

<b>Module Code:</b>	COM437
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<b>Module Title:</b>	Information and Systems Engineering
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<b>Level:</b>	4	<b>Credit Value:</b>	20
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<b>Cost Centre(s):</b>	GACP	<b>JACS3 code:</b>	1190
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<b>Faculty:</b>	Arts, Science and Technology	<b>Module Leader:</b>	Denise Oram
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Scheduled learning and teaching hours	48 hrs
Guided independent study	152 hrs
Placement	0 hrs
<b>Module duration (total hours)</b>	200 hrs

<b>Programme(s) in which to be offered (not including exit awards)</b>	Core	Option
BSc (Hons) Computer Science	✓	<input type="checkbox"/>
BSc (Hons) Computing	✓	<input type="checkbox"/>
BSc (Hons) Computer Networks and Security	✓	<input type="checkbox"/>
BSc (Hons) Cyber Security	✓	<input type="checkbox"/>
BSc (Hons) Computer Game Design and Enterprise	✓	<input type="checkbox"/>

<b>Pre-requisites</b>
None.

**Office use only**

Initial approval: 30/08/2018

With effect from: 01/09/2018

Date and details of revision:

Version no:1

Version no:

## Module Aims

The module aims to introduce students to professional development within the discipline of Computing. To gain an understanding of the science of information, information engineering, information classification, and the principles of requirements determination and documentation.

The module will introduce 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 design, development and implementation process.

Students will also develop a professional approach to practice and evaluate the impact of systems design and development 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	Provide a range of evidence to demonstrate ongoing development and achievement within the field of Computing.	KS1	KS5
		KS6	
3	Appreciate 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
5	Evaluate the impact of systems design and development on Society and the environment.	KS1	KS2
		KS3	KS7

**Transferable skills and other attributes**

- Personal motivation, organisation and time management
- Ability to collaborate and plan
- Written and verbal communication skills
- Research and analytical skills

### Derogations

*None.*

### Assessment:

Indicative Assessment Tasks:

The development of a Portfolio whereby students will be given assessment tasks in tutorials and case study based coursework (a number of tasks as formative assessment individually graded) to contribute to the portfolio.

Example: a group project using a consulting case study and presentation.  
An individual critical reflection on the systems design and development process and professional approach to practice.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)	Duration (if exam)	Word count (or equivalent if appropriate)
1	1-5	Portfolio	100		3000

### Learning and Teaching Strategies:

Lectures will deliver key concepts, ideas, theories and examples. Tutorials and workshops (lab sessions) will allow the further exploration of the lectures and use scenarios, exercises, case studies etc to give students the opportunity to investigate, discuss and acquire further subject specific knowledge through both individual and group work. Self-study exercises and reading are also given.

All assessments for the module will allow students the opportunity to explore key concepts and theories whilst developing an appreciation of 'real-life' issues and situations. Students will have access to lecture materials and resources, via the University's VLE platform.

### Syllabus outline:

Syllabus outline:

- The science of information and computing systems
- Information classification
- Information engineering and requirements determination processes
- Analysis and design
- Development methodologies (Waterfall, Agile, DevOps)
- Modelling techniques
- Systems design and development processes

- System Implementation, support and security
- Cloud strategy & cloud environments
- The impact of new technologies on computing applications and society
- Professionalism and social responsibility – Ethical, social, sustainability, political aspects; usability, security, accountability.

<b>Indicative Bibliography:</b>
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<b>Essential reading</b>
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N/A
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<b>Other indicative reading</b>
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Reynolds, G. (2014), <i>Principles of Information Systems</i> . 12th ed. Boston: Cengage Learning.
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Kendall, K.E. and Kendall, J.E. (2019), <i>Systems Analysis and Design</i> . 10th ed. Harlow: Pearson.
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Rubin, K. (2012), <i>Essential Scrum: A Practical Guide to the Most Popular Agile Process</i> . Upper Saddle River, NJ: Addison-Wesley.
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The British Computer Society (BCS), <a href="http://www.bcs.org.uk">http://www.bcs.org.uk</a>
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The Institution of Engineering and Technology (IET), <a href="http://www.theiet.org">http://www.theiet.org</a>
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The Institute of Electrical and Electronic Engineers (IEEE), <a href="http://www.ieee.org">www.ieee.org</a>
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The Association of Computing Machinery (ACM), <a href="http://www.acm.org">http://www.acm.org</a>
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