MODULE SPECIFICATION TEMPLATE

Instructions:

1. **If the module is part of a programme of study in a University department, please complete sections 1 and 2.**
2. **If the module is part of a programme of study in an Associate College, please complete Sections 1 and 3.**

SECTION 1: MODULE SPECIFICATIONS

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1. The title of the module

   CO633 Computer Networks and Communications

2. The Department which will be responsible for management of the module

   Computer Science

3. The Start Date of the Module

   September 2006

4. The cohort of students (onwards) to which the module will be applicable.

   2009/10

5. The number of students expected to take the module

   60-100

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 Modules to be withdrawn on the introduction of this proposed module and consultation with other relevant Departments and Faculties regarding the withdrawal

   None, this is just an update to an existing module

7. The level of the module (eg Certificate [C], Intermediate [I], Honours [H] or Postgraduate [M])

   H

8. The number of credits which the module represents

   15

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

   Autumn or Spring

10. Prerequisite and co-requisite modules

    CO324, CO520, and (CO322 and CO325 – or equivalent coverage of engineering maths).

11. The programmes of study to which the module contributes

    BSc Computer Science,
    BSc Computer Science and Management Science,
    BSc Computer Science with Artificial Intelligence,
    BSc Business Computing,
    BSc Web Computing,
    BSc Mathematics and Computer Science,
    BEng Computer Systems Engineering
    and their Year in Industry and Foundation Year variants.

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) Have a comprehensive and systematic understanding of current network architectures and their individual protocol layers, including the algorithms employed. [A3]

    b) Be able to analyse the specification for a protocol and develop software that implements a simple protocol. [A3, A4, B3, B4, C1, C4]

    c) Be aware of performance issues in general and/or analytical terms, and of the trade-offs involved. [A3, B1]

d) Have a deeper understanding of selected key topics at the forefront of this field, including recent developments and outstanding issues. [A3]

13. The intended generic learning outcomes and, as appropriate, their relationship to programme learning outcomes

On successful completion of this module, students will:

e) Be able to analyse a problem specification and to design and implement a solution. [B3,B5]

f) Be able to evaluate systems in terms of function and performance, with an awareness of possible trade-offs. [B1]

g) Be able to communicate technical issues clearly to specialist audiences. [D2]

h) Be able to make effective use of IT facilities. [D3]

i) Be able to apply relevant mathematical techniques. [D4]

j) Be able to manage their own learning and time. [D5]

14. A synopsis of the curriculum

The module contains two main components, as detailed below. Note that the curriculum is intended to outline the scope of the module and not necessarily to prescribe the order in which topics are delivered.

1) Network Architectures and Protocols. This component provides a comprehensive study of network architecture and individual protocol layers, including details of the technologies, algorithms and protocols currently used:

- OSI and Internet reference models (recap)
- Physical layer: media and transmission
- Data link layer and medium access sub-layer
- The network layer and routing
- Transport service: TCP and UDP
- Application layer issues
- Naming and directory services: DNS, use of DHCP
- Quality of service

2) Advanced Topics. This component takes an in-depth look at a number of advanced topics in the area of computer communications, including details of the current practice and outstanding issues in a number of state-of-the-art areas, such as:

- High speed local area networks
- Small office and home networks (SOHO, NAT)
- Broadband networks (DSL)
- Streaming multimedia
- Network routing algorithms, Internetworking, multicast
- Queuing theory

The advanced topics may vary from year to year as this field continues to develop rapidly.

15. Indicative Reading List

- Computer Networks (Fourth Edition), Andrew S. Tanenbaum, Prentice Hall, 2002
- Data and Computer Communications (7th International Edition), William Stallings, Prentice Hall, 2004
- Data Communications and Networking (3rd International Edition), Behrouz A. Forouzan, McGraw-Hill, 2003
- Business Data Communications and Networking (8th International Edition), Jerry Fitzgerald and Alan Dennis, Wiley, 2004

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 and private study, supported by reading guides and web-based materials, with further assistance provided electronically via newsgroups and/or the web. The achievement of learning outcomes will additionally be facilitated by formative coursework assignments, also supported by the same means. This module represents a total of 150 study hours, broken down approximately as follows:

30 contact hours (lectures)

80 hours of private study (including exam revision)

40 hours spent on coursework

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.

The module is assessed by:

- 65% Unseen written examination [LO: a, c, d, f, i]
- 20% Programming assignment(s) [LO: b, e, h, j]
- 15% Written assignment(s) [LO: a, c, d, f, g, i, j]

Comment [MSOffice1]: Sandra: we could change the coursework weightings to 21% and 14% if we need to have an exact split of the CW component in who percentage parts (e.g. 60:40).

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

None. The department has staff able to teach this module. The recommended books are already in the library.

19. A statement confirming that, as far as can be reasonably anticipated, the curriculum, learning and teaching methods and forms of assessment do not present any non-justifiable disadvantage to students with disabilities

The department recognises and has embedded the expectations of SENDA, and supports students with a declared disability or special (educational) need in its teaching, through the establishment of Inclusive Learning Plans agreed between student, department and the Disability Support Unit. We liaise with the Disability Support Unit in order to provide specialist support where needed.

If the module is part of a programme in an Associate College, please complete the following:

20. Associate College:

21. University Department (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 DEPARTMENT

Statement by the Director of Learning and Teaching: "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"

....
Director of Learning and Teaching Date

……
Print Name

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

....
Head of Department Date

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Print Name

SECTION 3: MODULE IS PART OF A PROGRAMME IN AN ASSOCIATE COLLEGE

(Where the module is proposed by an Associate College)
Statement by the Nominated Officer of the College: "I confirm that the College has approved the introduction of the module and will be responsible for its resourcing"

....
Nominated Responsible Officer of the Associate College Date

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Print Name

……..
Post

……
Associate College

August 2009