

# CS 320

## Networking and Distributed Computing

HOS-202  
Spring 2008  
MWF 2:20–3:30  
<http://www.cs.moravian.edu/cs320>

**CS 320. Networking and Distributed Computing. (1u)** An introduction to the physical and architectural elements of communication networks. A review of network architecture and communication protocols with emphasis on the standard Internet TCP/IP and IPv6 protocols as well as LAN protocols such as Ethernet and FDDI. Discussions of tools which allow the design, measurement and operation of networks. Topics in distributed computing will include concurrency and synchronization, programming language constructs for parallel computing, and techniques such as remote procedure calls and shared memory models. Prerequisites: CS 222 and 244.

### Instructor:

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### Prerequisites by Topic

1. Significant programming experience in a high-level language such as Java or C/C++.
2. Familiarity with programming in the Unix environment—Editing, compiling, debugging, testing, documenting. Knowledge of Unix scripting would also be helpful.
3. Fundamental understanding computer architecture and data representation.

In addition, some basic understanding of probability and statistics may be helpful but is not necessarily required.

### Text

The texts for the course is *Unix Network Programming: The Sockets Network API, 3/e* by Stevens, et al, and *C Pocket Reference* by Prinz and Kirch-Prinz.

Useful references would include *Advanced Programming in the Unix Environment* by Stevens, the *TCP/IP Illustrated* series by Stevens et al, *Unix System V in a Nutshell* by Robbins, and *Computer Networks and Internets with Internet Applications, 4/e* by Comer

Finally, there is a plethora of networking oriented information and documentation on the Internet itself<sup>1</sup>. Besides the web, USENET newsgroups can be an excellent source of current network research, development, and events.

### Goals

1. You will learn aspects of low-level programming in the C language.
2. You will learn the fundamentals of data communication and computer networking, including physical implementations.
3. You will learn how to create client and server network applications for the TCP/IP protocol suite.
4. You will learn about existing as well as recently created networking technologies.
5. You will learn interprocess communication techniques and tools, as well as distributed processing techniques and tools.

### Homework

Each homework (non-program) will be graded out of a possible 100 points. Late homework will be penalized with the same schedule as late programs (see below).

### Presentations

The presentation component of the grade will be determined from group presentations of course material to the rest of the class. For example, one presentation may be material from the Comer book, while another may be on the design and implementation of specific protocols.

### Projects

There will be at least one course “project.” This project will be a substantial programming assignment that will incorporate the design and implementation of a network protocol. An important part of this project will be documentation and a final presentation by the group demonstrating the program(s).

<sup>1</sup>Who knew?

## Programs

Programming assignments will typically be multi-module C programs. The proper and regular use of programming tools like `make` and `cv`s will prove to be very helpful.

- Each program will be graded out of 100 points, but will be weighted to reflect its relative complexity. Programs will be graded on correctness (~70%), style (~20%), and documentation (~10%). If an assignment is one *class-day* late, it will be penalized 10%. If it is no more than *class-week* late, it will be penalized 50%. After one class-week, it is worth no credit.
- Unless explicitly stated otherwise, programs are due electronically on midnight on the due date.
- Failing to turn in correct programming assignments in a timely fashion is hazardous to your grade, directly and indirectly. If you start missing assignments, I will notify your academic advisor.

## Tests

No makeup exams will be given. Students missing one or more tests, in a properly excusable fashion, will be graded based on the available scores as the total score. The hour exams will most likely be open book and open notes, unless explicitly stated otherwise.

## Computer Resources

The primary computer resources will be the Unix-based Sun Solaris 2.x workstations on MoCoSIN.

You are expected to comply with all MoCoSIN, CIT and campus policies with respect to use of the computer resources. This includes, but is not limited to, such policies as not locking workstations, not using an account other than your own, etc.

## Grading

### Weighting

Projects and Programs	30
Presentations	10
Homework and Quizzes	10
Hour Exams	30
Final Exam	20
<b>Total</b>	<b>100 %</b>

## Policies

- Incomplete grades will **not** be assigned for failure to do the work as required during the semester.

- Attendance is very important, and pop quizzes, which would count in the homework category, may spontaneously occur. You are responsible for everything discussed in class.

## Important Dates

<b>Jan 14</b>	M	First day of classes
<b>Jan 22</b>	T	Last Day to Add/Drop
<b>Feb 8</b>	F	Hour Exam I
<b>Feb 29</b>	F	Midterm
<b>Mar 1–9</b>	S – U	Spring Break
<b>Mar 14</b>	F	Hour Exam II
<b>Mar 21–24</b>	F–M	Easter Break
<b>Mar 28</b>	F	Last Day to Withdraw with a W
<b>Apr 11</b>	F	Hour Exam III
<b>Apr 25</b>	F	Last Class Day
<b>Apr 28–May 3</b>	M – S	Final Examinations
<b>May 10</b>	S	Commencement

## General

- Keep backups of all assignments, especially during program development.
- Special circumstances, will, of course, be considered on an individual basis. Please see us as soon as possible if any such circumstances arise.
- All work, unless explicitly stated in the problem definition, is to be an individual effort. Students are encouraged to discuss approaches so long as the final submission has a single, clearly identifiable author. Violations of this will be dealt with as a case of academic dishonesty, see below.

## Academic Dishonesty Policy

Students are encouraged to read and understand the college policy on academic honesty. Violations of this policy will certainly result in reduced (0?) scores on the assignments and may result in a failure of the class. In addition, students are expected to read and comply with the course specific policy on improper collaboration.

## Terms and Conditions

I consider this syllabus to be a contract between myself as instructor and you as student. Therefore, I will do my best to adhere to the policies herein. However, if the circumstances warrant, there may need to be changes. Such changes will clearly be communicated to the class.