

# CSE 514: Computer Networks

**Instructor:** Guohong Cao

**Email, web:** gxc27@psu.edu, <https://www.cse.psu.edu/~gxc27>

**Class time, place:** TuTh 3:05PM - 4:20PM, Willard Bldg 260

**Office, Office Hours:** W326 Westgate Building, TuTh 1:30PM - 2:30PM

**Course Description:** This course provides students with the basic background, design, and evaluation skills in computer networks. It covers application, transport, network, and data link layers. Students should have necessary analytical and programming skills to do networking projects.

**Course Outline:** (tentative schedule in Canvas)

1. Computer Networks and the Internet – Internet, network structure, protocol stack
2. Application Layer – HTTP, FTP, SMTP, DNS, content distribution
3. Transport Layer – UDP, TCP, sliding window, congestion control
4. Network Layer: Data Plane – forwarding, scheduling, IPv4, IPv6, software defined networking
5. Network Layer: Control Plane – Routing algorithms, BGP, SDN control plane, ICMP
6. Link Layer and Local Area Networks – Multiple access control, LAN, Ethernet
7. Wireless and Mobile Networks – Wireless LAN, 4G/5G, mobility management

**Textbook:** *Computer Networking: A Top-Down Approach*, 8th Edition, J. Kurose and K. Ross (Required).

*Computer Networks: A System Approach*, Fifth Edition, L. Patterson and B. Davies.

We also read papers that will be posted on the class web page.

## Course Grading:

- Homework: 15%
- Midterm (October 19, in class): 30%
- Projects: 20%
- Final: 32%
- Class Participation: 3%

**Policies:** Assignments are due on the date specified. They will be accepted within two days after the due date with a 20% penalty. No submission will be accepted two days after the due date.

**Academic Integrity Statement:** Dishonesty of any kind will not be tolerated in this course. Dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. Students who are found to be dishonest will receive academic sanctions and will be reported to the University (see Senate Policy G-9). The CSE Department has its statement on Academic Integrity (<http://www.eecs.psu.edu/students/resources/EECS-CSE-Academic-Integrity.aspx>).

All code you submit as part of your projects must be your own design and implementation, except for code that we provide or code that you document as coming from another source. The latter exception may only be used for incidental pieces of code and may result in a reduction of your score. Violations of this policy will result in at least a 0 on the assignment/project and a reduction of the final course grade by one letter. Any serious violation will result in an automatic failure in the course.

**Accessibility:** Penn State welcomes students with disabilities into the University's educational programs (see <http://equity.psu.edu/student-disability-resources>)

**Counseling & Psychological Services (CAPS):** Students who experience personal issues that interfere with their academic performance can seek assistance from CAPS center (<http://studentaffairs.psu.edu/counseling>).

**Inclusive Teaching Statement:**

**What you can expect from me:** 1) When contacted, I will respond to all of your inquiries in a timely manner. 2) I want you to learn and succeed so do not be afraid to ask for clarification if you have questions about your assignments, grades, and any related feedback. 3) Your opinions, thoughts and words matter to me and will make a difference in this class. 4) Your success is important to me. Please do not hesitate to contact me when you have a concern and want assistance in this course.

**What I will expect from you:** 1) A desire to learn and a commitment to obtain skills that you can use in future courses as well as out in the real world. 2) Complete all coursework (reading, assignments, labs, assessments, etc.) to the best of your ability. 3) Be ready to embrace new concepts and recognize that mistakes are a vital part of the learning process. It is crucial to allocate enough time to cover the course material.

If you would like to share more information about yourself or have something you'd like to discuss, please feel free to reach out via email or visit my office.