CSE 422 Section 001

Computer Networking
Spring Semester, 2019

Objectives

The objective of this course is to teach the student the basic principles involved in the design and operation of computer networks. Topics include computer network architectures and models, physical media and signaling, data link protocols, medium access control, routing and IP, transport services including TCP/UDP, network applications, local-area and wide-area networks.

Course projects will be using C/C++ and Python programming.

Instructor/TA

Meeting Time/Location: TuTh 3:00 pm - 4:20 pm, 100 Packaging
Instructor: Dennis Phillips
Office: 3502 Engineering
Office Hours: after class or by appointment
Email: dennisp at msu dot edu (email is by far the best way to contact me)

TA: Kamra Ali John Wydra
Help Room Hours: Tuesday 6-7 PM @ Simpson Wednesday 6-7 PM @ Simpson Thursday 12:30-2:30 PM @ Bone

Course Web Site

Information related to the course is available on the Internet at: http://www.cse.msu.edu/~cse422

This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email team@piazza.com. Find our class page at: https://piazza.com/msu/spring2019/cse422/home

Course Textbook

Attendance Policy

Students are expected to attend class and participate in discussions. A student who needs to miss class, be late for class, or leave class early, due to an irresolvable conflict, must notify the instructor by email in advance.

Course Grades

Each student's course grade will be based on the sum of the points earned in the following categories:

- Participation/In-Class Activities (5% of total course points)
- Homework (20% of total course points)
- Computer Projects (45% of total course points)
- Mid-term Exam (in-class) (15% of total course points)
- Final Exam (in-class) (15% of total course points)

The following table gives the scale for course grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage of Points Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.0</td>
<td>90%</td>
</tr>
<tr>
<td>3.5</td>
<td>85%</td>
</tr>
<tr>
<td>3.0</td>
<td>80%</td>
</tr>
<tr>
<td>2.5</td>
<td>75%</td>
</tr>
<tr>
<td>2.0</td>
<td>70%</td>
</tr>
<tr>
<td>1.5</td>
<td>65%</td>
</tr>
<tr>
<td>1.0</td>
<td>60%</td>
</tr>
</tbody>
</table>

The instructor reserves the right to adjust the scale for course grades, if necessary.

Make-ups
There are no make-up mid-term or final exam. Students must schedule other activities (e.g., interview trips) so as to avoid conflicts.

## Network Programming

Lectures will include discussion of application programming interfaces for computer networking. Primary focus will be on socket programming, including example code and interactions between sockets and transport protocols (e.g., TCP, UDP) and application-level protocols (e.g., HTTP, SSL). One of the Computer Projects will involve socket programming.

## Class Procedures

1. **Late submissions will be accepted only under justifiable circumstances and possibly with penalty.** Not turning in any two homework assignments or any one project assignment is considered grounds for failing the course.
2. Reading material will be assigned in class and via the course web site. Students are expected to have read the assigned material prior to the next lecture.
3. Quizzes and the Final Exam will be closed-book (3in by 5in formula card is allowed) and will cover material assigned from the text, lectures, and handouts.
4. Class notes/slides will be made online before class, please print them and take to the class. Some problems in the slides are solved in class and the solution is not included in the published slides.
5. All students will have computer accounts on CSE machines. The instructor will use those accounts in the course email alias. If your home account is under another domain, it is your responsibility to have your mail forwarded.
6. The programming assignments will require that the students be proficient in C/C++ or Python. Grading of programming assignments will involve either demonstrations or automated testing.

**Notes:** The instructor reserves the right to change course policies and schedule according to needs of the class.

## Academic Honesty

Article 2.3.3 of the Academic Freedom Report states that "The student shares with the faculty the responsibility for maintaining the integrity of scholarship, grades, and professional standards." In addition, the College of Engineering adheres to the policies on academic honesty as specified in General Student Regulations 1.0, Protection of Scholarship and Grades; the all-University Policy on Integrity of Scholarship and Grades; and Ordinance 17.00, Examinations. (See Spartan Life: Student Handbook and Resource Guide and/or the MSU Web site: [www.msu.edu](http://www.msu.edu) ) Therefore, unless authorized by your instructor, you are expected to complete all course assignments, including homework, lab work, quizzes, tests and exams, without assistance from any source. You are expected to develop original work for this course; therefore, you may not submit course work you completed for another course to satisfy the requirements for this course. Also, you are not authorized to use the [http://www.allmsu.com](http://www.allmsu.com), [http://chegg.com](http://chegg.com), or similar web sites to complete any course work. Students who violate MSU rules
may receive a penalty grade, including--but not limited to--a failing grade on the assignment or in the course. Contact your instructor if you are unsure about the appropriateness of your course work.

That’s the university policy. My specific policies are as follows: You may discuss individual assignments with other students, but the assignment must be entirely your own work. Plagiarism just makes me mad! All work turned in must be your own. If you borrow or adapt software from a textbook or from source code that is obviously public, you must treat this as a quotation or paraphrase, acknowledging the source in the heading or the program module.

You may discuss assignments in general terms with your classmates, the course staff, or the instructor, but you are not permitted to receive solutions from others or to read or copy part or all of another person’s solution to a problem.

Being caught cheating on any aspect of the course and academic dishonesty report (ADR) will be filed with the university and is grounds for receiving a grade of 0.0 for the course. Any student missing an exam (only documented emergencies excepted) will receive a grade of 0.0 for the course.

I encourage you to visit honorcode.msu.edu to learn more about the Spartan Code of Honor academic pledge:

“As a Spartan, I will strive to uphold values of the highest ethical standard. I will practice honesty in my work, foster honesty in my peers, and take pride in knowing that honor is worth more than grades. I will carry these values beyond my time as a student at Michigan State University, continuing the endeavor to build personal integrity in all that I do.”

Midterm/Final Exam

A midterm examination and a final examination will be conducted during the semester, and will constitute 30% of the total course points.

- Midterm Exam (15%)
- Final Exam (15%)

All issues related to the final examination will follow the policies and schedule of the University: MSU Final Exam Schedule.

Homework

Four computer homeworks will be assigned and will constitute 20% of the total course points. These homeworks will be based on the assigned reading as well as the material presented in class. Homework solutions are submitted electronically via the handin system. Only PDF format submissions will be accepted. The name of the solution file submitted must follow the format hwn_mmmmmmm.pdf where n is the homework number (1,2,3,4) and mmmmmmm is your msu network id.

Homework assignments are to be done individually.
Computer Projects

Three computer projects will be assigned and will constitute 45% of the total course points. The projects will include the design and implementation of solutions using either Python and C++ depending on the project assigned. All projects are team projects composed of two team members. Teams are assigned randomly by the instructor. New teams will be formed for each project. Project solutions are submitted electronically via the handin.

Project 1 is a project involving the use of the protocol analyzer WireShark. The solution for Project 1 should be in PDF format. Only one team member needs to submit the solution file. The name of the solution file submitted must follow the format prj1_mmmmmm_nnnnnnnn.pdf where mmmmmm and nnnnnnnn are the msu network ids of the team members.

Project 2 will be a programming project implementing a reliable transport protocol implemented in C/C++. Discussing problem-solving strategies with other students is encouraged, but as soon as the discussion turns to a particular implementation that must be done on your own.

Project 3 will be a programming project involving socket programming implementing a simple client server game in Python. Discussing problem-solving strategies with other students is encouraged, but as soon as the discussion turns to a particular implementation that must be done on your own.

Each project solution is electronically compared to all other solutions to identify similar solutions. Individuals that submit solutions that are essentially identical will receive a score of zero for that assignment, and will be reported to their Dean. A student who is involved in a second such incident of academic dishonesty will receive a grade of zero in the course. Since the comparison is done off campus, to protect your privacy do not include your name or PID in your project solution.

Under no circumstances should you share a project solution with another team. Simply showing your solution to another student almost guarantees a zero score: past experience shows that a student who asks to "look at" your solution will copy parts of it or pass it along to someone else who copies it.

Important Project Notes

- On Time Projects must be turned in on time. Late projects will not be graded.
- Turning-in Projects Project solutions will be turned in using the Handin system.

Notes

The instructor reserves the right to modify course policies, the course calendar, and assignment specifications.

Any extenuating circumstances that impact on your participation in the course should be discussed with your lecture instructor as soon as those circumstances are known (such as absences due to illness, religious observances, or other required school activities).
All students are expected to be responsible users of the computer system provided for this course. Account usage guidelines published by the Department of Computer Science and Engineering are posted under: [Acceptable Use Policy](#)

**Important Course Policies**

1. Make-ups for examinations may be arranged, if your absence is caused by a documented illness or personal emergency. A written explanation (including supporting documentation) must be submitted to your lecture instructor; if the explanation is acceptable, an alternative to the examination will be arranged. When possible, make-up arrangements should be completed in advance.
2. A student who is unable to complete a computer project or homework assignment by the specified due date because of illness or a personal emergency should contact his or her lecture instructor. If the student's explanation is acceptable, the assignment due date will be extended (or his or her lecture instructor will make other appropriate arrangements).
3. To be eligible for credit, each solution to a computer project must fulfill the published requirements, must be submitted by the published due date, and must be your own work.
4. The Department of Computer Science and Engineering expects all students to adhere to MSU's policy on Integrity of Scholarship and Grades, which includes the statement, "... all academic work will be done by the student to whom it is assigned, without unauthorized aid of any kind". The complete text of the University policy is posted under: [University Policy on the Integrity of Scholarship and Grades](#). Students who violate this policy may receive a failing grade in the course.
5. Students requiring accommodation under the Americans with Disabilities Act (ADA) with [MSU's Resource Centers for Disabilities (RCPD)](http://www.rcpd.msu.edu) should bring their Verified Individualized Services and Accommodations (VISA) form to the instructor as near the beginning of the term as possible.
6. Accommodations will be made for religious observances if requests are made well in advance. Since religious observances are usually known at the beginning of class and assignment due dates are in this syllabus, we expect students to request accommodation at the beginning of the semester. See MSU's policy on [Religious Observance](#) for more details.