Aston Business School
Birmingham

BNM802 SIMULATION FOR MANAGERIAL DECISION MAKING

Academic Year 2011/12

Number of Aston Credits: 15

Number of ECTS Credits: 7.5

Staff Member Responsible for the Module:

Dr Andrew Greasley Operations and Information Management Group
Aston Business School Building 263 Extension 3110
Email: a.greasley@aston.ac.uk
Availability: See 'office hours' on door or email for an appointment
Or contact Mr John Morley, Operations & Information Management Group Administrator, Aston Business School Room 266 Extension 3236

Pre-requisites for the Module:

None

Module Objectives and Learning Outcomes:

At the end of the course students will be able to use simulation as an aid for decision making.

This module focuses on the modelling of business systems using computer simulation. The students will be required to locate a business problem and build and interpret the results from a simulation model of that problem. Thus this module combines the challenge of learning the theory of simulation modelling in the classroom with the practical challenges of collecting data in an external organisation and working in a group to meet a deadline for the presentation of results.

The module will cover all the steps in undertaking a simulation study including data collection, modelling input data using probability distributions, building a model using the ARENA simulation software and output analysis using confidence intervals.

Each student will receive a version of the ARENA simulation software on CDROM.

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Module Content:

Week 1	Introduction to Simulation
Week 2	Building a Model using the ARENA Visual Interactive Modelling System
Week 3	Modelling Input Data
Week 4	Validation and Verification
Week 5	Experimentation and Analysis
Week 6	Implementation of Results
Week 7	Presentation of Model Results
Week 8	Introducing Simulation in the Organisation
Week 9	Revision
Week 10	**Examination Week**

Corporate Connections:

The lecturer has conducted a number of consultancy assignments for public and private sector organisations. He draws extensively on this experience during the teaching of this module.

International Dimensions:

By its very nature, the visual aspect of visual interactive simulation makes it a worldwide language. Simulation and forecasting is thus a very attractive technique for multi-national organisations and is used within a range of international consultancy units.

Contribution of Research:

The lecturer has published a number of papers on the subject of simulation in international journals such as the International Journal of Operations and Production Management, Journal of the Operational Research Society and SIMULATION. He is also author of the set text for this module “Simulation Modelling for Business”.

Method of Teaching:

1.25 hour lecture per week, followed by 0.5 hour break, followed by 1.25 hour tutorial lab session as appropriate.

The ARENA software package will be used in the practical sessions. It is essential that students attend both lectures and practicals in order to understand the subject.

Handouts will be provided at lecture as well as the computer instructions where appropriate to create a dynamic learning environment with student hands-on participation in the application of concepts covered.

Method of Assessment:

The module is assessed 100% by coursework

The coursework requires the development (in groups) of a simulation model using ARENA and the submission of an individual report (80%) and the presentation as a group of the study results in week 7 (20%).

Learning Hours:

These should be roughly along the lines indicated below:

Contact Hours	27
Directed Learning (within the contact hours)	13
Private Study/Group Work	110
Total	**150**

The following essential and recommended readings are subject to change. Students should not therefore purchase textbooks prior to commencing their course. If students wish to undertake background reading before starting the course, many of the chapters/readings are available in electronic form via on-line library catalogues and other resources.

Essential Reading:

Simulation Modelling for Business, by A. Greasley (2004), Ashgate Publishing Limited: Aldershot. (available from www.ashgate.com or www.amazon.co.uk)

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Indicative Bibliography:

Simulation with ARENA, (fifth edition), by W.D. Kelton, R.P. Sadowski, D.T. Sturrock (2009), McGraw-Hill: Maidenhead.

Computer Simulation in Management Science, (5th Edition) by M. Pidd M (2004), John Wiley & Sons: Chichester

Useful Electronic Sources:

INSPEC, Compendex, ABI-Inform Full Text (Proquest), Web of Science (Science Citation Index), Emerald.