**17EC42O1-INTERNET OF THINGS**

**(ECE)**

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| **Course category:** | Open Elective | **Credits:** | 3 |
| **Course Type:** | Theory | **Lecture - Tutorial - Practical:** | 2 - 2 – 0 |
| **Pre-requisite:** | Objective Oriented Programming, Embedded Systems, Microcontrollers and Microprocessors, Computer Networks. | **Sessional Evaluation :**  **External Evaluation:**  **Total Marks:** | 40  60  100 |

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| **Course**  **Objectives:** | Students undergoing this course are expected to: | |
| 1. Learn the basics of IOT concepts.  2. Learn the various applications of IOT.  3. Learn the various applications of M2M.  4. Learn the basics of Cloud Computing.  5. Develop IOT using Python.  6. Learn the various IOT devices. | |
| **Course Outcomes:** | Upon successful completion of the course , the students will be able to: | |
| **CO1** | Understand the application areas of IOT |
| **CO2** | Realize the revolution of internet in mobile devices, cloud & sensor networks |
| **CO3** | Understand building blocks of internet of things and characteristics. |
| **CO4** | Design various IOT applications using Python. |
| **CO5** | Understand cloud computing concepts. |
| **CO6** | Design IOT applications on different microcontrollers. |
| **Course**  **Content:** | **UNIT-I**  **Introduction & concepts:** Introduction to internet of things, physical design of IOT, logical design of IOT, IOT enabling technologies, IOT Levels.  **UNIT – II**  **Domain specific IOTS:** Home automation, cities, environment, energy, retail, logistics, agriculture, industry, health & life style.  **UNIT – III**  **M2M:** M2M, Difference between IOT and M2M, SDN and NFV for IOT, software defined networking, network function virtualization, need for IOT systems management, simple network management protocol, limitations of SNMP, and network operator requirements.  **UNIT – IV**  **Cloud computing basics:** Cloud computing basics, terminology, characteristics, services, cloud deployment, public, private environments, secure communication, cloud security.  **UNIT – V**  **Developing internet of things & logical design using python:** Introduction, IOT design methodology, installing python, python data types & data structures, control flow, functions, modules, packages, file handling, date/ time operations, classes, python packages.  **UNIT-VI**  **IOT physical devices & endpoints:** What is an IOT device, exemplary device, board, linux on raspberry pi, interfaces, and programming& IOT devices. | |
| **Text books**  **&**  **Reference books:** | **Text books :**  1.“Internet of Things a hands-on-approach”, by Vijay Madisetti, Arshdeep Bagha,”, 2014, ISBN:978-1-118-43062-0  **Reference books :**  **1.**“Designing the Internet of Things”, by Adrian McEwen, Wiley Publishers.  2.“The silent intelligence: The Internet of Things”, by Daniel Kellmereit. | |
| **e-Resources** | nptel.ac.in/courses. | |