STUDENT AND ACADEMIC SERVICES

UWE Bristol | University of the West of England

MODULE SPECIFICATION

Part 1: Information			
Module Title	Methods of Computer Processing of Statistical Data [TSI]		
Module Code	UFCF8X-12-2	Level	Level 5
For implementation from	2022-23		
UWE Credit Rating	12	ECTS Credit Rating	6
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 aim of this module is to familiarise students with the applied statistical procedures and their computer implementation, and the basis of data processing software as Statistica for example. **Outline Syllabus:** Introduction. Data and Information. Statistical data sources. Models of statistical data. Statistical software review. Task setting. Applied statistical methods and simulation. Sample and sampling. Descriptive statistics. Data visualization and application of software such as STATISTICA Testing Statistical Hypotheses: testing hypotheses about the type of distribution law, testing of independence, etc; Distribution Laws: Fisher, Student, Chi-squared; Testing of homogeneity hypothesis; Rank tests. Statistical tests properties; Outliers analysis and missing data; Statistical dependency. Correlation analysis. Pair, partial, and multiple correlation; Statistical study of relationships; Concepts of regression theory. Method of least squares. LSM estimators and their properties.

Gauss- Markov theorem;
Classical models. Gauss-Markov assumptions. Multicollinearity. Heteroscedasticity and
Autocorrelation;
Non-linear models. Forecasting on the basis regression;
One factor linear and non-linear models;
Stepwise methods in regression;
Computational problems of least-squares method. Recurrent method.
ANOVA and MANOVA.
Time Series Analysis. Autocovariance and autocorrelation functions. Spectral analysis;
Criteria of trend analysis. ARIMA model;
Conclusion. New technologies and applications.

Teaching and Learning Methods: Learning and teaching will be provided to students in two
forms: lectures and laboratory works. During lectures, theoretical aspects of the course will be
provided to students by the teaching staff. Lectures will be supported by presentations published
and available to the students on e.tsi.lv under the module section. Also, additional materials, like
publications on the internet, videos etc will be presented in e.tsi.lv.
During laboratory work each student receives an individual variant of the dataset for analysis.

Part 3: Assessment

This module assessment is split into two components (A – Exams, B – Laboratory works):

A – Final exam

B1 - A series of in-class tests, assessing students knowledge and understanding as the module progresses.
B2- A portfolio of laboratory works, each of which should include a written report.

First Sit Components	Final Assessment	Element weighting	Description
Examination - Component A	✓	30 %	Final Exam
In-class test - Component B		30 %	Series of ongoing in-class tests
Portfolio - Component B		40 %	sequence of laboratory works. Each laboratory work should be completed, and report should be provided
Resit Components	Final Assessment	Element weighting	Description
Examination - Component A		30 %	Written Exam
In-class test - Component B		30 %	Series of ongoing in-class tests
Written Assignment - Component B		40 %	A sequence of laboratory works. Each laboratory work should be completed, and report should be provided

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
Knowledge of modern statistical methods of data analysis	MO1

	Use statistical methods and visualization to quickly explore data	MO2
	Apply statistics and computational analysis to make predictions based on	MO3
	Apply basic computer science concepts such as modularity, abstraction, and encapsulation to data analysis problems	MO4
	Effectively communicate the outcome of data analysis using descriptive statistics and visualisations	MO5

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	120
	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/B1C41FB1-9105-E435-651D-6A48F50762CF.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