Course Title	**IoT: MICROCONTROLLERS, PROGRAMMING AND APPLICATIONS**
Course Code	**CSC 302**
Course Purpose and Objectives	The aim of this course is to enforce students to explore the three basic insights of the Internet of Things: Why do we want to connect everything? What do we want to connect? And how do we connect everything? A typical IoT solution includes sensors, local analytic abilities, network connections, and the ability to process and analyze the gathered data. Overall it is important to understand how a product or a process or a business can be improved with the instrumentation and the collection of data. It all starts with the connection of a sensor to a gateway and from there to the network and the cloud.
Learning Outcomes	1. Create circuits and microcontroller programs with Arduino and a variety of components. 2. Create Python programs on the Raspberry Pi to provide IoT functionality. 3. Use Packet Tracer to model Python-based IoT systems. 4. Analyse a business model using the Business Model Canvas. 5. Explain security aspects of IoT solutions. 6. Explain how the IoT can be used to provide solutions in healthcare, energy and smart-city and manufacturing.
Course Content	• Introduction • Exploring Microcontrollers (Raspberry Pi and Arduino) • Programming Microcontrollers (Python / JavaScript) • Collecting and Processing Data • IoT and its applications in the Industry • Become an inventor – Hackathon Challenge • Laboratory Work