UNIVERSITY OF KENT

MODULE SPECIFICATION

SECTION 1: MODULE SPECIFICATIONS

1. Title of the module: CO846 Cloud Computing
2. School which will be responsible for management of the module: Computing
3. Start date of the module: Spring 2011
4. The cohort of students (onwards) to which the module will be applicable: 2010-2011
5. The number of students expected to take the module: 8
6. Modules to be withdrawn on the introduction of this proposed module and consultation with other relevant Schools and Faculties regarding the withdrawal: None
7. Level of the module: M
8. The number of credits which the module represents: 15 (7.5 ECTS)
   Note: undergraduate full-time students take modules amounting to 120 credits per year and postgraduate full-time students take modules amounting to 180 credits per year for a Masters award
9. Which term(s) the module is to be taught in (or other teaching pattern): Spring Term
10. Prerequisite and co-requisite modules
    Prerequisite:
        • Prior knowledge of networks, security, and computer operating systems equivalent to an undergraduate degree in Computer Science or a closely related subject.
11. The programme(s) of study to which the module contributes
    Portfolio of Taught Postgraduate Programmes in Computing
12. The intended subject specific learning outcomes and, as appropriate, their relationship to programme learning outcomes
    On successful completion of this module, students will:
        a. Understand the concepts of web services and how service oriented architectures are driving the virtualisation of grid/cloud resources. (A1, A3, A4, B1)
        b. Have an understanding of grid computing technology and its relation with cloud computing (A1)
        c. Understand virtualisation technologies and how they are used in cloud computing (B3, B4, B5)
        d. Be familiar with the general details of current cloud computing technologies (B3)
        e. Have an understanding of security issues in grid/cloud environments (A7, A8)
        f. Be able to use a range of open source tools (hadoop etc.) in the creation of a cloud infrastructure and perform basic operations in existing grid/cloud infrastructures (A1, B1, B5, C1, C2, C3)
13. The intended generic learning outcomes and, as appropriate, their relationship to programme learning outcomes

On successful completion of this module, students will be able to:

a. Identify, analyse and formulate criteria and specifications appropriate to a given problem; (B1, B6)

b. Manage their own time effectively, individually or in groups, and work effectively as a member of a team; (D1, D2, D3, D5)

c. Communicate technical issues with specialist and non-specialist audiences; (D6, D7)

14. A synopsis of the curriculum

- Overview of web services and their use in grid/cloud computing;
- Review grid computing technologies and the relations and differences between grid computing and cloud computing;
- Virtualisation technologies, tools for cloud computing (Xen or KVM);
- Open source cloud infrastructures and applications, including Hadoop, Eucalyptus etc;
- Cutting edge commercial cloud infrastructure and applications.

15. Indicative Reading List


16. 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 learning outcomes

All learning outcomes will be achieved through a combination of lectures, coursework and private study, with further assistance provided electronically via discussion forums and the web. All subject-specific learning outcomes will be supported by a number of pieces of compulsory coursework.

A significant part of the learning in this module will come from group based project work. This will include a number of small group projects outside of project week, and a larger group project in project week. The group projects will provide opportunities to put material learnt in lectures to practical use, additionally drawing on the students' own experiences. These will cover software development projects, as well as reviews (from testing and validation) of existing systems.

This module represents a total of 150 study hours, including:
17. Assessment methods and how these relate to testing achievement of the intended learning outcomes

Students are graded on a percentage scale with 40% as the pass mark.

All learning outcomes are assessed by coursework and an unseen written examination. The weightings are as follows:

- 50% written examination, assessing outcomes (12b, 12c, 12d, 12e, 13a)
- 50% coursework, assessing outcomes (12a, 12b, 12c, 12d, 12e, 12f, 13a, 13b, 13c)

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

Teaching will be undertaken by existing academic staff from the School of Computing using timetabled university lecture/seminar rooms and existing teaching space within the School.

Students will require normal access to university library and IT resources. A small number of copies of core texts may need to be purchased.

Some additional computing resources (hardware/software) are required for practical work. Sufficient provision will be made in an existing School of Computing laboratory.

19. 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.

If the module is part of a programme in a Partner College or Validated Institution, please complete the following:

20. Partner College/Validated Institution:

21. University School (for cognate programmes) or Faculty (for non-cognate programmes) responsible for the programme:

SECTION 2: MODULE IS PART OF A PROGRAMME OF STUDY IN A UNIVERSITY SCHOOL
Statement by the School Director of Learning and Teaching/School Director of Graduate Studies (as appropriate): "I confirm I have been consulted on the above module proposal and have given advice on the correct procedures and required content of module proposals"

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Director of Learning and Teaching/Director of Graduate Studies (delete as applicable) Date

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Print Name

Statement by the Head of School: "I confirm that the School has approved the introduction of the module and, where the module is proposed by School staff, will be responsible for its resourcing"

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Head of School Date

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Print Name

SECTION 3: MODULE IS PART OF A PROGRAMME IN A PARTNER COLLEGE OR VALIDATED INSTITUTION

(Where the module is proposed by a Partner College/Validated Institution)

Statement by the Nominated Officer of the College/Validated Institution (delete as applicable): "I confirm that the College/Validated Institution (delete as applicable) has approved the introduction of the module and will be responsible for its resourcing"

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Nominated Responsible Officer of Partner College/Validated Institution Date

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Print Name

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Post

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Partner College/Validated Institution

19 November 2010