

Module Code:	CONL714
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Module Title:	Systems Engineering
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Level:	7	Credit Value:	15
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Cost Centre(s):	GACP	<u>JACS3</u> code:	I100
		<u>HECoS</u> code:	100371

Faculty:	FAST	Module Leader:	Denise Oram
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Scheduled learning and teaching hours	15 hrs
Guided independent study	135 hrs
Placement	0 hrs
Module duration (total hours)	150 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
MSc Computer Science (online)	✓	<input type="checkbox"/>
MSc Computer Science with Big Data Analytics	✓	<input type="checkbox"/>
MSc Computer Science with Cyber Security	✓	<input type="checkbox"/>
MSc Computer Science with Networking	✓	<input type="checkbox"/>
MSc Computer Science with Software Engineering	✓	<input type="checkbox"/>

Pre-requisites
Studied CONL701 Critical Research for Postgraduate Study

Office use only

Initial approval: 04/09/2019
 With effect from: 01/01/2020
 Date and details of revision:

Version no:1

Version no:

Module Aims

The module aims for students to identify, explore, and evaluate concepts of analysis and design and a range of traditional and contemporary methodologies to enable the student to appreciate the nature of information and its role in the system's engineering process.

The module will provide students with the knowledge to develop a professional approach to practice and evaluate the impact of systems design, development and implementation on Society; to include consideration of professional, ethical, legal, political, cultural and sustainability issues.

Intended Learning Outcomes

Key skills for employability

KS1	Written, oral and media communication skills
KS2	Leadership, team working and networking skills
KS3	Opportunity, creativity and problem solving skills
KS4	Information technology skills and digital literacy
KS5	Information management skills
KS6	Research skills
KS7	Intercultural and sustainability skills
KS8	Career management skills
KS9	Learning to learn (managing personal and professional development, self-management)
KS10	Numeracy

At the end of this module, students will be able to

Key Skills

At the end of this module, students will be able to		Key Skills	
1	Research and appraise professional skills related to Computing and develop a professional and ethical approach to practice	KS2	KS4
		KS6	KS7
		KS8	KS9
2	Evaluate the impact of systems design and development on Society and the environment	KS1	KS2
		KS3	KS7
		KS	
3	Explain and assess the concepts of information engineering and system requirements.	KS1	KS2
		KS3	KS5
		KS6	
4	Evaluate a range of tools, techniques and approaches applicable to the development of digital systems.	KS1	KS2
		KS3	KS5

Transferable skills and other attributes

- Personal motivation, organisation and time management
- Written and verbal communication skills
- Research and analytical skills

Derogations

None

Assessment:

Indicative Assessment Tasks:

The first two assessments will be coursework completed during the module to evidence learning and understanding of the content. This will be followed by a restricted response and timed online quiz during Week 8 to summarise the knowledge gained throughout the module.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration or Word count (or equivalent if appropriate)
1	1	Essay	40%	1,250 words
2	2	Essay	40%	1,250 words
3	3,4	Quiz	20%	1 hour

Learning and Teaching Strategies:

The overall learning and teaching strategy is one of guided independent study requiring ongoing student engagement. Online material will provide the foundation of the learning resources, requiring the students to login and engage on a regular basis throughout the eight-week period of the module. There will be a mix of suggested readings, discussions and interactive content containing embedded digital media and self-checks for students to complete as they work through the material and undertake the assessment tasks. The use of a range digital tools via the virtual learning environment together with additional sources of reading will also be utilised to accommodate learning styles. There is access to a helpline for additional support and chat facilities through Canvas for messaging and responding.

Syllabus outline:

1. The science of information and computing systems
2. Information engineering and requirements determination processes
3. Analysis and design of digital systems
4. Development methodologies
5. Modelling techniques
6. Systems design and development processes and the impact on society
7. Professionalism and social responsibility and accountability – ethical, social, cultural, environmental, political and security

Indicative Bibliography:

Essential reading

Bocij, P, Greasley, A, Hickie, S. (2018), *Business Information Systems; Technology, development and management for the modern business*. 6th ed. Pearson

Other indicative reading

Kendall, K.E. and Kendall, J.E. (2013), *Systems Analysis and Design*. 9th ed. Pearson