>17.5</b>       | <b>20.5</b>       | <b>24</b>          | <b>24</b>          | <b>21</b>          | <b>21</b>          | <b>18</b>          | <b>14</b>       | <b>160</b>    |
| 8.   | Mandatory<br>Courses (MC)<br>(Non-Credit)<br><b>8 Units</b>                    |                   |                   | <b>3</b><br>(1)    | <b>6</b><br>(2)    | 3<br>(3U)          |                    |                    |                 | <b>12</b>     |