

MODULE SPECIFICATION PROFORMA

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| Module Title: | 21 st Century Computing | Level: | 4 | Credit Value: | 20 |
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| Module code: | COM623 | Is this a new module? | No | Code of module being replaced: | N/A |
|---------------------|--------|------------------------------|----|---------------------------------------|-----|

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| Cost Centre(s): | GACP | JACS3 code: | I100 |
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| With effect from: | September 18 |
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| School: | Applied Science, Computing & Engineering | Module Leader: | Professor Vic Grout |
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| Scheduled learning and teaching hours | 48 hrs |
| Guided independent study | 152 hrs |
| Placement | 0 hrs |
| Module duration (total hours) | 200 hrs |

| Programme(s) in which to be offered | Core | Option |
|--|------|--------------------------|
| BSc (Hons) Computing | ✓ | <input type="checkbox"/> |
| BSc (Hons) Computer Networks & Security | ✓ | <input type="checkbox"/> |
| BSc (Hons) Cyber Security | ✓ | <input type="checkbox"/> |
| BSc (Hons) Computer Game Development | ✓ | <input type="checkbox"/> |
| BSc (Hons) Creative Computing | ✓ | <input type="checkbox"/> |
| BSc (Hons) Artificial Intelligence | ✓ | <input type="checkbox"/> |
| BSc (Hons) Computing Philosophy | ✓ | <input type="checkbox"/> |
| BSc (Hons) Computer Science | ✓ | <input type="checkbox"/> |
| BSc (Hons) Informatics | ✓ | <input type="checkbox"/> |
| BA (Hons) Business Management and IT – NPTC | ✓ | <input type="checkbox"/> |
| BSc (Hons) Computer Game Design and Enterprise | ✓ | <input type="checkbox"/> |

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| Pre-requisites |
| N/A |

Office use only

Initial approval: September 14

Date of revision: October 2017

Version: 4

Have any derogations received Academic Board approval?

Yes No N/A

Module Aims

The aim of the module, always to be scheduled as close to the end of the overall programme as possible, is to allow students to identify, critically examine and debate a range of current and future technical and social issues in computing and technology and, in so doing, develop a critical awareness of the impact of current and emerging technology. It will enable students to gain a broad general knowledge of some current research areas in computing and their application in industry, commerce and further afield. In a general sense, the module will introduce students to the field of 'Futurology'. Both the emphasis on *looking ahead* and the clear balance between technological advancement and social implications are essential features of the module.

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 | Identify, critically analyse, and debate current and future issues in computing from both a technical and social perspective. | KS1 | KS2 |
| | | KS5 | KS6 |
| | | KS7 | KS8 |
| | | KS9 | |
| 2 | Assess emergent technologies at various stages of development. | KS1 | KS2 |
| | | KS5 | KS6 |
| | | KS7 | KS8 |
| | | KS9 | |
| 3 | Synthesise conflicting opinions on emergent and future technologies. | KS1 | KS2 |
| | | KS5 | KS6 |
| | | KS7 | KS8 |

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| | | KS9 | |
| 4 | Debate and make informed predictions regarding the directions taken by various aspects of computer technologies and their application and impact in the short, medium and long-term future. | KS1 | KS2 |
| | | KS5 | KS6 |
| | | KS7 | KS8 |
| | | KS9 | |
| Transferable skills and other attributes | | | |
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Derogations

N/A

Assessment:

Indicative Assessment

There will be a single assignment, with two components, which asks students to conduct an in-depth investigation into a topic within the broad scope of *Emerging Computing Technology*, and to prepare a group presentation and individual report. Students will, in small groups, choose or be otherwise allocated a topic within the broad scope of *Emerging Computing Technology*. They will prepare and deliver a 30-40 minute group presentation to the rest of the class and other staff on this topic then, individually, submit a 3,000–3,500 word paper on the topic, possibly on a particular subject/field within it, if they wish. The emphasis throughout will be on the *future* development of the subject and well-grounded speculation is encouraged. The group element of the assessment will be worth 30% of the overall module mark and the individual report 70%.

| Assessment number | Learning Outcomes to be met | Type of assessment | Weighting (%) | Duration (if exam) | Word count (or equivalent if appropriate) |
|-------------------|-----------------------------|--------------------|---------------|--------------------|---|
| 1 (group) | 1,2,3,4 | Presentation | 30 | 30-40 mins | |
| 2 (ind.) | 1,2,3,4 | Report | 70 | | 3000-3500 |

Learning and Teaching Strategies:

The module will be delivered through a combination of staff 'keynotes', formal lectures, tutorials, practical demonstrations and student labs. Use will be made of the University VLE to direct students to further reading, particularly to introduce students to current issues and topics that arise as the module progresses. Students will also be given reading lists and useful URLs to develop their work on the module. A key element in the learning process will be the independent study component. Industrial contacts will be used wherever possible to strengthen and validate key topics.

Syllabus outline:

The purpose of this module, at level six, is to provide students with a thorough and up-to-date knowledge of current trends in computing and to reinforce this where possible with the involvement of staff 'keynotes' and local industry. By definition the syllabus will be reviewed regularly but the focus for students will always be how to identify and critically analyse current issues in computing and be able to put developed arguments supporting and refuting issues, otherwise known as 'Futurology'.

The syllabus will naturally be reviewed on a regular (probably twice-yearly) basis with redundant material being discarded and new introduced in its place. Typical content, based on current directions, could include:

- The 'Internet of Things'
- Social implications of emerging technology
- Computers and the Environment/Green IT and environmental computing
- Computer Forensics
- Accessibility and Usability
- Optical, Quantum or Biological Computing
- Parallel and Grid Computing
- Interactive Television
- Intelligence in Future Imaging Technology
- Robotics
- Human-Computer Interaction/Evolving interfaces
- Ethics, privacy, etc.,
- Health and safety
- Security and threats
- Political aspects of technology
- Ethical hacking
- Computing in the developing world
- Philosophical principles/Computational philosophy
- Technology adoption
- New aspects of Computer Storage
- New Developments in CPU/Architecture
- New Platforms
- Radio Frequency Identification (RFID) and other technologies

Bibliography:

Essential reading

The British Computer Society (BCS), <http://www.bcs.org.uk>

The Institution of Engineering and Technology (IET), <http://www.theiet.org>

The Institute of Electrical and Electronic Engineers (IEEE), www.ieee.org

IEEE Computer and Communication Societies,
<http://www.computer.org> and <http://www.comsoc.org/>

The Association of Computing Machinery (ACM), <http://www.acm.org>

Media Technology websites such as the BBC, <http://www.bbc.co.uk/news/technology/>

Other indicative reading

N/A