MODULE SPECIFICATION

Part 1: Information			
Module Title	Higher Mathematics [TSI]		
Module Code	UFCFDW-30-0	Level	Level 3
For implementation from	2020-21		
UWE Credit Rating	30	ECTS Credit Rating	15
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

Overview: This module provides theoretical foundations of the higher mathematic fundamentals such as linear and vector algebra, function of several variables and to develop logical and the algorithmic thinking of students for solution of applied and theoretical tasks.

Educational Aims: The aim of the module is to provide theoretical foundations of the higher mathematic fundamentals such as linear and vector algebra, function of several variables and to develop logical and the algorithmic thinking of students for solution of applied and theoretical tasks. Development of the basis of the mathematical knowledge and creation of a platform for further mathematical education.

Outline Syllabus: The module covers the following topic areas:

Term 1:
Linear and vector algebra
Analytic geometry
Functions and their characteristics
Limits of numerical sequences and functions of one variable.
Continuity of functions.

Derivatives of function, interpretations and computation.

Term 2:
Definite and indefinite integrals
Functions of several variables
Ordinary differential equations and systems of the differential equations.
Functional series (power, Taylor, Fourier)
Multiple integrals.
Linear spaces and operators.

Teaching and Learning Methods: Learning and teaching will be provided to students in two forms: lectures and labs. 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, the course includes additional materials, like textbooks, publications on the internet, videos etc.

During practical calculus classes, students receive a set of practical problems for every topic to perform. Several practical problems are explained during classes by a teaching assistant, while other problems are provided as a homework.

Part 3: Assessment

This module assessment is split into two components (A – Exam, B – In-semester Assignments). Both components should be completed individually (i.e. this is not group work). Due to the large volume of the course, the exam is split into 4 components – two in-semester colloquiums and two end-term exams (for the first and second terms).

A – 3 hour exam component that includes both theoretical and practical parts:
B1 - A series of in-class tests used to gage students progress and understanding throughout the module.
B2 – A series of tasks - Includes solutions for a set of problems on every topic covered in the module.

First Sit Components	**Final Assessment**	**Element weighting**	**Description**
In-class test - Component B		30 %	A series of in-class tests, covering theoretical knowledge of linear and vector algebra and analytic geometry and integral calculus
Portfolio - Component B		50 %	A series of tasks - Includes solutions for a set of problems on every topic covered in the module
Examination - Component A	✓	20 %	Exam and includes practical assignments as well as theoretical questions
Resit Components	**Final Assessment**	**Element weighting**	**Description**
In-class test - Component B		30 %	A series of in-class tests, covering theoretical knowledge of linear and vector algebra and analytic geometry and integral calculus
Portfolio - Component B		50 %	A series of tasks - Includes solutions for a set of problems on every topic covered in the module
Examination - Component A		20 %	Exam and includes practical assignments as well as theoretical questions

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
Use main statements, theorems and definitions of higher mathematics	MO1
Understand main principles and laws of linear and vector algebra, analytical geometry, theory of functions, mathematical and functional analysis	MO2
Apply core mathematical methods of problem solving and be able to apply then for applied tasks	MO3
Able to solve core mathematical problems using modern approaches and methods	MO4
Able to formulate a problem, develop an approach to its solution and competently interpret the results	MO5
Have a skill of appropriate and efficient solving method selection	MO6
Apply abstract thinking, analysis and synthesis	MO7
Ability to implement core methods of mathematical reasoning, to use mathematics for correct presentation and proving own knowledge	MO8
Use mathematics as a universal language of science and a tool for modelling of real phenomena and processes	MO9

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	144
Total Scheduled Learning and Teaching Hours:	144
Hours to be allocated	300
Allocated Hours	240

Reading List

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

https://rl.talis.com/3/uwe/lists/87E24D6C-C796-7F93-9450-93F7A7C792A7.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 [Oct][PT][TSI][5yrs] BSc (Hons) 2020-21 BSc (Hons) 2020-21

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

Computer Science and Software Development [Feb][PT][TSI][5yrs] BSc (Hons) 2020-21 BSc (Hons) 2020-21