1. KentVision Code and title of the module

COMP6481, COMP8481- Solving Problems with Data and Text

## Division and School/Department or partner institution which will be responsible for management of the module

Division of Computing, Engineering, and Mathematical Sciences

School of Computing

## The level of the module (Level 4, Level 5, Level 6 or Level 7)

Level 6: COMP6481, Level 7 COMP8481

## The number of credits and the ECTS value which the module represents

15 credits (7.5 ECTS)

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

Spring

## Prerequisite and co-requisite modules and/or any module restrictions

Level 6 Pre-requisites:

COMP5830: An Introduction to Programming and Web Technologies

or

COMP3200: Introduction to Object-Oriented Programming

or

COMP3590 Programming for Artificial Intelligence

Level 7 Pre-requisites:

COMP8270: Programming for Artificial Intelligence

## The course(s) of study to which the module contributes

Compulsory to the following courses:

Year in Computing

Optional to the following courses:

Artificial Intelligence – BSc

Computer Science – BSc

Business Information Technology – BSc

Computer Science (Cyber Security) – BSc

Software Engineering – BSc

Artificial Intelligence – MSc

Computer Science – MSc

Computer Science (Artificial Intelligence) – MSc

Computer Science (Cyber Security) – MSc

Cyber Security – MSc

Networks and Security – MSc

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

On successfully completing the level 6 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, text processing, and data mining to sample datasets.

8.4. Demonstrate knowledge and critical understanding of the discovery from data process and be able to apply it to specific examples.

8.5. Describe the challenges of ethics and fairness in data and apply these to specific examples.

On successfully completing the level 7 module students will also be able to:

8.6. Demonstrate systematic understanding and critical awareness of the discovery from data process and be able to technically evaluate specific results.

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

On successfully completing the level 6 module students will be able to:

9.1. Use sophisticated computer software.

9.2. Write computer programs for data manipulation and text processing using appropriate programming languages and software packages.

On successfully completing the level 7 module students will also be able to:

9.3 Undertake critical appraisal of a candidate solution or design, and reflect upon its merits.

## 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. 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 pre-processing and cleaning data, the challenges of gathering relevant data, and the need to present results in a comprehensible and actionable way. Data mining: classification/regression and clustering, and the idea of predictive analytics. Elements of information retrieval from text. Vector representations of text documents. Fairness and ethical issues concerning data.

## Reading list

## The University is committed to ensuring that core reading materials are in accessible electronic format in line with the Kent Inclusive Practices.

## The most up to date reading list for each module can be found on the university's [reading list pages](https://kent.rl.talis.com/index.html).

Ian H. Witten, Eibe Frank, Mark A. Hall, and Christopher Pal, Data Mining: Practical Machine Learning Tools and Techniques, Morgan Kaufmann, 2016.

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

Sowmya Vajjala, Bodhisattwa Majumder, Anuj Gupta, Harshit Surana, Practical Natural Language Processing: A Comprehensive Guide to Building Real-World NLP Systems. O'Reilly Media, 2020.

## Contact Hours

Private Study: 118

Contact Hours: 32 (22h lectures + 10h classes)

Total: 150

## Assessment methods

* 1. Main assessment methods

This module will be assessed by 100% coursework.

• 20% class exercises

• 30% time limited assessment (approximately 2 hours)

• 50% practical assignment (approximately 59 hours of work)

14.2 Reassessment methods

Like for like.

## Map of module learning outcomes (sections 9 & 10) to learning and teaching methods (section 13) and methods of assessment (section 14)

**Module learning outcomes against learning and teaching methods:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *8.6* | *9.1* | *9.2* | *9.3* |
| **Learning/ teaching method** |  |  |  |  |  |  |  |  |  |
| Lectures | **X** | **X** |  | **X** | **X** | **X** |  |  | **X** |
| *Practical classes* | **X** |  | **X** |  | **X** | **X** | **X** | **X** |  |
| *Private study* | **X** | **X** | **X** | **X** | **X** |  | **X** | **X** | **X** |

**Module learning outcomes against assessment methods:**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *8.6* | *9.1* | *9.2* | *9.3* |
| **Assessment method** |  |  |  |  |  |  |  |  |  |
| *In class test* | **X** | **X** |  | **X** | **X** |  |  |  | **X** |
| *Class exercises* | **X** |  | **X** | **X** |  | **X** | **X** | **X** | **X** |
| *Practical assignment* | **X** | **X** | **X** | **X** | **X** | **X** | **X** | **X** |  |

## Inclusive module design

The Division 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

## Campus(es) or centre(s) where module will be delivered

Canterbury

## 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.

**DIVISIONAL USE ONLY**

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

| Date approved | New/Major/minor revision | Start date of delivery of (revised) version | Section revised  (if applicable) | Impacts PLOs (Q6&7 cover sheet) |
| --- | --- | --- | --- | --- |
| 24/01/22 | New | September 2022 | N/a |  |
|  |  |  |  |  |