Confirmation that this version of the module specification has been approved by the School Learning and Teaching Committee:

19 December 2014………………………………………………….(date)

**MODULE SPECIFICATION**

1. **Title of the module**

CO659 Computational Creativity

1. **School or partner institution which will be responsible for management of the module**

Computing

1. **Start date of the module**

2015/16

1. **The number of students expected to take the module**

30-80

1. **Modules to be withdrawn on the introduction of this proposed module and consultation with other relevant Schools and Faculties regarding the withdrawal**

None

1. **The level of the module (e.g. Certificate [C], Intermediate [I], Honours [H] or Postgraduate [M])**

H

1. **The number of credits and the ECTS value which the module represents**

15 (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Autumn or Spring term

1. **Prerequisite and co-requisite modules**

CO320 (prerequisite) and CO520 (prerequisite or co-requisite), or comparable programming competence (in the latter case, please contact course convenors beforehand to confirm before registering).

1. **The programmes of study to which the module contributes**

This module will be an optional module in the following degree programmes:
BSc Computer Science (and pathways)

BSc Computing and Business Administration

BSc Computing (and pathways)

BSc Business Information Technology

Computing Joint Honours programmes

“Year in Industry” equivalents

Also available as a Wild Module.

1. **The intended subject specific learning outcomes**

On successfully completing the module students will be able to

* 1. State and compare the various definitions of computational and human creativity, to discuss the various philosophical issues relating to computational and human creativity, and to relate these to specific examples of creative software e.g. software which composes music, writes stories, or creates scientific hypotheses.
	2. Describe a number of computational creativity systems, both standalone and collaborative, to describe the techniques used in implementing them, and describe how they are used in specific examples across a number of creative domains in the arts and sciences.
	3. Write software that implements computational creativity techniques, grounded in an understanding of research in the area, applied to a variety of domains in the arts and sciences.
	4. Describe, employ and debate methods for evaluation of computational creativity.
	5. Identify appropriate contexts for using computational creativity, and design an appropriate system for that context.
1. **The intended generic learning outcomes**

On successfully completing the module students will be able to

* 1. Make effective use of general IT facilities.
	2. Engage with research literature and other information sources.
	3. Communicate technical issues clearly in written and spoken formats.
	4. Manage their own learning and development, including time management and organisational skills.

1. **A synopsis of the curriculum**

The module aim is to give students an overview and understanding of key theoretical, practical and philosophical research and issues around computational creativity, and to give them practical experience in writing and evaluating creative software.

The module will cover the following topics:

* Introduction to computational creativity
* Examples of computational creativity software e.g. musical systems, artistic systems, linguistic systems, proof generator systems, furniture design systems
* Evaluation of computational creativity systems (both of the quality and the creativity of systems)
* Philosophical issues concerning creativity in computers
* Comparison of computer creativity to human creativity
* Collaborative creativity between humans and computers
* Overview of recent research directions/results in computational creativity
* Practical experience in writing creative software.
1. **Indicative Reading List**

There is no specific textbook for this module. However students will be expected to read material provided in lectures, web-based articles and classes, as well as relevant texts. The following list is by way of example only***:***

* **Artificial Intelligence and Creativity: An Interdisciplinary Approach,** edited by Terry Dartnall, published by Springer, 1994, ISBN 978-0792330615
* **The Creative Mind: Myths and Mechanisms** by Margaret A. Boden, published by Routledge, 1990/2003 ISBN 978-0415314534
* **Computers and Creativity** edited by Jon McCormack and Mark d’Inverno
published by Springer, 2012, ISBN 978-3-642-31726-2
* **Exploding The Creativity Myth: The Computational Foundations of Linguistic Creativity,** by Tony Veale, published by Bloomsbury Acad. & Prof., 2012, ISBN 978-1441181725
* **Musical Creativity: Multidisciplinary Research in Theory and Practice,** edited by Irene Deliege and Geraint Wiggins, published by Psychology Press, 2006, ISBN 978-1841695082
* <http://robotcomix.com/> Web comics that transform our understanding of Computers and Creativity, by Tony Veale, 2014.
* Selected papers from special journal issues on computational creativity, 2006-present, as listed at <http://computationalcreativity.net/home/resources/journals/>
1. **Learning and Teaching Methods, including the nature and number of contact hours and the total study hours which will be expected of students, and how these relate to achievement of the intended module learning outcomes**

All learning outcomes will be achieved through a combination of lectures, practical classes and private study, supported by reading guides and web-based material. Achievement of the learning outcomes will additionally be facilitated by coursework assignments, supported through the same means. This module comprises of 150 hours of study, broken down approximately as follows:

* 22 hours of lectures (contributing to learning objectives 11.1-11.5, 12.2)
* 11 hours of practical classes (contributing to learning objectives 11.3-11.5, 12.1,12.2)
* 12 hours of student-led seminars, in the second half of the term (contributing to learning objectives 11.1, 11.2, 11.4, 11.5, 12.2-12.4)
* 65 hours of private study, including exam revision (contributing to learning objectives 11.1-11.5, 12.1-12.4)
* 40 hours spent on coursework (contributing to learning objectives 11.1-11.5, 12.1-12.4)

The lectures serve to introduce the relevant issues and terminology. Lectures will be accompanied by course notes, with some topics supplemented by directed reading and class exercises.

The students will acquire the listed skills by participating in the exercises and assessments, attending lectures, private study and by using relevant software tools.

1. **Assessment methods and how these relate to testing achievement of the intended module learning outcomes**

Assessment is through a combination of 2 hour unseen written examination (50%) and two assessed pieces of coursework (20% and 30%).

The examination will assess learning outcomes 11.1,11.2,11.4,11.5,12.2-12.4.

The first coursework will consist of presentations to and participation in the student-led seminar sessions (20%). This will assess learning outcomes 11.1,11.2,11.4,12.2-12.4.

The second coursework will be a practical project and report consisting of implementing a computational creativity system and evaluating and reflecting on the results (30%). This will assess learning outcomes 11.3-11.5,12.1-12.4.

1. **Implications for learning resources, including staff, library, IT and space**

Members of the School of Computing at Canterbury and Medway will be able to teach this module or parts of this module. A number of relevant software tools are available for free. Recommended books will need to be acquired for the library. The course will not require any additional teaching space.

1. **The School recognises and has embedded the expectations of current disability equality legislation, and supports students with a declared disability or special educational need in its teaching. Within this module we will make reasonable adjustments wherever necessary, including additional or substitute materials, teaching modes or assessment methods for students who have declared and discussed their learning support needs. Arrangements for students with declared disabilities will be made on an individual basis, in consultation with the University’s disability/dyslexia support service, and specialist support will be provided where needed.**
2. **Campus(es) or Centre(s) where module will be delivered:**

Canterbury initially, to be offered additionally at Medway after 1 year.