

## Areas of Specialization

The students enrolled in B. Tech. Computer Science and Engineering (4 year) would have an option to specialize in one the following emerging areas-

- **Artificial Intelligence and Machine Learning**
- **Data Science and Big Data Analytics**
- **Cyber Security and Privacy**

## Minimum Requirement for Specialization

The student wishing to do specialization must have overall CGPA  $\geq 7$  and CGPA in Specialization component  $\geq 8$ . The student must complete minimum of 12 credits in the area of specialization as follows-

- Electives courses from the chosen specialization bucket- 12 Credits
- OR
- Electives courses from the chosen specialization bucket- 6 Credits
  - Project-I in the area of specialization- 6 Credits

At the time of graduation (end of 8th semester before convocation), students who have completed the specialization requirement may apply for a specialization in CSE to UG advisor for further processing. A student can apply for a specialization only in one of the mentioned areas.

## List of Elective courses in specialization buckets

Given below are the list of courses in above specialization buckets.

### Artificial Intelligence and Machine Learning-

| Course Code | Course Name                                      | L-T-P | Credits |
|-------------|--|-------|---------|
| CSD350      | Natural Language Processing                      | 2-0-1 | 3       |
| CSD357      | Image Processing and Its Applications            | 2-0-1 | 3       |
| CSD360      | Introduction to Logic and Functional Programming | 2-0-1 | 3       |
| CSD361      | Introduction to Machine learning                 | 2-0-1 | 3       |
| CSD454      | Computer Vision                                  | 2-0-1 | 3       |
| CSD456      | Deep Learning                                    | 2-0-1 | 3       |
| CSD481      | Special Topics in Artificial Intelligence        | 3-0-0 | 3       |
| CSD485      | Special Module in Artificial Intelligence        | 1-0-0 | 1       |

### Data Science and Big Data Analytics-

| Course Code | Course Name                      | L-T-P | Credits |
|-------------|----------------------------------|-------|---------|
| CSD350      | Natural Language Processing      | 2-0-1 | 3       |
| CSD351      | Advanced Data Management Systems | 2-0-1 | 3       |
| CSD355      | Foundation of Data Science       | 2-0-1 | 3       |
| CSD358      | Information Retrieval            | 2-0-1 | 3       |
| CSD361      | Introduction to Machine learning | 2-0-1 | 3       |
| CSD363      | Social and Information Networks  | 2-0-1 | 3       |

|        |                                    |       |   |
|--------|------------------------------------|-------|---|
| CSD450 | Algorithms for Big Data            | 3-0-0 | 3 |
| CSD452 | Big Data Analytics                 | 2-0-1 | 3 |
| CSD455 | Data Mining and Warehousing        | 2-0-1 | 3 |
| CSD462 | Virtualization and Cloud Computing | 2-0-1 | 3 |
| CSD482 | Special Topics in Applications     | 3-0-0 | 3 |
| CSD486 | Special Module in Applications     | 1-0-0 | 1 |

### **Cyber Security and Privacy-**

| <b>Course Code</b> | <b>Course Name</b>                      | <b>L-T-P</b> | <b>Credits</b> |
|--------------------|---|--------------|----------------|
| CSD356             | Foundation of Information Security      | 2-0-1        | 3              |
| CSD451             | Applied Cryptography                    | 2-0-1        | 3              |
| CSD457             | Internet of Things                      | 2-0-1        | 3              |
| CSD459             | Performance Modeling and Queuing Theory | 3-0-0        | 3              |
| CSD463             | Wireless and Mobile Systems             | 3-0-1        | 3              |
| CSD464             | Wireless Sensor Networks                | 2-0-1        | 3              |
| CSD483             | Special Topics in Systems               | 3-0-0        | 3              |
| CSD487             | Special Module in Systems               | 1-0-0        | 1              |

# Above list is tentative and can be suitably updated based on needs of the Industry and availability of relevant course in the university.