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

BUSN9660: Simulation Modelling

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)**

Spring

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

None

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

Compulsory module for MSc Business Analytics and MSc Logistics and Supply Chain Management

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

8.1 Recognise the types of business and organisational problems that can be appropriately formulated and analysed using stochastic simulation.

8.2 Demonstrate a conceptual understanding of the basis of queuing theory.

8.3 Build realistic simulation models using industry-standard software and acquire a systematic understanding of the flexibility that simulation based approaches provide managers in terms of dealing with risk and other real-world complexities.

8.4 Demonstrate a comprehensive understanding of the theoretical foundations of stochastic simulation, including random number generation, sampling from discrete and continuous distributions, and statistical analysis of transient/steady-state outputs.

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

9.1 Demonstrate originality in model building, problem-solving, and numerical analysis skills to solve complex problems.

9.2 Use advanced computer tools to solve practical problems of direct relevance to business planning.

9.3 Communicate findings to both specialist and non-specialist audiences in a clear, yet rigorous manner.

1. **A synopsis of the curriculum**

The aim of the module is to give students hands-on experience in using industry-standard simulation modelling software in order to structure and solve complex and large-scale managerial decision problems.

The module will cover the following indicative topics.

* Queuing theory: Students will be introduced to the basic underpinnings of queuing theory, including key assumptions, benefits, and limitations.
* Discrete-event simulation: Core theory of discrete-event simulation will be covered, including a review of simulation mechanics, how to incorporate randomness into a simulation, and the systematic analysis of simulation model results. This will be supplemented with practical training in how to build and run simulation models using commercial software. Example applications will be drawn from a variety of sectors, such as manufacturing/production, transportation, healthcare, and other service industries (e.g. banking, retail, customer service).

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: 35

Private study hours: 115

Total study hours: 150

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

VLE test 1: Queuing Theory Exercises: 20%

VLE test 2: 20%

Simulation Modelling Report (up to 2500 words): 60%

13.2 Reassessment methods

Reassessment Instrument: 100% coursework

1. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section 12) 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* | *9.1* | *9.2* | *9.3* |
| *Lectures* | ✓ | ✓ |  | ✓ |  |  |  |
| *Computer Terminals* |  |  | ✓ |  | ✓ | ✓ | ✓ |
| *Independent Study* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |  |

**Module learning outcomes against assessment methods:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *9.1* | *9.2* | *9.3* |
| *VLE test 1 Queuing Theory Exercises* |  | ✓ |  |  | ✓ |  | ✓ |
| *VLE test 2* |  | ✓ |  | ✓ | ✓ |  |  |
| *Simulation Modelling Report* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |

Students must achieve a pass in the Simulation Modelling Report to ensure that 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**

An alternative version of the same module will be delivered at Hong Kong Baptist University as part the Division’s dual MSc degree in Business Analytics.

**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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