MUJ Faculty of Engineering: BTech Computer Science & Engineering (IoT&IS) (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 Communication and Computer Networks	4
Data Structures and Algorithms	4
Economics	3
University Elective 1	3
Data Structures and Algorithms Lab	1
Data Communication and Computer Network Lab	1
Self-Study or Project	1
Third Semester Credits	**24**

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

Fifth Semester Course Name	Cr
Design and Analysis of Algorithms	4
Sensors and Microcontrollers	4
Cryptography and Security /Machine Learning (Flexi Core-2)	4
Program Elective 2	3
Program Elective 3	3
University Elective 3	3
Design and Analysis of Algorithms Lab	1
Sensors and Microcontrollers Lab	1
Project-Based Learning 2	1
Fifth Semester Credits	**24**

Sixth Semester Course Name	Cr
IoT Architecture and Design	4
Automata Theory/ Deep Learning (Flexi Core-3)	4
Program Elective 4	3
Program Elective 5	3
University Elective 4	3
Technical Writing Clinic	1
IoT Architecture and Design 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 IoT&IS

Department Core Courses:
1. Digital Design and Computer Architecture
2. Data Communication and Computer Networks
3. Data Structures and Algorithms
4. Operating Systems
5. Relational Database Management Systems
6. Design and Analysis of Algorithms
7. Sensors and Microcontrollers
8. IoT Architecture and Design

Flexi- Courses
1. FC1: Object-Oriented Programming using Java
2. FC1: Object-Oriented Programming using C++
3. FC2: Cryptography and Security
4. FC2: AI and Machine Learning
5. FC3: Automata Theory
6. FC3: Deep Learning

Department Program Electives
1. Foundation of Data Science
2. Foundations of Blockchain Technology
3. Foundation of Digital Forensics
4. Wireless Communication
5. Software Engineering
6. User Interface Design
7. Software Testing
8. Cyber Security
9. Web Technologies
10. Big Data Analytics
11. Wireless Sensors and Adhoc Networks
12. Human-Computer Interaction
13. Natural Language Processing
14. Next Generation Telecom Networks
15. Security and Trust Management in IoT
16. Industry 4.0
17. Social Network Analysis
18. Robotic Process Automation
19. Embedded Systems
20. Green Computing
21. Medical Image Processing
22. Computer Vision in Disease Visualization
23. Smart Patient Monitoring
24. Privacy and Security in IoT-based Healthcare
25. Robotics in IoT healthcare
26. Smart City Designing
27. Smart Urban Infrastructure and Management
28. Smart Transport Systems
29. Privacy and Security issues in Smart City
30. IoT for Smart Grid

Focus Areas offered by the Department of CCE

Focus Area 1: Smart Healthcare
1. Medical Image Processing (PE-III)
2. Computer Vision in Disease Visualization (PE-IV)
3. Smart Patient Monitoring (PE-V)
4. Privacy and Security in IoT-based Healthcare (PE-VI)
5. Robotics in IoT healthcare (PE-VII)

Focus Area 2: Smart Cities
1. Smart City Designing (PE-III)
2. Smart Urban Infrastructure and Management (PE-IV)
3. Smart Transport Systems (PE-V)
4. Privacy and Security issues in Smart City (PE-VI)
5. IoT for Smart Grid (PE-VII)

Department University Electives.
These courses are only open to students outside of FOE
1. Intelligent Systems
2. Smart Cities
3. Wearable Devices
4. Precision Agriculture
5. Introduction to Industry 4.0

Schema for Continuous Assessment

Wk1   Wk7   Wk12   Wk14

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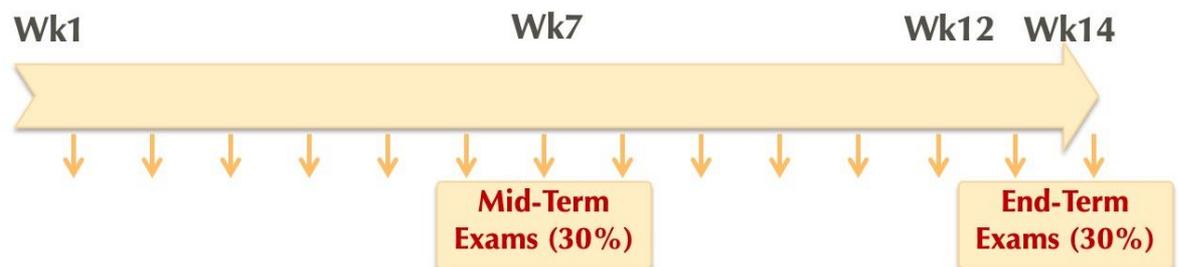
- Mandatory
  - Mid-term (30%) ; End-term (30%)
- Multiple Options for Internal assessment (40%)
  - Flexible and customizable by faculty
  - As guided by NEP

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