1. **Title of the module**

COMP3290 (CO329) – Data Analysis

1. **School or partner institution which will be responsible for management of the module**

School of Computing

1. **The level of the module (Level 4, Level 5, Level 6 or Level 7)**

Level 4

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Spring or Autumn

1. **Prerequisite and co-requisite modules**

Pre-requisite: COMP3200 Introduction to Object-Oriented Programming

COMP3220 Foundations of Computing I

1. **The programmes of study to which the module contributes**

BSc Computing, BSc Computing (consultancy)

BSc Computer Science for Health

BSc Business Information Technology

Plus the year in industry versions of these programmes.

1. **The intended subject specific learning outcomes.  
   On successfully completing the module students will be able to:**

8.1 Identify and evaluate alternative solution strategies to a given problem [A4, B2, C3]

8.2 Analyse, design and implement a computing-based solution to a structured problem [A2, B4, C1 C3, D5]

8.3 Design and implement well-documented, maintainable spreadsheets or programs suitable for data analysis tasks [C1].

8.4 Build models and carry out analyses of real-world problems using OR methodologies and spreadsheets [D3].

8.5 Perform custom calculations using Matlab and/or VBA or similar programming languages [A2, C1]

8.6 Write programs and/or develop spreadsheets to present and analyse quantitative data [D3].

1. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**

9.1 Identify and analyse criteria and specifications appropriate to specific problems and plan strategies for their solution. [A4, B3]

9.2 Demonstrate a basic analytical ability and its relevance to everyday life. [B7]

9.3 Apply principles of effective information management, information organisation and information retrieval skills to information of various kinds. [C3]

9.4 Deploy effectively the tools used for the construction and documentation of software, with particular emphasis on understanding the whole process involved in using computers to solve practical problems. [B7, C4]

9.5 Demonstrate effective use of general IT facilities, manage one’s own learning and development including time management and organisational skills. [D3, D4]

9.6 Analyse and draw reasoned conclusions concerning structured and, to a more limited extent, unstructured problems. [B9]

1. **A synopsis of the curriculum**

The module introduces students to data analysis and statistics techniques that are important in the application of computers to business and industry. This includes summarising data, using measures of central tendency and dispersion, and effective graphical representations. Various probability models, including normal and binomial distributions, sampling and inference and predictive techniques are introduced. Regression and time series analysis also covered, along with what-if analysis tools.

The module teaches students to program in software such as Matlab and/or create spreadsheets using VBA scripting. These tools are used to handle data, variables and arrays, to display output data using built-in functions and develop new functions. Various problem-solving techniques and plotting for data visualisation are introduced.

1. **Reading list (Indicative list, current at time of publication. Reading lists will be published annually)**

UpSkill Learning, MATLAB - Programming with MATLAB for Beginners: A Practical Introduction To Programming And Problem Solving (MATLAB for Engineers, MATLAB for Scientists, MATLAB Programming for Dummies), 2016

Clarke, G. M, A Basic Course In Statistics, 2004

Jelen, B, Microsoft Excel 2010 in Depth, Que, 2010

Jelen, B, VBA and Macros: Microsoft Excel 2010, Que, 2010

Albright, SC, VBA for Modelers: Developing Decision Support Systems with

Microsoft Office Excel, South Western Educational Publishing, 2011

Hillier, FS, Introduction to Operational Research, McGraw-Hill, 2009

Powell, SG, the Art of Modelling with Spreadsheets, John Wiley & Sons, 2010

1. **Learning and teaching methods**

Total contact hours: 28

Private study hours: 122

Total study hours: 150

1. **Assessment methods**
   1. Main assessment methods

Assessment 1 - Excel Fundamentals and What-if Analysis (20%)

Assessment 2 - Linear Programming & Data Analysis (20%)

Assessment 3 - Using Matlab (10%)

Assessmenr 4 - Data Analysis Project (50%)

13.2 Reassessment methods

Reassessment Instrument: 100% coursework

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *8.6* | *9.1* | *9.2* | *9.3* | *9.4* | *9.5* | *9.6* |
| **Lecture** | X | X | X | X | X | X | X |  |  |  |  | X |
| **Private Study** | X | X | X | X | X | X | X | X | X | X | X | X |
| **Classes** | X | X | X | X | X | X | X | X | X | X | X | X |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Assessment method** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Assessments** | X | X | X | X | X | X | X | X | X | X | X | X |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

1. **Inclusive module design**

The School recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:

a) Accessible resources and curriculum

b) Learning, teaching and assessment methods

1. **Campus(es) or centre(s) where module will be delivered**

Medway

1. **Internationalisation**

The topics addressed by this module relate to a field which is of international importance, given the global role of computers in today's technological innovation.  The topics covered by this module are international in nature, being identical worldwide and independent of traditional spoken language. Within the teaching and delivery, we aim to promote a diversity of international experience through use of worldwide examples and perspectives on the use of data analysis in the international context.

**FACULTIES SUPPORT OFFICE USE ONLY**

**Revision record – all revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
| 10/12/18 | Minor | Sept-19 | 13 | no |
|  |  |  |  |  |

Revised FSO Jan 2018