MODULE SPECIFICATION

Part 1: Information			
Module Title	Computer Systems Structures [TSI]		
Module Code	UFCFCW-24-0	Level	Level 3
For implementation from	2020-21		
UWE Credit Rating	24	ECTS Credit Rating	12
Faculty	Faculty of Environment & Technology	Field	Computer Science and Creative Technologies
Department	FET Dept of Computer Sci & Creative Tech		
Module Type:	Standard		
Pre-requisites	None		
Excluded Combinations	None		
Co-requisites	None		
Module Entry Requirements	None		
PSRB Requirements	None		

Part 2: Description

Educational Aims: The main aim of the module is to provide students with information to understand design and functioning principles of computers (C) and computer systems (CS); be able to carry out the choice of C and/or CS, whose architectural features fits better to specific conditions.

Outline Syllabus: The module covers the following topic areas:

Structure of von Neumann computer,
Computer arithmetic basics,
Elementary Boolean functions and logical elements,
Architecture of instruction commands,
Computer functional organisation,
Computer control units,
Computer operational units,
Computer internal memory,
Computer external memory,
Computer virtual memory,
Memory protection,

Computer intercommunication system,
Input/output systems,
Modern tendencies in computer processors architecture,
Computer logical basics,
Circuit technology of digital devices,
Synthesis and analysis of digital devices,
Parallelism as a basis of high-performance calculations,
Realisation of parallelism at the level of single processor,
Computer system concept. CS taxonomy,
Computer systems (C) with shared and distributed memory,
Topology of interconnection networks,
Computer systems of SIMD class (vector, array, systolic),
Computer systems of MIMD class with shared memory (SMP, PVP, NUMA),
Computer systems of MIMD class of MIMD with distributed memory (MPP cluster, Constellation, transputer),
Computer systems with non-standard organisation of computational process (data-flow, reduction, wavefront),
Computer systems performance estimation,

Teaching and Learning Methods: Learning and teaching will be provided to students in following forms: lectures, labs, tests. During lectures, theoretical aspects of the course will be provided to students by the teaching staff. Lectures will be supported by presentation published and available to the students on e.tsi.lv under the module section. Also, additional materials, like code examples, text books, publications on the internet, videos etc will be presented in e.tsi.lv. During labs, each student receives an individual task to perform.

Part 3: Assessment

This module assessment is split into two components (A – Exam, B – Labs):

- A1: final 3-hour examination which will assess the students understanding of taught material that forms part of the learning outcomes but cannot easily be assessed through practical tasks.

- B1: A portfolio of practical exercises, which covers all topics of the module
- B2: A series of online tests covering a range of topics covered within this module

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A	✓	25 %	Exam coverage topics term 1 and 2
Portfolio - Component B		20 %	A portfolio of practical exercises, which covers all topics of the module (for term 1&2)
In-class test - Component B		55 %	A series of in-class tests, which covers all topics of the module (for term 1&2)
Resit Components	**Final Assessment**	**Element weighting**	**Description**
Examination - Component A		25 %	Exam coverage topics term 1 and 2
Portfolio - Component B		20 %	A portfolio of practical exercises, which covers all topics of the module (for term 1&2)
In-class test - Component B		55 %	a series of in-class tests, which covers all topics of the module (for term 1& 2)

Part 4: Teaching and Learning Methods

Learning Outcomes

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

Module Learning Outcomes	Reference
Understand basic principles of von Neumann computer design and structure	MO1
Know computer arithmetic, logical and circuitry fundamentals.	MO2
Understand conception of calculation performance increase due to usage of multiprocessors and multicomputer.	MO3
Understand CS classification	MO4
Know about conventional and non-standard CS architectures, as well as range of their use.	MO5
Know and use C and CS performance estimation methods	MO6
Present basic tendencies in development of computer aids	MO7
Apply different data presentation formats and different numbering systems	MO8
Use the mathematical apparatus of Boolean algebra for synthesis and analysis of combination and serial logical circuits	MO9
Reasonably choose the type and characteristics of Cs and CSs as it applies to the supposed aim of their application	MO10
Understand the margins of borders of different Cs and CSs architectures	MO11
Be able to comprehend and expound knowledge at scientific and professional domain	MO12
Be able to track tendencies and trends in development of the computing aids	MO13

Contact Hours

Independent Study Hours:	
Independent study/self-guided study	96
Total Independent Study Hours:	96
Scheduled Learning and Teaching Hours:	
Face-to-face learning	64
Total Scheduled Learning and Teaching Hours:	64
Hours to be allocated	240
Allocated Hours	160

Reading List

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

https://rl.talis.com/3/uwe/lists/A1851884-C45A-1309-4633-9B981361EDE4.html?lang=en-gb&login=1

Part 5: Contributes Towards

This module contributes towards the following programmes of study:

Computer Science and Software Development [Oct][FT][TSI][4yrs] BSc (Hons) 2020-21

Computer Science and Software Development [Feb][FT][TSI][4yrs] BSc (Hons) 2020-21