MODULE SPECIFICATION

Name of Module	Statistics					
Parent School/Dept	Computer Science/Information Systems					
Programme(s) where module is offered	BSc Computer Science with Electrical Engineering; BSc Computer Science with Economics; BSc Computer Science with Business; BSc Computer Science with International Relations; BSc Computer Science with Political Science; BSc Information Systems with Electrical Engineering; BSc Information Systems with Economics; BSc Information Systems with Business; BSc Information Systems with International Relations; BSc Information Systems with Political Science;					
Status (core, option, free choice)		Core		**Pre-Requisite Modules or Qualifications**	None	
FHEQ Level	4	**Unit Value**	6 ECTS	**Module Code**	MATH 260	**Module coordinator**	Dr. Mirna Udovicic
Term taught		Spring		**Applicable From**	2016	

Educational Aims of the Module

This module will start with graphical interpretation and display of data. Describing patterns and departures from patters including discussion of central tendencies and variability for both univariate and bivariate data will be studied. Exploring bivariate data will include correlation, linearity, least-squares regression lines, and residuals analysis if times permits. Some fundamental topics in probability need to be covered: interpreting probability together with discrete random variables (including binomial and geometric and expected values and variability of those), of continuous random variables such as normal distribution, and sampling distributions. This module will also cover statistical inference, estimating population parameters, testing hypothesis and confidence intervals. The module will also touch upon sampling and experimentation techniques of planning and conducting a study.

Module Outline/Syllabus

- Statistics, Data, and Statistical Thinking;

- Methods for Describing Sets of Data;

- Probability

- Random Variables and Probability Distribution

- Inferences Based on a Single Sample

- Inferences Based on a Two Samples

- Design of Experiments and Analysis of Variance

- Categorical Data Analysis

Student Engagement Hours

Type	Number per Term	Duration	Total Time
Lectures	30	2 hours	60 hours
Tutorials	15	2 hours	30 hours
Total Guided/Independent Learning Hours			**60**
Total Contact Hours			**90**
Total Engagement Hours			**150**

Assessment Method Summary

Type	Number Required	Duration / Length	Weighting	Timing/Submission Deadline
Final exam	1	180 minutes	50%	End of semester
Mid-term exam	1	90 minutes	20%	Week 8
Project (group)	1	2000 words	10%	Week 13

Test	2	60 minutes	20%	Week 4 and week 13

Module Outcomes

Intended Learning Outcomes:		**Teaching and Learning Strategy:**
1. Interpret data using graphical and basic statistical techniques. 2. Determine the probability of discrete and continuous random variables, including binomial and normal distribution, and central limit theorem. 3. Infer base on single sample by estimating with confidence intervals, including student's t-statistics	→	1. Interactive lectures on module material. (ILO: 1 -6) 2. Tutorials provide series of development exercises and solutions to illustrate the theory. (ILO: 1-6) 3. Group project enables students to develop research skills and apply the gained knowledge on a concrete problem through conducting research, analysing and presenting the data and project results. (ILO: 6)
4. Test hypothesis, inferring based on single and two samples. 5. To understand the reasoning behind statistical studies and basic techniques of conducting studies. 6. To understand basic technologies that provide tools for data analysis.	→	**Assessment Strategy** 1. Final Exam (ILO: 1 -5) 2. Mid-term exam (ILO: 1-3) 3. Test (ILO: 1 -5) 4. Project (ILO: 1-6)
Practical Skills 1. Practical understanding of data collection and basic analysis 2. Practical understanding on how to use statistics for decision making 3. Use of common software applications such as MS Word, MS Excel, MS PowerPoint.	→	**Teaching and Learning Strategy:** 1. Practical demonstrations (PS:1-3) 2. Interactive lectures (PS:1-3) 3. Weekly Lab exercises with tutor-lead support will allow students to gain hands on skills in data analysis (PS:1-3) 4. Group project (PS:1-3)
	→	**Assessment Strategy** 1. Mid-term exam (PS:1) 2. Final exam (PS:1-2) 3. Test (PS:1-2) 4. Project (PS:1-3)
Transferable Skills 1. Ability to make systematic and creative judgements 2. Team work: ability to collaborate and solve problems in team projects. 3. Research Report Writing and Presentation Skills.	→	**Teaching and Learning Strategy:** 1. Tutorials (TS:1 -3) 2. Project (TS:1-3)
	→	**Assessment Strategy** 1. Mid-term exam (TS: 1) 2. Final exam (TS:1) 3. Project (TS:1 -3)

Key Texts and/or other learning materials

Set Text

- James T. McClave, P. George Benson and Terry Sincich.(2013) *Statistics for Business and Economics*, 12th edition, Pearson.

Supplementary Materials

- Field. *Discovering Statistics using SPSS*, 3rd edition, Sage.
- Newbold, P., et al., (2015), Statistics for Business and Economics, Pearson
- Hand, D., (2008), Statistics: A short Introduction, Oxford University Press
- Urdan, T., (2010), Statistics in Plain English, 3rd Edition, Routledge
- Scientific Research, (2015), Open Journal of Statistics, [online], http://www.scirp.org/journal/ojs/ (accessed 25th November 2015).

Please note: This specification provides a concise summary of the main features of the module and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module and programme can be found in the departmental or programme handbook. The accuracy of the information contained in this document is reviewed annually by the University of Buckingham and may be checked by the Quality Assurance Agency.

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