MODULE SPECIFICATION

Part 1: Information			
Module Title	Communications and Protocols		
Module Code	UFCFVR-15-3	Level	Level 6
For implementation from	2022-23		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	
Department	FET Dept of Computer Sci & Creative Tech		
Contributes towards	Computer Science BSc (Hons) 2020-21		
Module type:	Standard		

Pre-requisites	Internet of Things 2020-21, Operating Systems 2020-21
Excluded Combinations	None
Co- requisites	None
Module Entry requirements	None

Part 2: Description

This module covers digital communications and protocol design from the perspective of a physical computing system. The module assumes some basic knowledge of microcontroller peripherals and an awareness of the Open Systems Interconnection (OSI) model of communications.

Pre-requisites: students must take one out of UFCFVK-15-2 Internet of Things or UFCWK-15-2 Operating Systems

Educational Aims: Using a practical approach, this module aims to develop a deep knowledge and understanding of computer communications and protocols.

Outline Syllabus: In this module you will cover the following areas:

Microprocessor Communications:
- Low-Level Peripherals Revisited
- External Modems & Sensors

State Machine Design for Communications
Radio & LPWAN

Media Access Control (MAC) Design & Implementation:
Protocol Design
Error Detection & Correction

Resource consumption and performance impact of protocol design:
Performance Analysis
Design Optimisation & Trade-offs

Teaching and Learning Methods: The teaching of this module is practically led with several workshops that will focus on the design and implementation of protocols for different transmission mediums. Though tutor-led session and peer support students will build upon foundational knowledge to develop and evaluate protocols for modern microprocessors.

Part 3: Assessment

During the lab sessions, students will be presented with a series of worksheets. They will work through the tasks on the worksheets and receive formative feedback in the process. For the summative assessment, students will demonstrate and discuss their solutions to the graded problems in the worksheets. The sign off sheet will be handed in as evidence of their work. (A)

Students will also be assessed in their effective use and understanding of the tools and technologies that they utilise. (A&B)

For the referral coursework, which will not be group work for part B, it is likely that the student will be required to provide evidence of their achievements on the practical worksheets rather than an in-person demonstration. (A&B)

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Practical Skills Assessment - Component A		50 %	Demonstration and sign-off of a series of worksheets.
Group work - Component B		35 %	Small group project with functional demonstration and signoff.
Group work - Component B	✓	15 %	Small group presentation that reflects on aspects of, for example, the project process, outcomes and management.
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Written Assignment - Component B		35 %	Regular assessment of project progress and signoff.
Practical Skills Assessment - Component A	✓	50 %	Evidence of completed practical worksheets. Evidence will be provided by, for example, screen shots and videos.
Presentation - Component B		15 %	Presentation of project.

Part 4: Teaching and Learning Methods

Learning Outcomes

On successful completion of this module students will be able to:

	Module Learning Outcomes
MO1	Devise methods of optimising the performance of communications protocols in different computational environments.
MO2	Evaluate the performance of different protocols and their impact on system design.
MO3	Produce diagrams that describe the structure of various protocols.
MO4	Design and implement aspects of a protocol and justify design choices in relation to theoretical concepts.

Contact Hours

Contact Hours	
Independent Study Hours:	
Independent study/self-guided study	114
Total Independent Study Hours:	114
Scheduled Learning and Teaching Hours:	
Face-to-face learning	36
Total Scheduled Learning and Teaching Hours:	36
Hours to be allocated	150
Allocated Hours	150

Reading List

The reading list for this module can be accessed via the following link:

https://rl.talis.com/3/uwe/lists/AAA72DA9-A0CC-1C46-25B8-83A8CD8D54D9.html?lang=en-GB&login=1