CENTRAL UNIVERSITY OF KERALA DEPARTMENT OF COMPUTER SCIENCE M.Sc. COMPUTER SCIENCE – PROGRAMME STRUCTURE

ELECTIVES				
COURSE CODE	COURSE TITLE	CONTACT HRS/WEEK			CREDITS
		LEC	LAB	TUT	
CSC5016	Internet of Things	2	2	1	4

Lec = Lecture, Tut = Tutorial, Lab = Practical

This is a participatory, experimental, flipped classroom, and **employability based skill development course**.

Course Objective:
   The objective of the course is to provide practical aspects of learning and developing applications based on internet of things.

By completing this course, students will obtain the following course/learning outcomes:
1. Knowledge gained:
    (i)   fundamental concepts of Internet of Things
2. Skill gained:
    (ii) Skills in the development of embedded code
3. Competency gained:
    (iii) Development of Internet of things applications for various real world applications.

Prerequisites: Basic knowledge of programming and electronic components.

Grading:
Lab implementation	– 20%
Participatory based group Project	– 10%
Assignment/Quiz/presentation	– 5%
Lab Test	– 5%
Final Exam	– 60%

CSC5016 – Internet of Things

Module 1
Introduction to IoT, History and evolution of IoT, societal benefits of IoT, Risks, Privacy and Security

Module 2
Understanding Arduino microcontroller, what can Arduino do?, setting up and testing Ardunio, Understanding Arduino programming environment, programming with Arduino. Experiments with Arduino: Blinking an LED/ RGB LED, PWM pin for varying the brightness of an LED, usage of push button, potentiometer, Photoresistor, temperature sensor, buzzer, servo, motor and LCD screen,

Module 3
Understanding Raspberry pi, what can Raspberry pi do?, setting up Raspberry pi. Understanding Raspberry pi programming environment, programming with Raspberry pi. Experimenting with Raspberry Pi.

Module 4
Case study in any one of the following: Opensource IoT platform, Amazon IoT cloud, IR sensor, Gas sensor, fire sensor, GSM shield, Bluetooth shield, PIR sensor, line tracking robot, Tensorflow on rasphherry Pi, Home automation

References:
1.   University of Cambridge lab experiments. https://www.cl.cam.ac.uk/projects/raspberrypi/
2.   https://courses.ideate.cmu.edu/99-355/s2016a4/text/syllabus.html
3.   https://courses.ideate.cmu.edu/99-355/s2017/text/syllabus.html
4.   https://www.tu-berlin.de/menue/summer_university/summer_university_term_2 /arduino_for_interactive_design/