MODULE SPECIFICATION

Part 1: Information			
Module Title	Designing and Developing Device Drivers		
Module Code	UFCFX4-15-3	Level	Level 6
For implementation from	2018-19		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Computer Science and Creative Technologies
Department	FET Dept of Computer Sci & Creative Tech		
Contributes towards			
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Educational Aims: This module intends to give the students an in depth practical course in device driver development for general purpose operating systems. The work will be located in the academic field of operating systems development but the emphasis will be on the practical difficulties in implementing and maintaining system interfaces for heterogeneous and rapidly changing collections of devices. The relationship of devices to the various sub systems within operating systems will be explored and criticised.

The interaction of devices and buses will be examined. The students will develop a practical appreciation of the subject through the laboratory work which will involve the students writing an OS device driver from scratch. Strategies for testing and debugging will be covered as well as documentation standards.

In addition the educational experience may explore, develop, and practise but not formally discretely assess the following:

Understand the need to work effectively with colleagues within a team

Outline Syllabus: Topics covered will include:

Operating Systems and device drivers :
OS models, HALs types of OS – monolithic, microkernel, distributed device drivers and file systems, devices and buses

Device driver internals:
Device driver models, interfacing to the OS, interrupt and polled devices, DMA, accessing and managing kernel memory

Device driver development:
Finding information on devices, creating a device driver from data sheets, partitioning the driver, testing, debugging and documenting, optimisation and performance

Device driver examples:
Device drivers and system initialisation, L2C device driver, codec device drivers, graphics drivers

Teaching and Learning Methods: The course will be paced through lectures, with group practicals and individual assignments providing a broadening experience. The theoretical content, introduced in lectures, will be reviewed in seminars. Personal work time will be used for background reading, report writing and preparation for laboratories.

Activity (hrs)
Contact time (36)
Assimilation and development of knowledge (74)
Exam preparation (20)
Coursework preparation (20)
Total study time (150)

Part 3: Assessment

The students will be assessed through a mix of practical assignment tasks and an examination. The practical tasks are designed to be completed over the course of the module, rather than as a piece of increased effort near the end of the teaching. This approach is taken to ensure sustained student engagement and to allow the student to demonstrate their mastery of a number of practical skills.

The more theoretical aspects of the course are assessed in the exam.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Practical Skills Assessment - Component B		50 %	Practical coursework
Examination - Component A	✓	50 %	Examination (2 hours)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Practical Skills Assessment - Component B		50 %	Practical coursework
Examination - Component A	✓	50 %	Examination (2 hours)

Part 4: Teaching and Learning Methods

Learning Outcomes

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

	Module Learning Outcomes
MO1	Master the practical difficulties of implementing system interfaces for heterogeneous and rapidly changing collections of devices.
MO2	Understand the requirements and functionality of device drivers
MO3	Recognise and manipulate the relationship between device drivers and operating systems
MO4	Develop, including debugging, testing and documenting, a device driver
MO5	Benchmark competing device drivers

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://uwe.rl.talis.com/index.html