

14-740: Fundamentals of Computer Networks

Fall 2020

Course Syllabus

- Overview:** 14-740 is a graduate-level, first-course in computer networks. The primary objective of this course is for you to learn the fundamental principles underlying computer networks. Using a top-down approach, we will cover topics in the application, transport, network and link layers of the protocol stack. We will also go over advanced topics, including network management, traffic engineering, and router internals. Besides learning about the nuts and bolts, you will gain an understanding of the engineering tradeoffs and design principles used in computer networks.
- Instructor:** Bill Nace
- TAs:** Rohit Nair
Rahul Ramanathan
Wenrui Wang
- Time and Location:** McConomy Auditorium, Cohen University Center
Tuesday and Thursdays; 9:50 - 11:10 am
- Textbook:** Computer Networking: A Top-Down Approach, 7th Edition, by James Kurose and Keith Ross, Addison Wesley.
Yes, this book is REQUIRED
We will use the latest edition! Use of the “Global Version” is fine.
- Other Reading:** A collection of research papers from conferences and journals and also engineering papers such as documents from IETF. These papers are available on the website. You will read the assigned readings critically before each class.
- Course Website:** All course materials (this syllabus, lecture slides, reading materials, instructions for assignments, etc) will be made available on the course website at www.ini740.rocks. The Canvas system at www.cmu.edu/canvas will be used for assignment submission and grades.
- Q&A Website:** This course will use Piazza for student questions and answers. The class page is piazza.com/cmu/fall2020/14740/home. Top participants on Piazza (either as askers or answerers) are eligible for Class Participation grade points.

Staff email dlist: You can send email to ini740-staff@lists.andrew.cmu.edu and your email will be distributed to the professor and all the TAs. While we prefer (and prioritize) use of Piazza, this method is useful for questions pertaining to your personal situation.

Grade assignment: The course grade will be calculated from a weighted average of the individual event scores. The events and weights are as follows:

Weight	Event
40%	2 homework assignments and 4 labs. The assignments are pen-and-paper analysis or projects involving network tools. The labs use the Wireshark protocol analyzer
10%	Paper reviews. For each paper you read, you will write a review containing a short summary of the paper, 3 important points, and 2 questions/comments you have for the paper. This is to help you read the papers critically before class and come prepared for discussions.
20%	2 non-comprehensive quizzes. Each quiz will be 45 minutes during a regular class period. Quizzes will draw on material from lectures, from the assigned readings (textbook and supplemental papers) as well as from homework and lab assignments.
25%	Comprehensive final exam. The exam will be held during finals week.
5%	Class participation, based on the questions and comments you contribute in class. Just showing up for class and not saying anything is not considered to be participation. Be ready by reading the assigned papers; thinking about the papers critically will help you.

Late Policy: All assignments must be submitted by the deadline. No late work will be accepted. If you have a life-changing event, talk to the professor (ahead of time if at all possible) for a potential extension.

Be very careful! Make sure you are certain that you are submitting the correct version of your work, for instance, as we won't accept something else after the deadline.

Extra Credit: Only graded events offered to all students in the course will be considered for the final grade. No individual will be offered "extra-credit" or a "make-up project" to improve their grade, as that would not be fair to other students. If you wish to have a better grade, don't wait until after the final to ask -- the only way to get a better grade is to do better work (and thus learn more) throughout the semester.

Grading Appeals: If you believe there has been a mistake in the grading of any assignment or exam, then please bring it to our notice so we might correct it. Grade appeals must be submitted **in writing** to the instructor or to the ECE course hub. **You must submit grade appeals within 1 week of the time the work was returned.**

Accommodations for Students with Disabilities: If you have a disability and are registered with the Office of Disability Resources, please come and talk to me to discuss your needs. You will also need to use their online system to formally notify me of your accommodations. I will work with you to ensure that accommodations are provided as appropriate.

If you suspect that you may have a disability and would benefit from accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact them at access@andrew.cmu.edu.

Policies Related to Remote Instruction: The pandemic requires many changes in how this course is taught. Primary instruction is in an *in-person plus remote* mode. A limited number of students will be able to attend the in-person section, as the room has a limit of 38 students. The remainder of students will access the lecture on Zoom. You are always welcome to participate in remote-only mode, should you wish. We will do our best to ensure remote students have a good experience, and to provide no particular advantage to those who can be in-person.

As a result, it is your responsibility to obtain internet access, to have a computer compatible with Zoom, to have a high-resolution web camera, good microphone and speakers. If your laptop doesn't have full HD video with at least 1080p resolution you will need to get a webcam to participate in class. Software solutions that use your phone camera as a webcam can help. If you lack access to appropriate equipment, please contact the Dean of Students or your advisor for assistance.

If you join a lecture or office hours through Zoom, we do expect you to be attentive at all times. Should we call on you to answer a question, we would expect you to quickly turn your camera on and voice your opinion. The same is true for breakout room invitations, poll responses, etc. Inactive attendees may be removed.

All lectures will be recorded and posted as a way to help those in other time zones. However, watching a recorded lecture is a sub-optimal learning experience, especially as there is no opportunity for interaction, to get a question immediately answered or to be able to participate in synchronous learning activities. I encourage everyone who possibly can to participate in the live lecture session.

Quizzes and the final exam will be proctored in a synchronous fashion. We apologize for the inconvenience a student in far-away time zone might experience, but is the only option that would allow me to meet my course goals in such a large class.

Academic Integrity: *14-740 will adhere to the strictest standard of academic honesty.* All work presented for a grade must be your own -- you are never permitted to copy someone else's work to present as your own. You must also identify the conceptual sources for all work submitted (i.e. if you discuss the work with anyone other than an instructor or TA, you must identify that person by name in your submission). All parties involved in an infraction are subject to disciplinary actions to the fullest extent permitted, generally failure of the course, and may be submitted to further University procedures up to and including expulsion. Please review fully and carefully the Student Handbook for Carnegie Mellon University's official policy regarding Cheating and Plagiarism (<http://www.cmu.edu/policies/documents/Cheating.html>). I will also punish any infraction that I believe occurred (Standard of evidence is "Preponderance of the Evidence"). Such punishment will generally be assignment of a zero grade for the event, as well as retroactive examination of previous work for signs of cheating.

Academic Integrity notes from an instructor who has taught this course many times:

In 14-740, the majority of academic integrity violations are due to over collaboration. Take a look at the policy: "All work presented for a grade must be your own." It does not go on to say "except for if you happened to work in a group and just copied down the answer that the group generated." If I find homework submissions that look identical (or even just "too similar"), I will suspect that copying took place.

Working and learning in a group is a fine thing to do for 14-740. Teaching others in a group is often the easiest way to make sure you learn the material yourself. However, ensure that each person in your group is doing their own work and not simply copying down a group-generated answer. Please, please, do the right thing.

Take care of yourself: Things at CMU can get stressful at times. Please remember to take good care of yourself! Now more than ever, with the additional sources of stress this semester, it is important for you to stay healthy, and to reach out to your support network and to other resources that can help you when things start feeling difficult.

Know that you are not alone - all of us can feel overwhelmed at times (especially at a time like this), and all of us benefit from help and support during those times. Even though many of you are away from campus, there are still several resources that we encourage you to make use of if you are going through any sort of struggle. Sometimes, even if you don't think that you need it, or that it's not serious enough to warrant reaching out, you may be surprised at how friends, family, course staff, and professionals can help you - consider reaching out to any of them you trust for help, or to get connected to resources that can provide the help you could use.

An excellent resource at CMU is Counseling and Psychological Services (CaPS) - they are excellent listeners, and can help you through a wide variety of situations (including ones that many of you may not consider when you hear the terms counseling and psychology). CaPS is available for students on and off campus, and can help you with situations such as academic stress, difficult life events, or feelings such as anxiety or depression.

Counseling and Psychological Services (CaPS)
<https://www.cmu.edu/counseling/>
(412) 268-2922

If you or someone you know is feeling suicidal or in danger of self-harm, call someone immediately, day or night:

CaPS: (412) 268-2922
Re:solve Crisis Network: (888) 796-8226

If the situation is life threatening, call the police

On campus: CMU Police: (412) 268-2323
Off campus: 911

Finally, if you have any questions about this, or would like to talk, please do not hesitate to reach out me.

Policies Related to Diversity and Inclusion: Please don't read anything into the fact that this is the last section of the syllabus. In many ways, this is much more important than any other material in the entire syllabus -- yes, including how grades are assigned.

I believe that every human being is special and precious and deserving of respect. Unfortunately, many have been treated in non-respectful ways, often horrifyingly so, based on their gender, race, age, sexuality, disabilities, or other status. I will do everything possible to ensure that all students are treated with the respect they deserve while participating in this course. Such respect requires that every student's diverse learning needs are addressed and that all student's diverse perspectives are treated as a source of strength and a benefit for all in the course.

If you feel you have been treated otherwise by the professor, course staff or other students, you are encouraged to discuss the situation with me. I will take the situation seriously, provide you with anonymity, and act on the information.

You should also know that there are university-level resources as well:

- **Center for Student Diversity and Inclusion:** csdi@andrew.cmu.edu, (412) 268-2150
- **Report-It online anonymous reporting platform:** www.reportit.net
 - username: *tartans*
 - password: *plaid*

Further, your suggestions on how we can do a better job in these areas is encouraged and appreciated. Please let me know of any areas of improvement.