



**Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore**  
**Shri Vaishnav Institute of Technology and Science**  
**Department of Electrical and Electronics Engineering**  
**Choice Based Credit System (CBCS) in the Light of NEP-2020**

COURSE CODE	CATE- GORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
	GE	IOT Applications for Automation	60	20	20	30	20	2	0	2	3

**Legends:** L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit.

\***Teacher Assessment** shall be based following components: Quiz/Assignment/ Project/Participation in Class, given that no component shall exceed more than 10 marks.

**Course Educational Objectives (CEOs):**

The objective of this course is to-

1. To Understand the Architectural Overview of IoT.
2. To Understand the IoT Reference Architecture and Real-World Design Constraints
3. To Understand the various IoT Protocols (Datalink, Network, Transport, Session, Service)

**Course Outcomes (COs):**

After completion of this course the students will be able -

1. To impart knowledge on IoT architecture and various protocols.
2. To implement IoT systems.

**Syllabus**

**UNIT I**

**8 Hrs.**

**Overview:** Overview of Internet of Things: Definition, IOT Vision, Smart Devices, IoT Conceptual Framework, IoT Architectural View, Components of IoT System, Examples of IoT system.

**UNIT II**

**8 Hrs.**

**IOT Technologies:** Basic building blocks, Design standards for IOT Systems, Wireless communication technologies: NFC, RFID, Bluetooth, ZigBee, WiFi. Wired Communication technologies: UART, SPI, I2C, Ethernet.

**UNIT III**

**8 Hrs.**

**IOT Devices:** Relays, Display, Switches, Actuators, Overview of various sensors such as Light, Temperature, Weight, Gas sensor, Ultra Sonic, Light (LDR, Photo Diode)

**UNIT IV**

**8 Hrs.**

**Prototyping And Designing:** Prototyping embedded device software: Arduino platform using IDE, Raspberry Pi IDE, Ethernet and WiFi Library. Software development for Gateways, Internet and web/cloud services.

**UNIT V**

**8 Hrs.**

**IOT Case Studies:** Home automation: Smart Lighting, Home intrusion detection. IOT System for Weather Monitoring System and Smart Cities.

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**Joint Registrar**

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**Text Books:**

1. Raj Kamal, “Internet of Things: Architecture and Design Principles”, McGraw Hill, First Edition, 2018.
2. Vijay Madisetti and Arshdeep Bahga, “Internet of Things (A Hands-on- Approach)”, 1st Edition, University Press, 2019.

**References:**

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, “From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”, 1st Edition, Academic Press, 2014.
2. Peter Waher, “Learning Internet of Things”, PACKT publishing, BIRMINGHAM –MUMBAI
3. Bernd Scholz-Reiter, Florian Michahelles, “Architecting the Internet of Things”, ISBN 978-3-642 19156-5 e-ISBN 978-3-642-19157-2, Springer

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