Davangere University

Department of Studies in Computer Science

Programme Name: Value Added Course for PG Computer Science

Course: Internet of Things: Challenges, Advances, and Applications

Course Structure and Syllabus

Subject Code	**IOTML1**	IA Marks :	10
Number of Lecture Hours/Week	02	Exam Marks :	40
Total Number of Lecture Hours	30	Exam Hours :	02

Minimum Eligibility Criteria :

- MSc.Pursuing /Passed Bsc/BCA/B.E. /B. Tech. in CS/Electronics/IT and Prerequisite, if any

Mode of Teaching :

- Online or Offline

Applicability of Course :

- Fourth semester of PG students

Objectives:

- Offering IoT and its challenges, application for imparting transferable and life skills in real time.
- Understand the impact of IoT technologies , be able to draw the big picture of IoT ecosystem , be able to identify the architecture of IoT systems
- Be able to describe the essential components of IoT, have the knowledge of the emerging technologies of IoT, be able to examine the security and privacy challenges of IoT , Be able to find appropriate security/privacy solutions for IoT , Have hands-on experience on IoT and security projects.

Outcomes:

- Gain knowledge about basic concepts of IoT and its interfaces.
- This course provides detailed discussion of the utilization of IoT and its underlying technologies in critical application areas, such as smart grids, healthcare, insurance, and the automotive industry.
- After the completion of the course, the students will be able design some IOT based prototypes.

Module -1

15 Hours

IoT definition, advantages, and impact (Introduction of IoT devices and discussion on the difference among IoT devices, computers, and embedded devices. How will IoT possibly change our lives?).Sensors and actuators in IoT (accelerometer, photoresistor, buttons, motor, LED, vibrator, analog signal vs. digital signal). Organizational Implementation and Management Challenges in the Internet of Things.

Module -2

15 Hours

IoT in electric distribution networks: control architecture, communication infrastructure and smart functionalities. Satellite based IoT infrastructure for management of large-scale electric distribution networks. IoT-Enabled Smart Gas and Water Grids: from Communication Protocols to Data Analysis. The Internet of Things and e-Health Remote Patients Monitoring. Security Considerations for IoT Support of E-Health Applications. IoT Considerations, Requirements, and Architectures for Insurance Applications. The Internet of Things and the Automotive Industry: A Shift from a Vehicle-Centric to Data-Centric Paradigm.

References:

- Internet of Things Challenges, Advances, and Applications, Edited By Qusay F. Hassan, Atta ur Rehman Khan, Sajjad A. Madani, Copyright Year 2018
- Internet of Things : A hands- on Approach by Arsheep Bahga (Author), Vijay Madisetti (Author)
- IOT (Internet of Things) Programming: A Simple and Fast Way of Learning IOT by David Etter
- IoT Ignorance is Digital Forensics Research Bliss: A Survey to Understand IoT Forensics Definitions, Challenges and Future Research Directions by Tina Wu, et al, University of New Haven Digital Commons @ New Haven Electrical & Computer Engineering and Computer Science Faculty Publications Electrical & Computer Engineering and Computer Science, 8-2019.
- E. Charnaik and D. McDermott," Introduction to artificial Intelligence"
- Dan W. Patterson, "Introduction to Artificial Intelligence and Expert Systems".
- Machine Learning by Tom M. Mitchell, India Edition 2013, McGraw Hill Education.
- Introduction to machine learning by EthemAlpaydın, second edition, MIT press.
- Machine Learning by Tom M. Mitchell.