[Subject code-2611000906044002]

Course Code: 601-02
Course Title: Concepts of A.I. and IoT Devices

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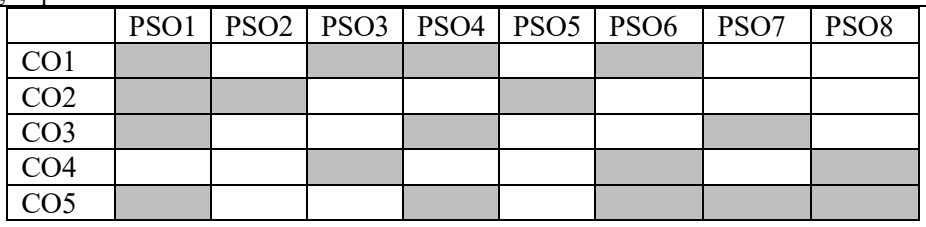
Course Title	**Concepts of A.I. and IoT Devices (Minor-6-02)**
Credits	4
Course Category	Minor Course
Level of Course	200-299 (Intermediate Level)
Teaching Hours	60 Hours
Minimum Hours/ Semester	60 hours of Theory (Including class work, examination, preparation etc.)
Review / Revision	-
Implementation Year:	A.Y. 2025-2026
Purpose of Course	The purpose of this course is to provide students with a foundational understanding of Artificial Intelligence (AI) and the role of Internet of Things (IoT) devices in enabling AI applications. It aims to introduce key concepts, tools, and real-life integrations of AI and IoT, preparing students for further learning or project-based exploration in this emerging interdisciplinary field.
Course Objective	1) To introduce the basic concepts and history of Artificial Intelligence (AI). 2) To explain key AI techniques such as search algorithms, machine learning, and expert systems. 3) To familiarize students with IoT devices and their architecture. 4) To explore how IoT devices collect and transmit data for AI applications. 5) To discuss real-world use cases integrating AI with IoT in domains like healthcare, agriculture, and smart cities. 6) To encourage understanding of the challenges and future scope of AI-enabled IoT systems.
Pre-requisite	Basic knowledge of computer fundamentals and an introductory understanding of programming or logic-building concepts is recommended. No prior experience with AI or IoT is required.
Course Outcomes	**CO-1 Remembering:** Recall and define key concepts, history, and types of Artificial Intelligence and IoT technologies. **CO-2 Understanding:** Explain the architecture, components, and connectivity methods of IoT systems used in AI applications. **CO-3 Applying:** Apply AI algorithms to process real-time data collected from IoT devices for smart decision-making. **CO-4 Analyzing:** Analyze challenges related to data quality, latency, power consumption, and security in AIoT systems. **CO-5 Creating:** Design and present innovative AIoT solutions based on case studies and group collaboration.
Mapping between Course Outcomes(CO) with Program Specific Outcomes(PSO)	
Course Content	**Unit 1: Basics of Artificial Intelligence (AI)** 1.1 Introduction to Artificial Intelligence 1.2 History and Evolution of AI 1.3 Types of AI – Narrow, General, Super AI 1.4 Key Concepts: Machine Learning, Deep Learning, Natural Language Processing 1.5 Real-life Applications of AI in Various Sectors (Healthcare, Education, Agriculture, Manufacturing) **Unit 2: IoT Devices that Can Be Used in AI Applications – Basics**

	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8
CO1	■		■	■		■		
CO2	■	■			■			
CO3	■			■			■	
CO4			■			■		■
CO5	■			■		■	■	■

	2.1 Introduction to Internet of Things (IoT) 2.2 Architecture of IoT Systems – Sensors, Actuators, Gateways, Cloud 2.3 Types of IoT Devices Useful in AI Projects 2.3.1 Environmental Sensors (Temperature, Humidity, Air Quality) 2.3.2 Motion and Position Sensors (Accelerometers, Gyroscopes, PIR) 2.3.3 Wearables and Smart Health Devices 2.3.4 Cameras and Microphones for Image and Voice Input 2.4 Basics of Connectivity: Wi-Fi, Bluetooth, Zigbee, LoRaWAN 2.5 Data Flow: From Sensors to AI Processing **Unit 3: Advanced Integration of AI with IoT** 3.1 Introduction to AIoT (Artificial Intelligence of Things) 3.2 Real-Time Data Processing Using AI Algorithms 3.3 Edge Computing vs Cloud AI in IoT 3.4 AI-Based Decision Making from IoT Inputs (examples: Smart Home, Smart Agriculture) 3.5 Challenges in AIoT: Data Quality, Latency, Power Consumption 3.6 Privacy, Security, and Ethical Considerations in AIoT **Unit 4: Summary and Case Study Discussion** 4.1 Summary of Key Concepts from AI and IoT 4.2 Case Study 1: Smart Farming using IoT and AI 4.3 Case Study 2: AI-Powered Smart Home Automation 4.4 Open Discussion on AIoT Trends and Future Scope 4.5 Group Activity: Analyze and Present an AIoT Use Case [All Units carry Equal Weightage]
Reference Books	1. Frontiers of Electronic Commerce, Ravi Kalakota and Andrew Whinston, Addition Wesley 2. Electronic Commerce: A Managerial Perspective, Efraim turban, Jae Lee, David King, H. Michel Chung, Addition Wesley 3. E-Commerce: An Indian Perspective, Joseph, PHI 4. E-Mail Hacking, Ankit Fadia, Vikas Publishing House Pvt. Ltd. 5. e-Commerce Concept, Models Strategies, G.V.S. Murthy, Himalaya Publisher 6. Cyber Crime in India, Dr M Dasgupta, Centax Publications Pvt Ltd 7. Cyber Laws and Crimes, Barkha U, Rama Mohan, Universal Law Publishing Co. Pvt Ltd. 8. Cyber Crime, Bansal S.K., A.P.H. Publishing Corporation 9. Cyber Security Understanding Cyber Crime, Computer Forensic and Legal Perspectives, Nina Godbole, Sunit Belapur, Willey India Publication
Teaching Methodology	Class Work, Discussion, Presentation, Self-Study, Seminars and/or Assignments
Evaluation Method	50% Internal assessment. - Attendance, Class and home Assignment - Unit Tests 50% External assessment. - Written Theory exam