MODULE SPECIFICATION

Part 1: Information			
Module Title	Parallel Computing		
Module Code	UFCFFL-15-M	Level	Level 7
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	Cyber Security [Sep][FT][Frenchay][1yr] MSc 2018-19 Cyber Security [Sep][PT][Frenchay][2yrs] MSc 2018-19		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description

Educational Aims: See Learning Outcomes

Outline Syllabus: Parallel Computing:
Introduction to parallel computing
Introduction to parallel architectures
Parallel programming abstractions, e.g. OpenMP, Actors, TBB

Heterogeneous Computing:
GPUs, DSPs, etc.
Parallel programming abstractions, e.g. OpenCL 4.1, Cuda
Applications, e.g. image processing, HPC

Distributed Computing (overview, to provide context with parallel):

Clusters
High-Performance Computing
Cloud computing

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 safe embedded systems.

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.

Part 3: Assessment

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 research in parallel computing.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B	✓	75 %	Logbook and demonstration of final product (2000-3000 words)
Presentation - Component A		25 %	Oral presentation
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Portfolio - Component B	✓	75 %	Logbook and video demonstration of final product (2000-3000 words)
Presentation - Component A		25 %	Video presentation

Part 4: Teaching and Learning Methods

Learning Outcomes

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

	Module Learning Outcomes
MO1	Distinguish, contrast, and apply the main concepts of sequential, concurrent, and parallel computing
MO2	Be able to critically evaluate and assess the effectiveness of parallel computation in homogenous and heterogeneous environments
MO3	Distinguish, contrast, and reflect between different hardware abstractions for parallelism, e.g. multi-core, many-core, and vector architectures
MO4	Develop programs for parallel systems, e.g. using OpenMP for single-node, and Cuda for accelerators
MO5	Develop parallel designs and algorithm design and implementation

Contact Hours

Contact Hours	
Independent Study Hours:	
Independent study/self-guided study	102
Total Independent Study Hours:	102
Scheduled Learning and Teaching Hours:	
Face-to-face learning	48
Total Scheduled Learning and Teaching Hours:	48
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/modules/ufcffl-15-m.html