SDSC3018: INTRODUCTION TO INTERNET OF THINGS

Effective Term
Semester A 2022/23

Part I Course Overview

Course Title
Introduction to Internet of Things

Subject Code
SDSC - School of Data Science
Course Number
3018

Academic Unit
School of Data Science (DS)

College/School
School of Data Science (DS)

Course Duration
One Semester

Credit Units
3

Level
B1, B2, B3, B4 - Bachelor's Degree

Medium of Instruction
English

Medium of Assessment
English

Prerequisites
Nil

Precursors
Nil

Equivalent Courses
Nil

Exclusive Courses
Nil

Part II Course Details

Abstract

The 21st century is an era of internet, information and data. The Internet of Thing (IoT) is the system of interrelated physical devices (such as vehicles, homes appliances and other items) embedded with electronics, sensors and software that provide the ability to transfer data over a network without human-to-computer interaction. This course provides and introduction to IoT. Students will learn about the integration of sensors in an IoT system and will set up their own IoT device to collect and share data.

Course Intended Learning Outcomes (CILOs)

	CILOs	Weighting (if app.)	DEC-A1	DEC-A2	DEC-A3
1	Define the various dimensions of IoT	15		x	
2	Apply concepts of IoT to develop a small system	40		x	x
3	Describe and outline the IoT architecture and framework and the associated issues of implementing an IoT system	15	x		
4	Ability to analyze and visualize the data from the IoT system	15	x	x	
5	Recognize how data and IoT can be used to drive innovation.	15	x		

A1: Attitude
Develop an attitude of discovery/innovation/creativity, as demonstrated by students possessing a strong sense of curiosity, asking questions actively, challenging assumptions or engaging in inquiry together with teachers.

A2: Ability
Develop the ability/skill needed to discover/innovate/create, as demonstrated by students possessing critical thinking skills to assess ideas, acquiring research skills, synthesizing knowledge across disciplines or applying academic knowledge to real-life problems.

A3: Accomplishments
Demonstrate accomplishment of discovery/innovation/creativity through producing /constructing creative works/new artefacts, effective solutions to real-life problems or new processes.

Teaching and Learning Activities (TLAs)

	TLAs	Brief Description	CILO No.	Hours/week (if applicable)
1	Large class activity	Weekly lectures with group discussion and Q&A sessions and small group activities to test concepts from the lecture	1, 3, 5	2 hours/week
2	Small group laboratory	Weekly laboratory session for discussion and analysis of small cases (first half of semester) and	2, 4	1 hour/week (for 6 weeks)

3	Group project	Laboratories during which the students develop their own IoT system and present their findings to the group. (second half of semester)	2, 4	1 hour/week (for 7 weeks)
4	Out-of-classroom activity	Complementary out-of-class activities (such as company visit) will be organized to show case IoT.	5	NA

Assessment Tasks / Activities (ATs)

	ATs	CILO No.	Weighting (%)	Remarks (e.g. Parameter for GenAI use)
1	Small group laboratory assignments	1, 2, 3, 4	20	
2	Individual/2-person project:Topic: Implementation of an IoT system	2, 4	30	
3	Presentation showcasing group project	5	10	

Continuous Assessment (%)
60

Examination (%)
40

Examination Duration (Hours)
2

Assessment Rubrics (AR)

Assessment Task
Small group project

Criterion
Written work and understanding of subject matter

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Implementation of IoT system

Criterion
Participation, and written work, IoT System

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Presentation

Criterion
Oral presentation

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Assessment Task
Exam

Criterion
Subject matter understanding

Excellent (A+, A, A-)
High

Good (B+, B, B-)
Significant

Fair (C+, C, C-)
Moderate

Marginal (D)
Basic

Failure (F)
Not even reaching marginal levels

Part III Other Information

Keyword Syllabus

Internet of Things
Embedded systems
Data analysis and visualization
Data driven and innovative thinking
System analysis and understanding

Reading List

Compulsory Readings

	Title
1	Lecture notes

Additional Readings

	Title
1	Nil