Description: Computer Systems and Communications Protocols

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<tr>
<th>Subject</th>
<th>Cat-Nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
<th>Campus</th>
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<td>14620</td>
<td>2, 2002</td>
<td>EXT</td>
<td>1.00</td>
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Academic Group: FOENS
Academic Org: FOES04
HECS Band: 2
ASCED Code: 031305

STAFFING
Examiner: John Leis
Moderator: John Grant-Thomson

PRE-REQUISITES
Pre-requisite: ELE1301 Co-requisite: ELE2303

SYNOPSIS
In recent times, computing and data communications have tended to converge, such that data communications has become an integral part of almost every computer system. This course is based around two central themes. The first is the logical extension of the material covered in the preceding Computer Engineering courses. This involves a more detailed study of advanced computer design including memory management, virtual memory, process management, cache memory, processor architectures and performance. The second theme is the design, implementation and use of data communication systems. This section, comprising approximately half the course, covers local area network protocols such as Ethernet, together with higher level protocols such as TCP/IP. An in-depth understanding of the theoretical and practical operation of these protocols is emphasised by implementation examples.

OBJECTIVES
On completion of this course, students should be able to:

- analyse the structure of a given operating system kernel, and identify the relationship between the various subsystems;
- predict the expected performance of memory and disk systems, and interpret the measured performance of disk/memory cache systems;
- justify the presence of kernel-level services;
- select and justify appropriate methods of data compression, encryption and error checking for local- and wide-area networks;
• interpret data communications standards documents from international bodies such as the CCITT/ITU, IETF and W3C;
• interpret protocol frames found in a data communications system, and provide explanations for the observed behaviour of communicating entities.

TOPICS

<table>
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<th>Description</th>
<th>Weighting (%)</th>
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<tr>
<td>1. Operating Systems</td>
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<tr>
<td>2. Hardware and Architecture</td>
<td>15.00</td>
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<td>3. Data Communications and Protocols</td>
<td>60.00</td>
</tr>
</tbody>
</table>

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.

Bach *The Design of the Unix Operating System*, Prentice Hall,
Brey, B. B. *The Intel Microprocessors: 8086/8088, 80186, 80286, 80486: Architecture, Interfacing and Programming*, Merrill,
Comer 1997, *Computer Networks and Internets*, Prentice Hall,
Silberschatz *Operating System Concepts*, Addison-Wesley,
Stalling *ISDN - An Introduction*, MacMillan,
Stalling *Local and Metropolitan Area Networks*, MacMillan,
Stone, H. S. *High Performance Computer Architecture*, Addison Wesley,
Van de Goor *Computer Architecture and Design*, Addison Wesley,

STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Assessment</td>
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<td>Examinations</td>
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<td>Private Study</td>
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ASSESSMENT DETAILS

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<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<tr>
<td>ASSIGNMENT 1</td>
<td>200.00</td>
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<td>ASSIGNMENT 2</td>
<td>200.00</td>
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<td>3 HOUR CLOSED EXAMINATION</td>
<td>600.00</td>
<td>60.00</td>
<td>Y</td>
<td>END S2</td>
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NOTES:
3. Student Administration will advise students of the dates of their examinations during the semester.

OTHER REQUIREMENTS
1. In order to complete this course successfully a student must normally obtain 50% of the marks in both the individual assessments and overall.
2. A minimum standard of communication skills must be demonstrated in order for a passing grade to be achieved.
3. The due date for an assignment is the date by which a student must submit the assignment to the USQ. The onus is on the student to provide proof of the submit date, if requested by the Examiner.
4. Students must retain a verbatim copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.
5. In accordance with University's Assignment Extension Policy (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.
6. Students who wish to apply for an extension to any assignment due date must do so in writing before the due date.
7. If students submit assignments after the due date without prior approval then a penalty of up to 10% of the total marks for the assignment will apply for each working day late.
8. In the event that a due date for an assignment falls on a local public holiday in their area, 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.
9. The Faculty of Engineering and Surveying will NOT accept submission of hand written or typed assignments by facsimile, e-mail or computer diskette. Students in remote locations who do not have regular access to postal services may be given special consideration.
10. The final grades for students will be assigned on the basis of the aggregate of the marks obtained for each of the assessments in the course.
11. A closed examination is an examination where the candidates are allowed to bring only writing and drawing instruments into the examination.
12. The Faculty of Engineering and Surveying does not offer supplementary examinations.
13. 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.

14 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; IDSM (Incomplete Deferred Examination and Make-up).