Description: Computer Communication and Internetworking

Subject  Cat-Nbr  Class  Term  Mode  Units  Campus
CSC      3407    20433  1, 2003  EXT    1.00   TW MBA

Academic Group: FOSCI
Academic Org: FOS003
HECS Band: 2
ASCED Code: 020113

STAFFING
Examiner: Yan Li
Moderator: Ron Addie

PRE-REQUISITES
Pre-requisite: CSC2400 or CSC2401

RATIONALE
Explosive growth in computer networks in the last two decades has changed the uses of computers dramatically. The largest computer network, Internet, is now connecting millions of computers in the world, providing services like email, file transfer, hypermedia information retrieval across all kinds of different platforms. This course is the introductory course in computer networking. It concentrates on basic concepts and protocols of computer networks. It uses TCP/IP based Internet as a case study to reveal and address the general principles of network design. This course serves as a foundation for a further course in computer networking, namely Computer Network Programming (CSC4402).

SYNOPSIS
This course addresses the layered structure of computer communication networks. It focuses on the most widely used TCP/IP protocol suite and uses TCP/IP protocols to teach the general principle of computer communication network design. After this course, the students will have not only general knowledge about computer networks but also the understanding and practical skills of managing TCP/IP Internetworking. The topics include: Internetworking Concepts and Architecture, Data Link Layer, Internet Address, ARP and RARP, Internet Protocols, User Datagram Protocol (UDP), Reliable Stream Transport (TCP), Routing, Transparent Gateways and Subnetting, Domain Name System (DNS), Application Programming Interfaces (API), Internet Applications, ISO Standards, Future Direction in Networking.
OBJECTIVES

On successful completion of this course students will be able to:

- demonstrate a high level of understanding of the general principles of the architecture of computer communication networks
- understand the TCP/IP protocol suite for internetworking
- illustrate that they have practical experience in using and managing TCP/IP internetworking

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Communication Protocol Concepts</td>
<td>10.00</td>
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<tr>
<td>2. Data Link Layer</td>
<td>10.00</td>
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<tr>
<td>3. Internet Addressing</td>
<td>5.00</td>
</tr>
<tr>
<td>4. ARP and RARP</td>
<td>5.00</td>
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<tr>
<td>5. Internet Protocols</td>
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<tr>
<td>6. User Datagram Protocol (UDP)</td>
<td>5.00</td>
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<tr>
<td>7. Reliable Stream Transport (TCP)</td>
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<tr>
<td>8. Routing</td>
<td>10.00</td>
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<tr>
<td>9. Transparent Gateways and Subnetting</td>
<td>5.00</td>
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<tr>
<td>10. Domain Name System (DNS)</td>
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<td>11. Application Programming Interfaces (API)</td>
<td>10.00</td>
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<td>12. Internet Applications and Security</td>
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<td>13. TCP/IP Network Administration</td>
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<tr>
<td>14. Future Directions in Networking</td>
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TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.

Department of Mathematics and Computing CDROM SET 1, S1 2003 (available from the USQ Bookshop). This CD set contains course material, Windows and Linux Software for this and various other courses. For more information about the CD sets and their use, please refer to http://www.sci.usq.edu.au/cdrom.

Comer, Douglas, E 2001, Computer Networks and Internets, 3rd edition, Prentice-Hall,
REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.


STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Directed Study</td>
<td>56</td>
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<tr>
<td>Examinations</td>
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<td>Private Study</td>
<td>111</td>
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</table>

ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
</tr>
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<tbody>
<tr>
<td>ASSIGNMENT 1</td>
<td>20.00</td>
<td>20.00</td>
<td>Y</td>
<td>31 Mar 2003</td>
</tr>
<tr>
<td>ASSIGNMENT 2</td>
<td>20.00</td>
<td>20.00</td>
<td>Y</td>
<td>05 May 2003</td>
</tr>
<tr>
<td>ASSIGNMENT 3</td>
<td>20.00</td>
<td>20.00</td>
<td>Y</td>
<td>02 Jun 2003</td>
</tr>
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<td>3 HOUR RESTRICTED EXAMINATION</td>
<td>100.00</td>
<td>40.00</td>
<td>Y</td>
<td>END S1</td>
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NOTES:

 Examination dates will be available during the semester. Please refer to the examination timetable when published.

IMPORTANT ASSESSMENT INFORMATION

1 Attendance requirements:

There are no attendance requirements for this course. However, it is the students' responsibility to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
2 Requirements for students to complete each assessment item satisfactorily:
   To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available for each assessment item.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 10% of the total marks gained by the student for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by: (i) satisfactorily completing the examination and assignments; and (ii) obtaining at least 50% of the total weighted marks available for all summative assessment items.

5 Method used to combine assessment results to attain final grade:
   The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.

6 Examination information:
   Restricted Examination: Candidates will be allowed access only to specific materials in a restricted examination. The only materials that candidates may use in the restricted examination for this course are: (a) the textbook: Comer, Douglas, E., 2001, Computer Networks and Internets, 3rd edn, Prentice Hall (b) Lecture Notes and (c) calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination. These details may be checked by the invigilator of the examination.

7 Examination period when Deferred/Supplementary examinations will be held:
   Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.

8 University Regulations:
   Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/SECARIAT/calendar/Part5/ or in the printed version of the current USQ Handbook.

**ASSESSMENT NOTES**

9 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.

10 In accordance with University policy, the Examiner may grant an extension of the due date of an assignment in extenuating circumstances.

11 The Faculty will NOT accept submission of assignments by facsimile.

12 Students who do not have regular access to postal services or who are otherwise disadvantaged by these regulations may be given special consideration. They should contact the examiner of the course to negotiate such special arrangements.
13 In the event that a due date for an assignment falls on a local public holiday in their areas, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.

14 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded the temporary grade: IM (Incomplete - Make up). An IM grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non-directed personal study.

15 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time, may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination: IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).

OTHER REQUIREMENTS

1 Laboratory: In some of the laboratory sessions, a network diagnostic tool is used to examine and watch the TCP/IP protocols in action on a local network.

2 Students who obtain an overall passing mark, but who do not gain at least 50% of the marks available for the examination, may, at the discretion of the examiner, be granted a supplementary examination.

3 Students will be granted a deferred examination only if they perform satisfactorily in all other assessment items.

4 Plagiarism of other students' work is unacceptable. Any breach will be dealt with in accordance with Faculty and USQ policies.

5 Candidates should be aware that the University has policies and regulations (Regulation 5.6.2.2) about the use of unfair means and electronic devices in an examination and they should refer to them to determine whether or not actions they intend to take are acceptable to the University.