MUJ Faculty of Engineering: BTech-Computer & Communication Engineering (160 Credits)
Curriculum 2023 onwards

First Semester Course Name	Cr
Engineering Chemistry + Lab	3
Mathematics 1	3
Basic Electrical Engineering	3
Basic Structural Engineering	3
Biology for Engineers	2
Computer Programming+ Lab	4
Arduino, IoT Fab Lab	1
Constitution of India	1
First Semester Credits	**20**

Second Semester Course Name	Cr
Engineering Physics + Lab	4
Mathematics 2	3
Environmental Studies	2
Basic Mechanical Engineering	3
Basic Electronics	3
Creativity & Innovation Lab	2
Engineering Graphics	1
Technical Writing Clinic 1	1
Universal Human Values	1
Second Semester Credits	**20**

Third Semester Course Name	Cr
Statistics & Probability	3
Digital Design and Computer Architecture	4
Data Communications	4
Data Structures and Algorithms	4
Economics	3
University Elective 1	3
Data Structures and Algorithms Lab	1
Data Communications Lab	1
Self-Study-1 or Project	1
Third Semester Credits	**24**

Fourth Semester Course Name	Cr
Management	3
Relational Database Management System	4
Operating Systems	4
Object-Oriented Programming using Java/ Object-Oriented Programming using C++ (Flexi Core-1)	4
Program Elective 1	3
University Elective 2	3
Relational Database Management Systems Lab	1
Operating Systems Lab	1
Project-Based Learning 1	1
Fourth Semester Credits	**24**

Fifth Semester Course Name	Cr
Design and Analysis of Algorithms	4
Artificial Intelligence and Machine Learning	4
Big Data Analytics/ Automata Theory (Flexi Core-2)	4
Program Elective 2	3
Program Elective 3	3
University Elective 3	3
Design and Analysis of Algorithms Lab	1
Artificial Intelligence and Machine Learning	1
Project Based Learning 2	1
Fifth Semester Credits	**24**

Sixth Semester Course Name	Cr
Computer Networks	4
Wireless Sensors & Adhoc Networks / Cloud Computing (Flexi Core-3)	4
Program Elective 4	3
Program Elective 5	3
University Elective 4	3
Technical Writing Clinic	1
Computer Networks Lab	1
Competitive Programming Lab	1
Res, Innov & Entrepreneurship	3
Sixth Semester Credits	**23**

Seventh Semester Course Name	Cr
University Elective 5	3
Program Elective 6	3
Program Elective 7	3
Program Elec 8 / Univ Elect 6	3
Internship (Industry/ Research)	1
Seventh Semester Credits	**13**

Eighth Semester Course Name	Cr
Major Project	12
Eighth Semester Credits	**12**

List of Courses offered by the Department of CCE

Department Core Courses:
1. Digital Design and Computer Architecture
2. Data Communications
3. Data Structures and Algorithms
4. Relational Database Management Systems
5. Operating Systems
6. Design and Analysis of Algorithms
7. Artificial Intelligence and Machine Learning
8. Computer Networks

Flexi- Courses
1. FC1: Object-Oriented Programming using Java
2. FC1: Object-Oriented Programming using C++
3. FC2: Big Data Analytics
4. FC2: Automata Theory
5. FC3: Wireless Sensors & Adhoc Networks
6. FC3: Cloud Computing

Department Program Electives
1. Foundation of Data Science
2. Foundations of Blockchain Technology
3. Foundation of Digital Forensics
4. Software Engineering
5. Wireless Communication
6. User Interface Design
4.
5. Next Generation Telecom Networks (PE-VI)
6. Software Defined Networks (PE-VII)

Focus Area 4: Information Security
1. Cryptography and Security (PE-III)
2. Network Security (PE-IV)
3. Cloud Security (PE-V)
4. Network Vulnerabilities (PE-VI)
5. Information System Auditing, Control, and Assurance (PE-VII)

7. Software Testing
8. Digital Image Processing
9. Advanced Java
10. Cyber Security
11. Mobile Application Development
12. Human-Computer Interaction
13. Mobile Computing
14. Fault Tolerance in Computing System
15. Information Retrieval
16. Social Network Analysis
17. Networks on Chip
18. Spatial Data Analytics
19. Parallel Computing
20. Green Computing
21. Web Programming
22. Advanced Internet Technologies
23. Principles of Web Services
24. DevOps
25. Full Stack Development
26. Soft Computing
27. Computer Vision
28. Deep Learning
29. Video Analytics
30. Natural Language Processing
31. Digital Communication & Signal Processing
32. Internet of Things (IoT)
33. Wireless Sensors and Adhoc Networks
34. Next Generation Telecom Networks
35. Software Defined Networks
36. Cryptography and Security

Department University Electives.

These courses are only open to students outside of FOE

1. Web programming
2. Client-Side Web Programming
3. Server-Side Web Programming
4. Advance Web Programming
5. Fundamentals of Data Science
6. Python for Data Science
7. Data Analysis and Visualization
8. Introduction to Machine Learning
9. Artificial Intelligence
10. Principles of IoT

37. Network Security
38. Cloud Security
39. Network Vulnerabilities
40. Information System Auditing, Control, and Assurance

Focus Areas offered by the Department of CCE

Focus Area 1: Web Technologies
1. Web Programming (PE-III)
2. Advanced Internet Technologies (PE-IV)
3. Principles of Web Services (PE-V)
4. DevOps Fundamentals (PE-VI)
5. Full Stack Development (PE-VII)

Focus Area 2: Computational Intelligence
1. Soft Computing (PE-III)
2. Computer Vision (PE-IV)
3. Deep Learning (PE-V)
4. Video Analytics (PE-VI)
5. Natural Language Processing (PE-VII)

Focus Area 3: Sensors Networks and IoT
1. Digital Communication & Signal Processing (PE-III)
2. Internet of Things (IoT) (PE-IV)
3. Wireless Sensors and Adhoc Networks (PE-V)
11. Linux Fundamentals
12. Digital Marketing
13. Cloud Computing
14. Blockchain Technology
15. Cyber Security

Schema for Continuous Assessment

Wk1   **Wk7**   **Wk12 Wk14**

| Mid-Term Exams (30%) | | End-Term Exams (30%) |
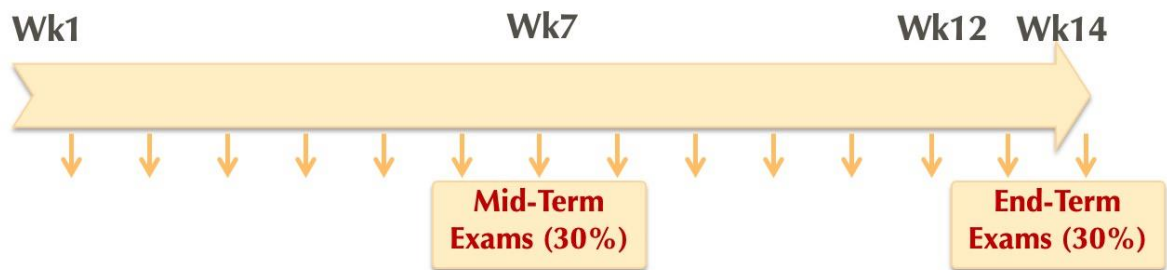
- **Mandatory**
  - Mid-term (30%) ; End-term (30%)
- **Multiple Options for Internal assessment (40%)**
  - Flexible and customizable by faculty
  - As guided by NEP

Quizzes *Weekly/ bi-monthly*	Research Paper Review	Research Project	Online Course	Semester-long Hackathon