1. **KentVision Code and title of the module**

BUSN9970: Prescriptive Analytics for Decision Making

1. **Division which will be responsible for management of the module**

Kent Business School

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

Level 7

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)**

Autumn

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

None

1. **The course(s) of study to which the module contributes**

MSc Business Analytics and optional module for MSc Logistics and Supply Chain Management.

MSc Business Analytics(HDA)

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

8.1 Demonstrate a comprehensive understanding of quantitative models for decision making.

8.2 Demonstrate conceptual understanding of how complex real-world systems can be represented in mathematical form.

8.3 Exhibit a systematic knowledge of some classic business, management, and industry problems, formulate them mathematically, and solve them.

8.4 Demonstrate an ability to deal with various real-world complexities and incorporate these into the modelling framework in order to prescribe actionable recommendations.

8.5 Implement such models using industry-standard software and perform analyses to support business planning and management.

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

9.1 Independently apply their model building, problem-solving and numerical skills to solve complex business/management/industry problems.

9.2 Demonstrate an ability to select the most appropriate technique for a particular business/management/industrial problem.

9.3 Independently analyse the outcome of a model and present their findings in a clear yet rigorous manner.

1. **A synopsis of the curriculum**

The aim of this module is to introduce students to optimisation modelling and solution techniques, typical applications areas within strategic/operation business planning, and the use of commercial optimisation software.

The module covers the following indicative topics:

* Linear Programming: Students will be introduced to the building blocks of optimisation (i.e. decision variables, objectives, constraints), how to mathematically formulate linear programming (LP) models, LP solution techniques, sensitivity analysis (e.g. range of optimality reduced costs, dual prices), and typical applications like production planning, scheduling, and portfolio selection.
* Network Models: This topic includes a range of concepts and modelling techniques for formulating classic network models, including transportation and assignment, shortest path, maximum flow, and minimum spanning tree problems, and common solution approaches.
* Integer Programming: This will cover integer linear programming (ILP) models, including binary integer models, classic exact and heuristic solution methods (e.g. branch and bound, greedy heuristics), and typical application areas of ILP, including capital budgeting, fixed charge production, and facility location.

1. **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).

1. **Contact hours**

Total contact hours: 42

Private study hours: 108

Total study hours: 150

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

Individual Written Assessment on Mathematical Modelling and Computation (2000 words) : 30%.

Exam (2 hours): 70%

13.2 Reassessment methods

Reassessment Instrument: 100% Exam

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

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *9.1* | *9.2* | *9.3* |
| *Lectures* | ✓ | ✓ | ✓ | ✓ |  | ✓ | ✓ | ✓ |
| *Seminars* |  | ✓ | ✓ | ✓ |  | ✓ | ✓ | ✓ |
| *Computing Labs* |  | ✓ | ✓ | ✓ | ✓ | ✓ |  | ✓ |
| *Private Study* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

**Module learning outcomes against assessment methods:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *9.1* | *9.2* | *9.3* |
| *Individual Written Assessment on Mathematical Modelling and Computation* |  | ✓ | ✓ | ✓ | ✓ | ✓ |  | ✓ |
| *Exam* | ✓ | ✓ | ✓ | ✓ |  | ✓ | ✓ |  |

Students must achieve a pass in all assessment elements to ensure all module learning outcomes have been met.

1. **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

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

Canterbury

1. **Internationalisation**

The curriculum in this module is globally applicable. Both the subject specific and generic learning outcomes are also globally applicable

**DIVISIONAL 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) |
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