

Module Title:	Simulation and Visualisation
Academic year:	2010 – 2011
Credit Value:	5 – Elective
Pre- requisites:	None
Assessment:	100% Continuous Assessment (CA)
Aims	To develop critical understanding of the theory and techniques used to design, develop and deploy applications for basic simulation, including direct modelling and Monte Carlo randomisation, and visualisation of complex models and the effective communication of data analysis. This module develops awareness in the student of <i>non-linear</i> computing techniques and systems. Such non-linear techniques can then be used to solve problems which typical linear software engineering techniques cannot, for example, <i>Conways 'Game of Life'</i> , <i>Bio-computing for the immune system</i> , <i>stock market modeling</i> and the <i>Prisoners Dilemma</i> . This module aims to encourage students to derive solutions to problems where not all parameters are known, and to reason an acceptable approximation for unknown parameters.
Module Content	<ul style="list-style-type: none"> • Modelling and Simulation • Library and Tool-based Visualisation • Analysis and Presentation of Data
Intended Learning Outcomes:	<p>Having successfully completed this module, a student will be able to:</p> <ol style="list-style-type: none"> 1. Plan and design a simulation and develop a simple simulation of a complex stochastic system, demonstrating critical understanding of model calibration and result confidence limit/tolerance. 2. Critically evaluate library and tool-selection such that complex data models may be effectively designed and manipulated. 3. Use statistical analysis software to extract, interpret and communicate underlying data trends, distributions and implications.