

## COURSE HANDOUT

INTERNET OF THINGS (BCAMJ-403)

BCA- 4<sup>TH</sup> SEMESTER

ACADEMIC YEAR (2024-25)

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### SYLLABUS

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Internal	Final Exam	Total
BCAMJ-403	Internet of Things	Major	4	4	0	0	40	60	100

At the end of the course the student will be able to	
CO1	Describe IoT concepts, frameworks, technologies and explain how they interrelate.
CO2	Analyze IoT architecture layers and components for efficient systems integration.
CO3	Evaluate IoT platforms and software for specific application needs.
CO4	Explain the security mechanisms to address threats and privacy issues in IoT.
CO5	Apply IoT solutions for real world Applications to address specific needs and challenges.

### Section-A

**Unit 1: Fundamentals of IoT:** Introduction, Definitions & Characteristics of IoT, Physical & Logical Design of IoT, Enabling Technologies in IoT, IoT Entities, IoT frameworks, D2D and M2M.

(10 Hrs)

**Unit 2: IOT Architecture:** Basic Layer Architectures, IOT network layer entities, Sensors and Actuators, Techniques for Data Acquisition and Control, Edge Layer, Cloud Data Management Architecture, Data Storage Layer.

(10 Hrs)

**Unit 3: IOT Enabling Platforms:** Edge Device Platform, IOT Gateways Devices IOT Cloud Platforms, IOT Application Platforms, Processors, Software (Open WSN, Tiny OS, Free RTOS).

(10 Hrs)

### Section-B

**Unit 4: Security and Privacy in IOT:** Security issues and Threats, Security Mechanism, Privacy issues, End to end communication Security, Layer wise Security issues, Machine Learning and its importance in IOT Security.

(10 Hrs)

**UNIT-5: Applications of IoT:** Home Automation, Smart Cities, Transportation/Logistics, Agriculture, Health Care, Industrial Control, Latest trends in IOT.

(08 Hrs)

### Text books

S. No.	Name of the Books	Author	Publisher Name	Edition (Pub. yr.)
1	Internet of Things Concepts & Applications	Prof. K.N Raja Rao	Willey	1 <sup>st</sup> (2021)
2	Internet of Things	Arshdeep Bagha, Vijay Madiseti	Universities Press	7 <sup>th</sup> (2022)

**Reference Books**

S No.	Name of the Books	Author	Publisher Name	Edition (Pub. Yr.)
1	The Internet of Things Architecture, Implementation & Security	Michel Miller	Pearson	1st (2020)

**COURSE PLAN**

<b>Unit-I Fundamentals of IoT</b>		
S. No	Topics	Recommended Books
1	Introduction, Definitions	Book 2, Ch.1
2	Characteristics of IoT	Book 2, Ch.1
3	Physical & Logical Design of IoT	Book 2, Ch.1
4	Enabling Technologies in IoT	Book 2, Ch.1
5	IoT Entities	Book 1, Ch.1
6	IoT frameworks	Book 1, Ch.1
7	D2D and M2M	Book 1, Ch.1
<b>Unit-II IoT Architecture</b>		
8	Basic Layer Architectures	Book 1, Ch.2
9	IOT network layer entities	Book 1, Ch.2
10	Sensors and Actuators	Book 1, Ch.2
11	Techniques for Data Acquisition and Control	Book 1, Ch.2
12	Edge Layer	Book 1, Ch.2
13	Cloud Data Management Architecture	Book 1, Ch.2
14	Data Storage Layer	
<b>Unit- III IoT Enabling Platforms</b>		
15	Edge Device Platform	Book 1, Ch.4
16	IOT Gateways Devices & IOT Cloud Platforms	Book 1, Ch.4
17	IOT Application Platforms	Book 1, Ch.4
18	Processors, Software – Open WSN	Book 1, Ch.4
19	Tiny OS & Free RTOS	Book 1, Ch.4
<b>Unit-IV Security and Privacy in IoT</b>		
20	Security issues and Threats	Book 1, Ch.5
21	Security Mechanism, Privacy issues	Book 1, Ch.5
22	End to end communication Security and Layer wise Security issues	Book 1, Ch.5
23	Machine Learning and its importance in IOT Security	Book 1, Ch.5
<b>Unit-V Applications of IoT</b>		
24	Home Automation, Smart Cities	Book 1, Ch.8
25	Transportation/Logistics, Agriculture, Health Care, Industrial Control,	Book 1, Ch.8
26	Latest trends in IOT	Book 2, Ch.10

### ADDITIONAL WEB RESOURCES

1.	<b>NPTEL:</b> Video lectures <a href="https://nptel.ac.in/courses/106105166">https://nptel.ac.in/courses/106105166</a>
2.	NPTEL Course Link: Internet of Things <a href="https://onlinecourses.nptel.ac.in/noc22_cs53/preview">https://onlinecourses.nptel.ac.in/noc22_cs53/preview</a>

### GRADING AND ASSESSMENT

- **Sessional Test:** 20 marks
- **Assignment:** 10 marks
- **Attendance:** 10 marks
- **Final Examination:** 60 marks

### COURSE POLICIES

- **Attendance:** Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity:** MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions:** Assignments and projects must be submitted by the specified timelines.

### FACULTY INFORMATION

- **Office Hours**  
 Tuesday (12:55 PM - 1:45 PM)  
 Friday (12:55 PM - 1:45 PM)
- **Contact Information**  
[gurpreetraina.ece@mietjammu.in](mailto:gurpreetraina.ece@mietjammu.in)