

RASHTRASANT TUKADOJI MAHARAJ NAGPUR UNIVERSITY, NAGPUR
FOUR YEAR BACHELOR OF TECHNOLOGY (B. Tech..) DEGREE COURSE
SEMESTER: VI (C.B.C.S.)
BRANCH: COMPUTER SCIENCE AND ENGINEERING

Examination Scheme and Syllabus

Sixth Semester:-

S. N.	Subject	Teaching Scheme			Evaluation Scheme			Credits	Category
		L	T	P	CA	UE	Total		
1	Compiler Design	4	-	-	30	70	100	4	PCC-CS
2	Compiler Design -Lab	-	-	2	25	25	50	1	PCC-CS
3	Elective-II	3	-	-	30	70	100	3	PEC-CS
4	Elective-III	3	-	-	30	70	100	3	PEC-CS
5	Open Elective-I	3	-	-	30	70	100	3	OEC
6	Professional Skills Lab II	-	-	2	25	25	50	1	PCC-CS
7	Hardware Lab	-	-	2	25	25	50	1	ESC
8	Mini Project	-	-	6	50	50	100	3	PROJ-CS
9	Economics of IT Industry	2	-	-	15	35	50	2	HSMC
10	Intellectual Property Rights (Audit Course)	2	-	-	50	-	-	Audit	PCC
	Total	17	-	12			700	21	

Elective-II: - 1. Machine Learning 2. Internet of Things 3. Cluster and Cloud Computing

Elective-III: - 1. Data Science 2. Distributed Operating Systems 3. Human Computer Interaction

Open Elective 1:- 1. Linux Fundamentals 2. Android Application Development 3. Blockchain Technologies

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NAGPUR
FOUR YEAR BACHELOR OF TECHNOLOGY (B. Tech..) DEGREE
COURSE
SEMESTER: VI (C.B.C.S.)**

BRANCH: COMPUTER SCIENCE AND ENGINEERING

Subject: **Elective 2: Internet of Things**

Subject Code: **BTECH_CSE-602.2T**

Load	Credits	College Assessment Marks	University Evaluation	Total Marks
36 Hrs.	3	30	70	100

Aim: This course provides a way to understand the concepts and the basics of Internet of things, IoT applications and examples overview (building automation, transportation, healthcare, industry, etc.) with a focus on wearable electronics.

Prerequisite(s): Introductory knowledge in programming, Networking.

Course Objectives:

1	To learn the concepts about Internet of things.
2	To understand and implement smart systems.
3	To understand the Network & Communication aspects.
4	Ability to understand the Security requirements in IoT.

Course Outcomes:

At the end of this course Student will be able to:

CO1	Understand the vision of IoT from a global context.
CO2	Understand M2M to IoT – A Basic Perspective
CO3	Use of Devices, Gateways and Data Management in IoT.
CO4	Understand the Internet of Things Privacy, Security and Governance
CO5	Implement basic IoT applications on embedded platform

SYLLABUS:

Unit I:

Introduction to IoT

Defining IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs

Unit II:

M2M to IoT – A Basic Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains, An emerging industrial structure for IoT, The international driven global value chain and global information monopolies.

M2M to IoT-An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.

Unit III:

Network & Communication aspects

Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination

Unit IV:

Internet of Things Privacy, Security and Governance

Introduction, Overview of Governance, Privacy and Security Issues, Contribution from FP7 Projects, Security, Privacy and Trust in IoT-Data-Platforms for Smart Cities, First Steps Towards a Secure Platform, Smartie Approach. Data Aggregation for the IoT in Smart Cities, Security

Unit V:

Developing IoTs

Introduction to Python, Introduction to different IoT tools, Developing applications through IoT tools, Developing sensor based application through embedded system platform, Implementing IoT concepts with python

Text books:

1. Vijay Madisetti and Arshdeep Bahga, “Internet of Things (A Hands-on-Approach)”, 1st Edition, VPT, 2014 .

Reference books:

1. Francis daCosta, “Rethinking the Internet of Things: A Scalable Approach to Connecting Everything”, 1st Edition, Apress Publications, 2013.
2. Cuno Pfister, Getting Started with the Internet of Things, O’Reilly Media, 2011, ISBN: 978-1-4493- 9357-1
3. Waltenegus Dargie, Christian Poellabauer, "Fundamentals of Wireless Sensor Networks: Theory and Practice".