

**Total Credits CSE-DS**  
[REGULAR Students]

| Sr. No.         | Course Type | Course Code | Course Name                           | Teaching Scheme |    |     | Credits |
|-----------------|-------------|-------------|---------------------------------------|-----------------|----|-----|---------|
|                 |             |             |                                       | L               | T  | P   |         |
| Semester - I    |             |             | Total Academic Engagement and Credits | 13              | 1  | 12  | 20      |
|                 |             |             |                                       |                 |    |     |         |
| Semester – II   |             |             |                                       | 13              | 1  | 12  | 20      |
|                 |             |             |                                       |                 |    |     |         |
| Semester – III  |             |             |                                       | 11              | 5  | 10  | 21      |
|                 |             |             |                                       |                 |    |     |         |
| Semester – IV   |             |             |                                       | 11              | 3  | 16  | 22      |
|                 |             |             |                                       |                 |    |     |         |
| Semester – V    |             |             |                                       | 13              | 3  | 12  | 22      |
|                 |             |             |                                       |                 |    |     |         |
| Semester – VI   |             |             |                                       | 12              | 4  | 14  | 23      |
|                 |             |             |                                       |                 |    |     |         |
| Semester – VII  |             |             |                                       | 9               | 3  | 20  | 22      |
|                 |             |             |                                       |                 |    |     |         |
| Semester – VIII |             |             |                                       | 4               | 2  | 20  | 16      |
|                 |             |             |                                       |                 |    |     |         |
| Total           |             |             |                                       | 86              | 22 | 116 | 166     |

**Total Credits**  
[LATERAL ENTRY Students]

| Sr. No.         | Course Type | Course Code | Course Name                           | Teaching Scheme |    |    | Credits |
|-----------------|-------------|-------------|---------------------------------------|-----------------|----|----|---------|
|                 |             |             |                                       | L               | T  | P  |         |
| Semester – III  |             |             | Total Academic Engagement and Credits | 11              | 5  | 10 | 21      |
|                 |             |             |                                       |                 |    |    |         |
| Semester – IV   |             |             |                                       | 11              | 3  | 16 | 22      |
|                 |             |             |                                       |                 |    |    |         |
| Semester – V    |             |             |                                       | 13              | 3  | 12 | 22      |
|                 |             |             |                                       |                 |    |    |         |
| Semester – VI   |             |             |                                       | 12              | 4  | 14 | 23      |
|                 |             |             |                                       |                 |    |    |         |
| Semester – VII  |             |             |                                       | 9               | 3  | 20 | 22      |
|                 |             |             |                                       |                 |    |    |         |
| Semester – VIII |             |             |                                       | 4               | 2  | 20 | 16      |
|                 |             |             |                                       |                 |    |    |         |
| Total           |             |             |                                       | 60              | 20 | 92 | 126     |

## COURSE DISTRIBUTION: SEMESTER WISE CSE-DS

| COURSE DISTRIBUTION: SEMESTER WISE |                                                                            |               |                         |    |    |    |    |    |   |   |         |                                    |
|------------------------------------|----------------------------------------------------------------------------|---------------|-------------------------|----|----|----|----|----|---|---|---------|------------------------------------|
| Sr No                              | Type of Course                                                             | Abbreviations | No. of Courses/Semester |    |    |    |    |    |   |   | Total   |                                    |
|                                    |                                                                            |               | 1                       | 2  | 3  | 4  | 5  | 6  | 7 | 8 | Regular | Lateral Entry from SEM III onwards |
| 1                                  | (a) Basic Science Courses                                                  | BSC           | 2                       | 2  | 1  | 1  | -  | -  | - | - | 8       | 2                                  |
|                                    | (b) Basic Science Laboratory Course                                        |               | 1                       | 1  | -  | -  | -  | -  | - | - |         |                                    |
| 2                                  | (a) Engineering Science Courses                                            | ESC           | 4                       | 3  | -  | -  | -  | -  | - | - | 12      | 0                                  |
|                                    | (b) Engineering Science Laboratory Courses                                 |               | 3                       | 2  | -  | -  | -  | -  | - | - |         |                                    |
| 3                                  | (a) Humanities and Social Sciences including Management Courses            | HSMC          | -                       | 1  | 1  | 1  | 1  | 1  | - | - | 7       | 4                                  |
|                                    | (b) Humanities and Social Sciences including Management Laboratory Courses |               | 1                       | 1  | -  | -  | -  | -  | - | - |         |                                    |
| 4                                  | (a) Professional Core Courses                                              | PCC           | -                       | -  | 4  | 3  | 3  | 3  | 1 | - | 26      | 26                                 |
|                                    | (b) Professional Core Laboratory Courses                                   | LC            | -                       | -  | 2  | 4  | 3  | 2  | 1 | - |         |                                    |
| 5                                  | (c) Professional Elective Courses                                          | PEC           | -                       | -  | -  | -  | 1  | 1  | 2 | 2 | 9       | 9                                  |
|                                    | (d) Professional Elective Laboratory Courses                               | LC-PEC        | -                       | -  | -  | -  | -  | -  | 2 | 1 |         |                                    |
| 6                                  | Inter-disciplinary Foundation Courses                                      | IFC           | -                       | -  | -  | 1  | 1  | -  | - | - | 2       | 2                                  |
| 7                                  | Skill Based Courses                                                        | SBC           | 1                       | 1  | 1  | 1  | 1  | -  | - | - | 5       | 3                                  |
| 8                                  | Liberal Learning Courses                                                   | LLC           | -                       | 1  | -  | 1  | -  | 1  | - | - | 3       | 2                                  |
| 9                                  | Inter-disciplinary Open Courses                                            | IOC           | -                       | -  | -  | -  | -  | 1  | 1 | - | 2       | 2                                  |
| 10                                 | Project Work & Internship                                                  | PROJ          | -                       | -  | -  | -  | 1  | 2  | 2 | 1 | 6       | 6                                  |
| 11                                 | Mandatory Learning Courses                                                 | MLC           | -                       | -  | 1  | 1  | 1  | 1  | - | - | 4       | 4                                  |
| Total                              |                                                                            |               | 12                      | 12 | 10 | 13 | 12 | 12 | 9 | 4 | 84      | 60                                 |

## CREDIT DISTRIBUTION: SEMESTER WISE CSE-DS

| CREDIT DISTRIBUTION: SEMESTER WISE |                                                                            |               |                         |    |    |                            |    |    |    |    |               |                                    |
|------------------------------------|----------------------------------------------------------------------------|---------------|-------------------------|----|----|----------------------------|----|----|----|----|---------------|------------------------------------|
| 1 Lecture hour = 1 Credit          |                                                                            |               | 2 Lab Hours = 1 Credit  |    |    | 1 Tutorial Hour = 1 Credit |    |    |    |    |               |                                    |
| Sr No                              | Type of Course                                                             | Abbreviations | No. of Credits/Semester |    |    |                            |    |    |    |    | Total Credits |                                    |
|                                    |                                                                            |               | 1                       | 2  | 3  | 4                          | 5  | 6  | 7  | 8  | Regular       | Lateral Entry from SEM III onwards |
| 1                                  | (a) Basic Science Courses                                                  | BSC           | 6                       | 6  | 3  | 3                          | -  | -  | -  | -  | 20            | 6                                  |
|                                    | (b) Basic Science Laboratory Course                                        |               | 1                       | 1  | -  | -                          | -  | -  | -  | -  |               |                                    |
| 2                                  | (a) Engineering Science Courses                                            | ESC           | 8                       | 6  | -  | -                          | -  | -  | -  | -  | 19            | 0                                  |
|                                    | (b) Engineering Science Laboratory Courses                                 |               | 3                       | 2  | -  | -                          | -  | -  | -  | -  |               |                                    |
| 3                                  | (a) Humanities and Social Sciences including Management Courses            | HSMC          | -                       | 2  | 1  | 1                          | 2  | 2  | -  | -  | 10            | 6                                  |
|                                    | (b) Humanities and Social Sciences including Management Laboratory Courses |               | 1                       | 1  | -  | -                          | -  | -  | -  | -  |               |                                    |
| 4                                  | (a) Professional Core Courses                                              | PCC           | -                       | -  | 12 | 9                          | 9  | 9  | 3  | -  | 56            | 56                                 |
|                                    | (b) Professional Core Laboratory Courses                                   | LC            | -                       | -  | 3  | 5                          | 3  | 2  | 1  | -  |               |                                    |
| 5                                  | (a) Professional Elective Courses                                          | PEC           | -                       | -  | -  | -                          | 3  | 2  | 6  | 6  | 21            | 21                                 |
|                                    | (b) Professional Elective Laboratory Courses                               | LC-PEC        | -                       | -  | -  | -                          | -  | -  | 2  | 2  |               |                                    |
| 6                                  | Inter-disciplinary Foundation Courses                                      | IFC           | -                       | -  | -  | 2                          | 2  | -  | -  | -  | 4             | 4                                  |
| 7                                  | Skill Based Courses                                                        | SBC           | 1                       | 1  | 2  | 1                          | 1  | -  | -  | -  | 6             | 4                                  |
| 8                                  | Liberal Learning Courses                                                   | LLC           | -                       | 1  | -  | 1                          | -  | 1  | -  | -  | 3             | 2                                  |
| 9                                  | Inter-disciplinary Open Courses                                            | IOC           | -                       | -  | -  | -                          | -  | 3  | 3  | -  | 6             | 6                                  |
| 10                                 | Project Work & Internship                                                  | PROJ          | -                       | -  | -  | -                          | 2  | 4  | 7  | 8  | 21            | 21                                 |
| 11                                 | Mandatory Learning Courses                                                 | MLC           | -                       | -  | -  | -                          | -  | -  | -  | -  | -             | -                                  |
| Total                              |                                                                            |               | 20                      | 20 | 21 | 22                         | 22 | 23 | 22 | 16 | 166           | 126                                |

## Course and Credit Distribution CSE-DS

| Sr. No. | Type of Course                                                             | Abbreviation | REGULAR        |               | LATERAL ENTRY<br>From SEM III onwards |               |
|---------|----------------------------------------------------------------------------|--------------|----------------|---------------|---------------------------------------|---------------|
|         |                                                                            |              | No. of Courses | Total credits | No. of Courses                        | Total credits |
| 1.      | (a) Basic Science Courses                                                  | BSC          | 8              | 20            | 2                                     | 6             |
|         | (b) Basic Science Laboratory Course                                        |              |                |               |                                       |               |
| 2.      | (a) Engineering Science Courses                                            | ESC          | 12             | 19            | 0                                     | 0             |
|         | (b) Engineering Science Laboratory Courses                                 |              |                |               |                                       |               |
| 3.      | (a) Humanities and Social Sciences including Management Courses            | HSMC         | 7              | 10            | 4                                     | 6             |
|         | (b) Humanities and Social Sciences including Management Laboratory Courses |              |                |               |                                       |               |
| 4.      | (a) Professional Core Courses                                              | PCC          | 26             | 56            | 26                                    | 56            |
|         | (b) Professional Core Laboratory Courses                                   | LC           |                |               |                                       |               |
| 5.      | (a) Professional Elective Courses                                          | PEC          | 9              | 21            | 9                                     | 21            |
|         | (b) Professional Elective Laboratory Courses                               | LC-PEC       |                |               |                                       |               |
| 6.      | Inter-disciplinary Foundation Courses                                      | IFC          | 2              | 4             | 2                                     | 4             |
| 7.      | Skill Based Courses                                                        | SBC          | 5              | 6             | 3                                     | 4             |
| 8.      | Liberal Learning Courses                                                   | LLC          | 3              | 3             | 2                                     | 2             |
| 9.      | Inter-disciplinary Open Courses                                            | IOC          | 2              | 6             | 2                                     | 6             |
| 10.     | Project Work & Internship                                                  | PROJ         | 6              | 21            | 6                                     | 21            |
| 11.     | Mandatory Learning Courses                                                 | MLC          | 4              | -             | 4                                     | -             |
| Total   |                                                                            |              | 84             | 166           | 60                                    | 126           |

### Semester-I

| S.No.         | Course Type | Course Code | Course Title                         | Hrs./ Week                             |   |   | Credits |
|---------------|-------------|-------------|--------------------------------------|----------------------------------------|---|---|---------|
|               |             |             |                                      | L                                      | T | P |         |
| 1             | BSC         | MA01        | Linear Algebra                       | 2                                      | 1 | - | 3       |
| 2             | BSC         | PY01        | Optics & Modern Physics              | 3                                      | - | - | 3       |
| 3             | ESC         | ME01        | Engineering Graphics & Visualization | 2                                      | - | - | 2       |
| 4             | ESC         | CE01        | Basic Civil Engineering              | 2                                      | - | - | 2       |
| 5             | ESC         | EC01        | Basic Electronics Engineering        | 2                                      | - | - | 2       |
| 6             | ESC         | CS01        | Programming for Problem Solving      | 2                                      | - | - | 2       |
| 7             | BSC         | PY01(P)     | Optics & Modern Physics Lab          | -                                      | - | 2 | 1       |
| 8             | ESC         | ME01(P)     | Engineering Graphics Lab             | -                                      | - | 2 | 1       |
| 9             | ESC         | CE01(P)     | Basic Civil Engineering Lab          | -                                      | - | 2 | 1       |
| 10            | ESC         | CS01(P)     | Programming for Problem Solving Lab  | -                                      | - | 2 | 1       |
| 11            | SBC         | EC01(P)     | Electronics and Computer Workshop    | -                                      | - | 2 | 1       |
| 12            | LLC         | LLC01       | Liberal Learning Course-I            | Credits to be added in Second Semester |   |   |         |
| 13            | HSMC        | HS01        | Design Thinking                      | -                                      | - | 2 | 1       |
| Total Credits |             |             |                                      |                                        |   |   | 20      |

**Note:**

- **Liberal Learning Course-II, LLC-01 (Any One Course from NCC/NSO/NCA)**
  - A. NCC
  - B. NSO
    - Anyone Sports at State Level
  - C. NCA
    - Music
    - Dance
    - Photography
    - Cinematography
    - Interior Design
    - Podcasting
    - Theatre
    - Painting etc.

## Semester-II

| S.No.         | Course Type | Course Code | Course Title                           | Hrs./ Week |   |   | Credits |
|---------------|-------------|-------------|----------------------------------------|------------|---|---|---------|
|               |             |             |                                        | L          | T | P |         |
| 1             | BSC         | MA02        | Calculus                               | 2          | 1 | - | 3       |
| 2             | BSC         | CH01        | Applied Chemistry                      | 3          | - | - | 3       |
| 3             | ESC         | ME02        | Fundamentals of Mechanical Engineering | 2          | - | - | 2       |
| 4             | ESC         | CE02        | Engineering Mechanics                  | 2          | - | - | 2       |
| 5             | ESC         | EE01        | Basic Electrical Engineering           | 2          | - | - | 2       |
| 6             | HSMC        | HS02        | Communicative English                  | 2          | - | - | 2       |
| 7             | BSC         | CH01(P)     | Applied Chemistry Lab                  | -          | - | 2 | 1       |
| 8             | ESC         | CE02(P)     | Engineering Mechanics Lab              | -          | - | 2 | 1       |
| 9             | ESC         | EE01(P)     | Basic Electrical Engineering Lab       | -          | - | 2 | 1       |
| 10            | HSMC        | HS02(P)     | Language Lab                           | -          | - | 2 | 1       |
| 11            | LLC         | LLC01       | Liberal Learning Course-I              | -          | - | 2 | 1       |
| 12            | SBC         | ME01(P)     | Tech. Shop Lab                         | -          | - | 2 | 1       |
| Total Credits |             |             |                                        |            |   |   | 20      |

**Note:**

- **Liberal Learning Course-II, LLC-01 (Any One Course from NCC/NSO/NCA)**
  - D. NCC**
  - E. NSO**
    - Anyone Sports at State Level
  - F. NCA**
    - Music
    - Dance
    - Photography
    - Cinematography
    - Interior Design
    - Podcasting
    - Theatre
    - Painting etc.

### Semester-III

| S.No.         | Course Type | Course Code | Course Title                                                | Hrs./ Week                             |   |   | Credits |
|---------------|-------------|-------------|-------------------------------------------------------------|----------------------------------------|---|---|---------|
|               |             |             |                                                             | L                                      | T | P |         |
| 1             | BSC         | MA03        | Probability and Statistics                                  | 2                                      | 1 | - | 3       |
| 2             | PCC         | DS01        | Data Communication                                          | 2                                      | 1 | - | 3       |
| 3             | PCC         | DS02        | Data Structure and Algorithm                                | 2                                      | 1 | - | 3       |
| 4             | PCC         | DS03        | Computer System Organization                                | 2                                      | 1 | - | 3       |
| 5             | PCC         | DS04        | Foundation of Data Science                                  | 2                                      | 1 | - | 3       |
| 6             | HSMC        | HS04        | Entrepreneurship and Principles of Management               | 1                                      | - | - | 1       |
| 7             | LC          | DS02(P)     | Data Structures and Algorithm Lab                           | -                                      | - | 4 | 2       |
| 8             | LC          | DS04(P)     | Foundation of Data Science Lab                              | -                                      | - | 2 | 1       |
| 9             | SBC         | DS01(P)     | Programming in Python                                       | -                                      | - | 4 | 2       |
| 10            | LLC         | LLC02       | Liberal Learning Course –II                                 | Credits to be added in Fourth Semester |   |   |         |
| 11            | MLC         | MLC01       | Professional Laws, Ethics, Gender, Human Values and Harmony | 1                                      | - | - | Audit   |
| Total Credits |             |             |                                                             |                                        |   |   | 21      |

**Note:**

- **Liberal Learning Course-II, LLC-01 (Any One Course from NCC/NSO/NCA)**

G. NCC

H. NSO

➤ Anyone Sports at State Level

I. NCA

➤ Music

➤ Dance

➤ Photography

➤ Cinematography

➤ Interior Design

➤ Podcasting

➤ Theatre

➤ Painting etc.

## Semester-IV

| S.No.         | Course Type | Course Code | Course Title                                     | Hrs./ Week |   |   | Credits |
|---------------|-------------|-------------|--------------------------------------------------|------------|---|---|---------|
|               |             |             |                                                  | L          | T | P |         |
| 1             | BSC         | MA04        | Statistical Principles of Data Science           | 2          | 1 | - | 3       |
| 2             | PCC         | DS05        | Computer Network                                 | 2          | 1 | - | 3       |
| 3             | PCC         | DS06        | Object Oriented Programming and Methodology      | 2          | 1 | - | 3       |
| 4             | PCC         | DS07        | Data Ethics                                      | 3          | - | - | 3       |
| 5             | HSMC        | HS03        | Innovation and Creativity                        | -          | - | 2 | 1       |
| 6             | IFC         | CB01        | Interdisciplinary Foundation Course-I            | 2          | - | - | 2       |
| 7             | LC          | DS05(P)     | Computer Network Lab                             | -          | - | 2 | 1       |
| 8             | LC          | DS06(P)     | Object Oriented Programming And Methodology Lab  | -          | - | 4 | 2       |
| 9             | DS08(P)     | LC          | R-Based Statistical Analysis                     | -          | - | 2 | 1       |
| 11            | DS09(P)     | LC          | Data Visualization and Business Intelligence Lab | -          | - | 2 | 1       |
| 12            | DS02(P)     | SBC         | Web Development Technologies                     | -          | - | 2 | 1       |
| 11            | LLC         | LLC02       | Liberal Learning Course –II                      | -          | - | 2 | 1       |
| 12            | MLC         | MLC02       | Constitution of India                            | 1          | - | - | Audit   |
| Total Credits |             |             |                                                  |            |   |   | 22      |

- **Liberal Learning Course-II, LLC02(Any One Course from NCC/NSO/NCA)**

- **NCC**
- **NSO**  
Anyone Sports at State Level
- **NCA**
  - Music
  - Dance
  - Photography
  - Cinematography
  - Interior Design
  - Podcasting
  - Theatre
  - Painting, etc.

- **Interdisciplinary Foundation Course (IFC)-I, CB01**

(Offered by Cyber Security, IoT including Blockchain Technology Branch)

- **Blockchain Technology**

## Semester–V

| S.No<br>.     | Course<br>Type | Course<br>Code | Course Title                                     | Hrs./ Week                            |   |   | Credits |
|---------------|----------------|----------------|--------------------------------------------------|---------------------------------------|---|---|---------|
|               |                |                |                                                  | L                                     | T | P |         |
| 1             | PCC            | DS10           | Database Management System                       | 2                                     | 1 | - | 3       |
| 2             | PCC            | DS11           | Operating System                                 | 2                                     | 1 | - | 3       |
| 3             | PCC            | DS12           | Machine Learning-I                               | 2                                     | 1 | - | 3       |
| 4             | PEC            | DS01           | Professional Elective-I                          | 3                                     | - | - | 3       |
| 5             | HSMC           | HS06           | Humanities and Social Sciences Open Courses - II | 2                                     | - | - | 2       |
| 6             | IFC            | EC01           | Interdisciplinary Foundation Course-II           | 2                                     | - | - | 2       |
| 7             | LC             | DS10(P)        | Database Management System Lab                   | -                                     | - | 2 | 1       |
| 8             | LC             | DS11(P)        | Operating System Lab                             | -                                     | - | 2 | 1       |
|               | LC             | DS12(P)        | Machine Learning-I Lab                           | -                                     | - | 2 | 1       |
| 9             | SBC            | DS03(P)        | JAVA-Programming                                 | -                                     | - | 2 | 1       |
| 10            | PROJ           | DS01           | Mini Project                                     | -                                     | - | 4 | 2       |
| 11            | PROJ           | -              | Internship-I                                     | Credits to be added in Sixth Semester |   |   |         |
| 12            | LLC            | LLC03          | Liberal Learning Course -III                     | Credits to be added in Sixth Semester |   |   |         |
| 13            | MLC            | MLC03          | Environmental Studies                            | 1                                     | - | - | Audit   |
| Total Credits |                |                |                                                  |                                       |   |   | 22      |

|                                                                                       |                                                                    |
|---------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <b>Humanities and Social Sciences Open Courses (HSMC) – II, HS06 (Any One Course)</b> | <b>Professional Elective Course(PEC) – I,DS01 (Any one Course)</b> |
| <b>(A) Industrial Safety Psychology</b>                                               | <b>(A) Software Engineering and Project Management</b>             |
| <b>(B) Project Management</b>                                                         | <b>(B) Data Warehousing and Mining</b>                             |
| <b>(C) Business Communication</b>                                                     | <b>(C) Agile Software Development</b>                              |
|                                                                                       | <b>(D) Theory of Computation</b>                                   |

### Interdisciplinary Foundation Course (IFC)-II, EC01

(Offered by Electronics & Communication Department)

#### ➤ Sensors and Automation

### Liberal Learning Course-III, LLC03 (Any One Course from NCC/NSO/NCA)

Note: pool of choices will be the same as in LLC01 and LLC02.

## Semester-VI

| S.No.         | Course Type | Course Code | Course Title                                    | Hrs./ Week                              |   |   | Credits |
|---------------|-------------|-------------|-------------------------------------------------|-----------------------------------------|---|---|---------|
|               |             |             |                                                 | L                                       | T | P |         |
| 1             | PCC         | DS13        | Big Data and Hadoop                             | 2                                       | 1 | - | 3       |
| 2             | PCC         | DS14        | Machine Learning-II                             | 2                                       | 1 | - | 3       |
| 3             | PCC         | DS15        | Natural Language Processing                     | 2                                       | 1 | - | 3       |
| 4             | PEC         | DS02        | Professional Elective Course -II                | 2                                       | - | - | 2       |
| 5             | IOC         | -----       | Interdisciplinary Open Course-I                 | 2                                       | 1 | - | 3       |
| 6             | HSMC        | HS05        | Humanities and Social Sciences Open Courses - I | 2                                       | - | - | 2       |
| 7             | LC          | DS13(P)     | Big Data and Hadoop Lab                         | -                                       | - | 2 | 1       |
| 8             | LC          | DS14(P)     | Machine Learning-II Lab                         | -                                       | - | 2 | 1       |
| 9             | PROJ        | DS02        | Minor Project                                   | -                                       | - | 4 | 2       |
| 10            | PROJ        | DS03        | Evaluation of Internship-I                      | -                                       | - | 4 | 2       |
| 11            | PROJ        | -           | Internship-II                                   | Credits to be added in Seventh Semester |   |   |         |
| 12            | LLC         | LLC03       | Liberal Learning Course -III                    | -                                       | - | 2 | 1       |
| 13            | MLC         | MLC04       | Intellectual Property Rights                    | 1                                       | - | - | Audit   |
| Total Credits |             |             |                                                 |                                         |   |   | 23      |

|                                                            |                                                        |                                                                        |
|------------------------------------------------------------|--------------------------------------------------------|------------------------------------------------------------------------|
| Professional Elective Course(PEC) –II DS02(Any One Course) | Interdisciplinary Open Course(IOC)- I (Any One Course) | Humanities and Social Sciences Open Courses – I, HS05 (Any One Course) |
| (A) Cyber Security                                         | MA01 (A) Scientific Aptitude                           | (A) English Language Proficiency                                       |
| (B) Compiler Design*                                       | (B) Green Technology                                   | (B) German Language                                                    |
| (C) Information Storage Management                         | (C) Operations Research                                | (C) French Language                                                    |
|                                                            | IOC- FT (A) Fundamental of Fire & Safety               | (D) Japanese Language                                                  |
|                                                            |                                                        | (E) Soft Skills and Interpersonal Communication                        |

**Liberal Learning Course-III, LLC03(Any One Course from NCC/NSO/NCA)**

**Note:** pool of choices will be the same as in LLC01 and LLC02.

### Semester VII

| S.No.         | Course Type | Course Code | Course Title                     | Hrs./ Week |   |   | Credits |
|---------------|-------------|-------------|----------------------------------|------------|---|---|---------|
|               |             |             |                                  | L          | T | P |         |
| 1             | PCC         | DS16        | Computer Vision                  | 2          | 1 | - | 3       |
| 2             | PEC         | DS03        | Professional Elective-III        | 2          | 1 | - | 3       |
| 3             | PEC         | DS04        | Professional Elective-IV         | 2          | 1 | - | 3       |
| 4             | IOC         | -----       | Interdisciplinary Open Course-II | 3          | - | - | 3       |
| 5             | LC          | DS16(P)     | Computer Vision Lab              | -          | - | 2 | 1       |
| 6             | LC-PEC      | DS03(P)     | Elective-III Lab                 | -          | - | 2 | 1       |
| 7             | LC-PEC      | DS04(P)     | Elective-IV Lab                  | -          | - | 2 | 1       |
| 8             | PROJ        | DS04        | Major Project Phase-I            | -          | - | 8 | 4       |
| 9             | PROJ        | DS05        | Evaluation of Internship-II      | -          | - | 6 | 3       |
| Total Credits |             |             |                                  |            |   |   | 22      |

| Professional Elective Course (PEC) –III,DS03(Any One Course) | Professional Elective Course (PEC) – IV,DS04 (Any One Course) | Interdisciplinary Open Course-II |
|--------------------------------------------------------------|---------------------------------------------------------------|----------------------------------|
| (A) Mobile Application Development                           | (A) Cloud Computing                                           | (A)Robotics                      |
| (B) Adversarial Machine Learning                             | (B) Streaming Data & Real-Time Analytics                      | (B)Industrial Electronics        |
| (C) Optimization for ML                                      | (C) Artificial Intelligence                                   | CS-01Digital Marketing & SEO     |
| (D) Computational Financial Modeling                         | (D) Deep & Reinforcement Learning                             | (D)3D Printing & Application     |

### Semester VIII (SCHEME A)

| S.No.         | Course Type | Course Code | Course Title           | Hrs./ Week |   |    | Credits |
|---------------|-------------|-------------|------------------------|------------|---|----|---------|
|               |             |             |                        | L          | T | P  |         |
| 1             | PEC         | DS05        | Elective-V             | 2          | 1 | -  | 3       |
| 2             | PEC         | DS06        | Elective-VI            | 2          | 1 | -  | 3       |
| 3             | LC-PEC      | DS06(P)     | Elective-VI Laboratory | -          | - | 4  | 2       |
| 4             | PROJ        | DS06(A)     | Major Project Phase-II | -          | - | 16 | 8       |
| Total Credits |             |             |                        |            |   |    | 16      |

### Semester VIII (SCHEME B)

| S.No.         | Course Type | Course Code | Course Title                                         | Hrs./ Week |   |    | Credits |
|---------------|-------------|-------------|------------------------------------------------------|------------|---|----|---------|
|               |             |             |                                                      | L          | T | P  |         |
|               | PEC         | DS05        | Elective-V                                           | 2          | 1 | -  | 3       |
| 2             | PEC         | DS06        | Elective-VI                                          | 2          | 1 | -  | 3       |
| 3             | LC-PEC      | DS06(P)     | Elective-VI Laboratory                               | -          | - | 4  | 2       |
| 4             | PROJ        | DS06(B)     | Project /Internship<br>(Industry/Corporate/Academia) | -          | - | 16 | 8       |
| Total Credits |             |             |                                                      |            |   |    | 16      |

➤ **Note:** In Eighth Semester, students may opt for ‘SCHEME A’ or ‘SCHEME B’.

| Professional Elective Course(PEC)–V,DS05 (Any One Course) MOOC | Professional Elective Course(PEC)–VI,DS06 (Any One Course) |
|----------------------------------------------------------------|------------------------------------------------------------|
| (A) Knowledge Management                                       | (A) Quantum Computing                                      |
| (B) Web & Information Retrieval                                | (B) Tensor flow                                            |
| (C) Cognitive Modelling*                                       | (C) Computational Intelligence                             |
| (D) Bio Informatics                                            | (D)Tableau                                                 |