



Module Specification

Wireless Sensor Networks

Version: 2023-24, v2.0, 12 Jul 2023

Contents

| | |
|--|----------|
| Module Specification | 1 |
| Part 1: Information | 2 |
| Part 2: Description | 2 |
| Part 3: Teaching and learning methods | 3 |
| Part 4: Assessment..... | 4 |
| Part 5: Contributes towards | 6 |

Part 1: Information

Module title: Wireless Sensor Networks

Module code: UFMF3E-15-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Not applicable

Features: Not applicable

Educational aims: See Learning Outcomes

Outline syllabus: The module provides an overview on wireless sensor networks (WSN). It includes topics such as:

Fields of Application of WSN (environmental, healthcare, military etc.)

Enabling Technologies.

Networking, protocols and routing in WSN.

Deployment and practical implementation issues in WSN.

Data Processing in WSN (e.g. data aggregation).

Sensors and sensors technology.

Real time, low power operating systems (tinyOS open source operating system)

Programming, debugging real time implementations in both software and hardware.

Part 3: Teaching and learning methods

Teaching and learning methods: See Learning Outcomes and Assessment.

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

MO1 An understanding of the basic structure of a WSN node, the ability to use it in a real-time application, and their mathematical and computer model.

MO2 Knowledge and understanding of network architectures and protocols in wireless systems in general and in WSN in particular

MO3 The competencies involved in problem identification, analysis, design development of a WSN based system

MO4 Competence in using technical (and non-technical) literature and the ability to obtain documentation from various sources

MO5 Ability to apply engineering techniques, taking account of a range of commercial and industrial constraints

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 126 hours

Face-to-face learning = 24 hours

Total = 150

Reading list: The reading list for this module can be accessed at [readinglists.uwe.ac.uk](https://uwe.rl.talis.com/modules/ufmf3e-15-m.html) via the following link <https://uwe.rl.talis.com/modules/ufmf3e-15-m.html>

Part 4: Assessment

Assessment strategy: The assessment for this module is as follows:

Research Report: Students will have to research an application of WSN and submit a report describing their findings.

Presentation (30 minutes): Students will have to present their findings during the assessment period.

Lab-based project: students develop a real time WSN application simulation and demonstrate it in the lab at the end of term.

Resit is the same as the first sit

Formative feedback will be provided during the laboratory sessions and tutorials.

Assessment tasks:

Project (First Sit)

Description: Laboratory Project Report involving the design, implementation, simulation, and evaluation of a WSN

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO5

Report (First Sit)

Description: Research Paper

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO3, MO4, MO5

Presentation (First Sit)

Description: Presentation (30 minutes)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO2, MO4, MO5

Project (Resit)

Description: Laboratory Project Report involving the design, implementation, simulation, and evaluation of a WSN

Weighting: 50 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO5

Report (Resit)

Description: Research paper

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO3, MO4, MO5

Presentation (Resit)

Description: Presentation (30 minutes)

Weighting: 25 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO2, MO4, MO5

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Digital Electronic Systems Engineering {Apprenticeship-UWE} [Frenchay] -
Suspended MSc 2023-24

Electronic Engineering [Sep][FT][Frenchay][4yrs] MEng 2020-21

Electronic Engineering [Sep][SW][Frenchay][5yrs] MEng 2019-20