1. **Title of the module**

COMP5840 (CO584) - Solving Problems with Data

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 5

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

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

Co-requisite: COMP5830: An Introduction to Programming and Web Technologies

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

Year in Computing

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

8.1. Present data using descriptive statistics and visualisations.

8.2. Describe methods for obtaining knowledge from data at different scales and of different types.

8.3. Apply computer packages for data visualisation and data mining to sample datasets.

8.4. Describe the entire knowledge discovery from data process and be able to apply it to specific examples.

8.5. Describe the challenges of ethics, privacy and security in data and apply these to specific examples.

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

9.1. Use sophisticated computer software.

9.2. Write reports using appropriate language and visual methods.

1. **A synopsis of the curriculum**

Data types: nominal, numerical, ordinal, text, audio, visual, temporal and non-temporal. Basic descriptive statistics: measures of average and spread, different ways of graphing data. Visualisation techniques for data of different types and scales. Choosing appropriate and valid methods for the analysis and presentation of data, and understanding the limitations of methods. Data at different scales, including big data, and the computational challenges of processing data at scale. The process of discovering useful knowledge from data: including understanding the need for preprocessing and cleaning data, the challenges of gathering relevant data, and the need to present results in a comprehensible and actionable way. Data mining: classification and clustering, and the idea of predictive analytics. Ethical, privacy and security issues concerning data.

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

John. H. Kranzler, Statistics for the Terrified, Pearson, 2010.

Ian H. Witten and Eibe Frank, Data Mining: Practical Machine Learning Tools and Techniques, Morgan Kaufmann, 2011.

Joel Grus, Data Science from Scratch, O’Reilly, 2015.

1. **Learning and teaching methods**

Total contact hours: 32

Private study hours: 118

Total study hours: 150

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

Coursework (2 x 30 hours) (50%)

Exam (50%)

13.2 Reassessment methods

Like for like.

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* | *9.1* | *9.2* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |
| Lectures | **X** | **X** |  | **X** | **X** |  |  |
| *Practical classes* | **X** |  | **X** |  | **X** | **X** |  |
| *Private study* | **X** | **X** | **X** | **X** | **X** | **X** | **X** |
| **Assessment method** |  |  |  |  |  |  |  |
| *Examination* | **X** | **X** |  | **X** | **X** |  |  |
| *Computing practical coursework* | **X** |  | **X** | **X** |  | **X** |  |
| *Case study coursework.* | **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**

Canterbury

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.

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**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) |
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Revised FSO Jan 2018