CS357b: Computer Communication Networks

Winter 1995

Computer networks and communications are fundamental aspects of modern computing. This course motivates the importance of the need to learn and understand the computer networks and communications technologies. This course covers the basic concepts and techniques on data communication, computer networks and communications.

Lecture Hours: 2:00 – 3:00 pm, MWF, B&G 52

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Required Texts.

The following book is required for this course and is available for purchase from the University Bookstore.

- W. Stallings, *Data and Computer Communications*, Fourth Edition, Macmillan, New York, ISBN 0-02-415441-5, 1994.

Suggested References.

- F. Halsall, *Data Communications, Computer Networks and Open Systems*, Third Edition, Addison-Wesley, Wokingham England, ISBN 0-201-56506-4, 1992.
- A. S. Tanenbaum, *Computer Networks*, 2nd edition, Prentice-Hall, 1988.
- W. Stallings, *Networking Standards: A Guide to OSI, ISDN, LAN and MAN Standards*, Addison-Wesley, Reading MA, ISBN 0-201-56357-6, 1993.
- D. Comer, *Internetworking with TCP/IP, Vol I: Principles, Protocols, and Architecture*, Second edition, Prentice-Hall, Englewood Cliffs, NJ, ISBN 0-13-468505-9 1991.
- D. Comer and D. Stevens, *Internetworking with TCP/IP, Vol II: Design, Implementation, and Internals*, Prentice-Hall, Englewood Cliffs, NJ, ISBN 0-13-472242-6 1991.
- S. Kochan and P. Wood, *UNIX Networking*, Hayden Books, Carmel, IN, ISBN 0-672-48440-4, 1989.

- W. Stallings, *SNMP, SNMPv2, and CMIP: The Practical Guide to Network-Management Standards*, Addison-Wesley, Reading MA, ISBN 0-201-63331-0, 1993.
- M. Rose, *The Simple Book: An Introduction to Internet Management*, Second Edition, Prentice-Hall, Englewood Cliffs, NJ, ISBN 0-13-177254-6 1994.
- M. Rose, *The Open Book: A Practical Perspective on OSI*, Second Edition, Prentice-Hall, Englewood Cliffs, NJ, ISBN 0-13-643016-3 1990.

Assignments.

There will be four assignments (worth 40% of the final mark), some involving programming in C (or Pascal) on UNIX. All assignments MUST be typed, typesetted or word-processed. All assignments are due at noon on the specified day. Table lists the due dates and expected loads and their weights of planned assignments this fall:

Assignment	Tentative Due Date	Programming	Groups	Expected Load	Weight
1	Jan 27	Yes	No	Light	8%
2	Feb 10	No	No	Medium	9%
3	Mar 20	Yes	No	High	15%
4	Apr 03	Yes	No	Light	8%

Late assignments may be handed in, but there will be a penalty of 3^N% (where N is the number of days). For example, if your assignment is handed in 5 hours late than the specified deadline time, then you will receive a deduction of 3% of the total mark assigned for the assignment. If it is three days late, then you will receive a total penalty of 27% (3^3) of the total mark assigned for the assignment. Note that the penalty deducted is from the total mark assigned for the assignment (rather than from what you have received). Note also that a weekend is NOT counted as one day.

All assignments are to be done individually. Discussing assignments is encouraged, but the ones you hand in must be your own.

Cheating Policy — The default cheating policy is: Students are directed to "Scholastic Offences" *pp* 30–1 of the *Academic Calendar* for a description of unacceptable conduct regarding assignments. The maximum penalty for the first offence is −100% for the assignment in question. Offences are kept on file. Students are directed to "Penalties" *pp* 31 of the *Academic Calendar* for a list of other penalties if this unacceptable conduct occurs repeatedly.

Exams.

There will be a two-hour, closed-book midterm exam (worth 20% each of the final mark) during the week of February 13 (the exact date and time will be announced later). There will also be a three-hour, closed-book final exam (worth 40% of the final mark), which will be scheduled by the registrar's office. To obtain a passing mark in the course, the weighted average of the midterm and final exams must be at least 50%.

Computing Facilities.

Your basic facility is the `GAUL` (Graphics and Undergraduate Laboratory), which consists of Sun servers (via X-terminals) and IBM RS/6000s.

Computer Accounts.

Most of you should have accounts already. If you have problems with your account or need a new account, please see Bruce Richards (MC 345).

Printing.

Both line printers and laser printers are available for use by students. Line printers are encouraged to be used for debugging purposes and laser printers are recommended for the final output and documentation. Laser printing is costly so please use it wisely.

Reading the News.

The newsgroup `uwo.csd.cs357` has been set aside for course use. You can read and post news to this newsgroup using the Unix commands `rn` (or `trn`, `xrn`) and `Pnews`, respectively.

In this newsgroup you will find changes to the lecture schedule, clarifications to the assignments, etc. *It is your responsibility to read this newsgroup on a daily basis.* There is likely to be little information at the beginning, but more as the course progresses.

Course Topics

The following are tentative topics that will be covered in the course.

- Introduction to Computer Communication Networks
- ISO-OSI Reference Model
- Data Transmission Techniques
- Data Link Control
- Multiplexing Techniques
- Switching Techniques
- Local Area Networks
- Metropolitan Area Networks
- Wide Area Networks
- Internetworking
- Higher-Layer Protocols
- Network Applications
- Network Management