Module Specification

Internet of Things

Version: 2023-24, v2.0, 17 Jan 2023

Contents

Part 1: Information

Module title: Internet of Things

Module code: UFCFVK-15-2

Level: Level 5

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Computer Sci & Creative Tech

Partner institutions: None

Field: Computer Science and Creative Technologies

Module type: Module

Pre-requisites: Computer and Network Systems 2023-24

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Pre-requisites: Students must take one of UFCFGL-30-1 Programming in C++, UFCFF6-30-1 Programming in C, or UFCF93-30-1 Computer and Network Systems.

Features: Not applicable

Educational aims: See Learning Outcomes.

Outline syllabus: The syllabus includes:
Introduction to the Internet of Things (IoT)
IoT Architectures
IoT Security
IoT Network protocols (MAC layer)
Wireless technologies for IoT (Layer 1 & 2)
IoT hardware and software development
Data analytics for IoT

Part 3: Teaching and learning methods

Teaching and learning methods: Laboratory exercises will allow the student to gain familiarization with the tools and techniques required for the implementation and verification of applications for Internet of Things.

Students will be expected to demonstrate self-direction and originality in their learning which will be facilitated through student directed tutorials.

Scheduled learning: in the form of tutorials, demonstrations and practical classes will comprise 1/3 of the total study time for this module.

Independent learning: will constitute the remaining study time with an expectation that approximately 46 hours will be spent on self-directed study, a further 40 hours in support of the coursework and 16 hours preparation for the presentation.

Contact Hours:

Activity:
Contact: 48 hours
Assimilation and skill development: 46 hours
Undertaking coursework: 40 hours
Research and presentation: 16 hours
Total: 150 hours

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Explain the principles and operation of the general Internet and the Internet of Things

MO2 Demonstrate with examples, constraints and opportunities of wireless and mobile networks for Internet of Things

MO3 Critically evaluate security issues within the domain of Internet of Things

MO4 Compare the various network protocols used in IoT

MO5 Describe the key wireless technologies used in IoT systems, such as WiFi, LoRaWAN, and Bluetooth LE

MO6 Apply object-oriented approaches in C++, to the design of embedded systems with application to Internet of Things

MO7 Develop and use test plans

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 102 hours

Face-to-face learning = 48 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufcfvk-15-2.html

Part 4: Assessment

Assessment strategy: Summative assessment is achieved through the demonstration of an innovative solution to a design problem along with submission of a log book.

Formative assessment will be provided as oral feedback throughout the laboratory

sessions particularly with respect to the design development and the log-book entries.

Final summative assessment will be by oral presentation of software developed for an Internet of Things application.

Students will also be assessed against the quality of their program design and documentation.

Assessment tasks:

Presentation (First Sit)
Description: Presentation (15 minutes)
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO7

Practical Skills Assessment (First Sit)
Description: Logbook and demonstration of final product
Weighting: 75 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO3, MO4, MO5, MO6, MO7

Presentation (Resit)
Description: Presentation (15 minutes)
Weighting: 25 %
Final assessment: No
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5, MO7

Practical Skills Assessment (Resit)
Description: Logbook and video demonstration of final product

Weighting: 75 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO3, MO4, MO5, MO6, MO7

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Computing [Sep][SW][Frenchay][4yrs] - Not Running BSc (Hons) 2022-23

Computing [Sep][FT][Frenchay][3yrs] - Not Running BSc (Hons) 2022-23

Computer Science [Villa] BSc (Hons) 2022-23

Computer Science [Villa] BSc (Hons) 2022-23

Computer Science [Frenchay] BSc (Hons) 2022-23

Computer Science [Frenchay] BSc (Hons) 2022-23

Computer Science {Foundation}[Oct][FT][GCET][4yrs] BSc (Hons) 2021-22

Computer Science {Foundation}[Sep][FT][Frenchay][4yrs] BSc (Hons) 2021-22

Computer Science {Foundation}[Sep][FT][Frenchay][4yrs] BSc (Hons) 2021-22

Computer Science {Foundation}[Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Computer Science {Foundation}[Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Computer Science {Foundation}[Feb][FT][GCET][4yrs] BSc (Hons) 2021-22

Computer Science (Smart Devices) {Foundation}[Oct][FT][GCET][4yrs] BSc (Hons) 2021-22

Computer Science (Smart Devices) {Foundation}[Feb][FT][GCET][4yrs] BSc (Hons) 2021-22

Computer Science {Foundation}[Feb][PT][GCET][8yrs] BSc (Hons) 2021-22

Computing {Foundation} [Sep][SW][Frenchay][5yrs] - Not Running BSc (Hons) 2021-22

Computing {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BSc (Hons) 2021-22

Cyber Security and Digital Forensics [NepalBrit] BSc (Hons) 2022-23

Computer Science [Sep][FT][Villa][3yrs] - Not Running BSc (Hons) 2022-23

Computer Science [May][FT][Villa][3yrs] - Not Running BSc (Hons) 2022-23

Computer Science [Jan][FT][Villa][3yrs] - Not Running BSc (Hons) 2022-23

Forensic Computing and Security {Dual} [Mar][FT][Taylors][3yrs] - Not Running BSc (Hons) 2022-23

Forensic Computing and Security {Dual} [Aug][FT][Taylors][3yrs] - Not Running BSc (Hons) 2022-23

Cyber Security and Digital Forensics [Frenchay] BSc (Hons) 2022-23

Cyber Security and Digital Forensics {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2021-22

Cyber Security and Digital Forensics {Foundation} [Sep][FT][Frenchay][4yrs] BSc (Hons) 2021-22

Computer Science {Foundation} [Sep][FT][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Computer Science [Sep][SW][Frenchay][4yrs] - Not Running BSc (Hons) 2020-21

Computer Science {Foundation} [Sep][SW][Frenchay][5yrs] BSc (Hons) 2019-20