Class Meetings @ BP 326
Mon, Wed 12:00 – 1:15

John Magee, Instructor
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Always include “CS280” in the subject.

Office hours @ BP 332:
MW 11:00 – 12:50, or after class
Feel free to drop by my office if my door is open!

Course Overview

CSCI 280 serves as an advanced introduction to computer networks geared toward students majoring in Computer Science. The main focus of the course will be an investigation of the design of computer networks and network protocols, from both a conceptual and design standpoint. We will primarily focus on the software used behind the scenes to build scalable, general-purpose networks.

Expect to cover the majority of the topics in the Kurose-Ross text. Major topics will include:

- Protocol layering
- Internet design principles, methodology, and architecture
- TCP/IP implementation
- Naming and addressing
- Unicast and multicast routing
- Congestion control and flow control
- Rate allocation policies, i.e. fairness, QoS
- Advanced network protocols and networked applications

This course fulfills a Computer Science 200-level elective requirement with a grade of C- or better.

Prerequisites

Prerequisites for this course require a grade of C- or better in CSCI 160 – Algorithms. This also assumes that you have completed CSCI 121 – Data Structures and MATH 114 – Discrete Mathematics.
Books

Computer Networking, 7th Edition
by Jim Kurose and Keith Ross

Other online readings and tutorials will be posted to the schedule page.

Software

For the applied parts of the course, you will be programming using a language of your choice. However, the starter and example code will use the C and Python programming languages.

- Netbeans or Eclipse IDE (for C and C++ development, Java)
- Python
- Wireshark - Network Protocol Analyzer
- Linux and Windows network utilities

Grading

The following percentages are tentative and may be changed at my discretion at any time:

- Written Assignments / Wireshark Labs: 25%
- Programming Assignments: 25%
- Midterm Exam: 20%
- Final Exam: 25%
- Attendance, Participation, Professionalism: 5%

Workload

Be forewarned – the workload in this course will be heavy. To master the conceptual material covered in lecture, there will be written homework assignments due approximately every other week in class. In addition, there will be two substantial programming assignments (written in a language of your choice), each of which is likely to amount to a thousand lines of code. If you are worried that your skills in writing and debugging large programs are weak, this course may not be for you. On the other hand, this course can help you greatly improve these essential skills.

Withdrawing from the Course

If you feel that you want to drop or withdraw from the class, please come talk to me about it as early as possible; I want to help you succeed, but you need to ask for help.

- Add/Drop period ends Wednesday, September 7, 2016 at 11:59pm.
- The last date to withdraw and receive a “W” grade is Friday, November 4, 2016.

Credits: This syllabus and course design was adapted from material by Aaron Stevens and John Byers, Boston University.
LEEP Learning Outcomes
The goal of this course includes advanced level mastery of LEEP Learning Outcomes as follows.

1. **Knowledge of the Natural World and Human Cultures and Societies.**
   Demonstrated through understanding of technical fundamental knowledge areas of computer science, applications of computer science to nearly every aspect of modern life, interaction of computing with many different fields, and the ability to communicate and learn from experts in other fields.

2. **Intellectual and Practical skills**
   Demonstrated through the ability to design and improve systems using quantitative and qualitative assessments of their functionality, usability, and performance; practice and improvement of communication skills and the ability to communicate effectively to a range of audiences about technical problems and their solutions; the ability to think at multiple levels of detail and abstraction, and apply that to construct and analyze systems; and a recognition of the context of the function of computer systems, including interactions with people and the physical world.

3. **Personal and Social Responsibility**
   Demonstrated through the recognition of the social, legal, ethical, and cultural issues inherent in the discipline of computing; an understanding individual and collective responsibility and the possible consequences of failure on real people or the world; a commitment to life-long learning, recognizing that the field of computing advances at a rapid pace; and the ability to manage one’s own learning and development, including managing time, priorities, and progress.

4. **Ability to Integrate Knowledge and Skills**
   Demonstrated through the recognition of recurring themes and general principles that have broad applications in computing beyond the domains in which they are introduced; an understanding of the fundamental interplay between theory and practice in computing; the ability to solve problems by constructing complex systems, which are analyzed on multiple levels of detail and abstraction; and an appreciation for interdisciplinary aspects of computer science and the application of knowledge toward solving cross-disciplinary problems.

5. **Capacities of Effective Practice**
   Demonstrated through the application of students’ knowledge toward solving real problems across a variety of domains; the pursuit of an integrative large-scale project that applies knowledge across the curriculum; the effective presentation of projects, ideas, technical problems, and solutions to a variety of audiences; the ability to work effectively in a team and enhance interpersonal skills through collaborative efforts; and the ability to recognize how to apply foundational knowledge to learn and adapt skills throughout a career, as specific technologies change over time.
Policies and Miscellaneous

The official administrative business of this class will be conducted by email.
Grade questions/disputes, explanation of absence, etc. will be processed exclusively via email so that we both have a written record of what was agreed. Feel free to discuss in person but an email follow-up is required for the official record.

Attendance and discussion/asking questions are expected and will be reflected in your grade.
If you must be absent, please email me in advance to let me know why you won’t be in class, and to let me know what you will do to keep up with the assignments. CS 280 is not a correspondence course.

Computer Use Policy
You are expected to attend class and work on the assignments for this class during that time. Please do not use this time to work on other homework, play games, check Facebook, or surf the web. Such activities can be distracting to other students.

Assignments are due on the date and time stated on the homework assignment (to be posted on web).
- Assignments received within 0-24 hours of the deadline will be accepted with a 10% penalty.
- Assignments received within 24-48 hours of the deadline will be accepted with a 20% penalty.
- Assignments received more than 48 hours past the deadline will not be accepted or graded.

Plan your work accordingly, and work on all assignments as soon as they are given so you can ask questions in class and get assistance in the labs and tutoring hours.
Students are responsible for ensuring that assignments are correctly submitted. If you have a question or problem, seek help from staff immediately.

No special make-up work will be accepted after the end of the semester.
In the event of a documented major medical problem, a grade of Incomplete will be given pending the submission of complete work. However, make up work “to improve one’s grade” will not be accepted.

It is YOUR responsibility to retain all papers, quizzes, and exams that have been graded and returned.
Should these original documents not be available in the event of a grade dispute, I will need to defer to the original records.

Grades are not negotiable.
Don’t even ask – just do the work and you’ll get the grade you deserve. Of course, please bring any clerical grading errors to my attention by email, and I will gladly fix them.

Time Commitment.
This is a 4-credit course. Each class meeting will require several hours of preparation and additional work outside of class. You should expect to devote 13-18 hours per week to this course. The workload will vary week-to-week. A minimum of 180 hours of engaged academic time is expected.
Students with Disabilities.
Clark University is committed to providing students with documented disabilities equal access to all university programs and facilities. If you have or think you have a disability and require academic accommodations, you must register with Student Accessibility Services (SAS), which is located in room 430 on the fourth floor of the Goddard Library. If you have questions about the process, please contact SAS at accessibilityservices@clarku.edu or (508)798-4368. If you are registered with SAS, and qualify for accommodations that you would like to utilize in this course, please request those accommodations through SAS in a timely manner.

Welcoming Class Atmosphere.
I strive to make my classroom welcoming and productive for all students. Please let me know what name or pronoun you prefer to use. Please bring to my attention any issues or concerns you have about the classroom atmosphere.

Plagiarism, Collaboration, and Collusion
Work that you submit under your own name must represent your own intellectual efforts. Unless otherwise specified, all CS280 homework assignments are independent work.

It is the student’s responsibility to know and understand the Clark University Academic Integrity policy, which is within the Academic Advising Handbook (The Blue Book) available at the Academic Advising Center.

In addition to the definition of plagiarism in the handbook, with respect to CSCI 280, plagiarism is specifically defined to include (but is not limited to) the following:

- collaboration on the solutions/code you write
- copying any part of someone else’s assignment/program, even if you have permission and/or have modified the code
- sharing or giving your assignment/code or even a subset of your assignment/code to another student to review
- reviewing another student’s solution (including from past semesters)
- reviewing solutions on the internet

It is my policy to use automatic plagiarism detection software, and suspicious similarities will be uncovered. The University takes acts of cheating and plagiarism very seriously; violators may be suspended or fail the course.

What is acceptable cooperation?
Cooperation is recommended in understanding programming concepts and system features. You are encouraged to discuss the labs, the homework problem statements and expected output, and to seek and receive help with programming languages and other tools.

However, each student must write his or her own solution/code and other deliverables independently.

Acknowledge Help Received
To avoid any misconception about academic conduct, you should acknowledge the names of anybody you discuss assignments with, or sources of any ideas or code snippets you use.