



<b>Course Name:</b>	Introduction to Computer Networks	
<b>Course Number:</b>	CS 372	
<b>Credits:</b>	4	
<b>Instructors:</b>	Bram Lewis	( <a href="mailto:Bram.Lewis@OregonState.edu">Bram.Lewis@OregonState.edu</a> )
<b>Graduate Teaching Assistants:</b>	Yashwanthi Anand	( <a href="mailto:anandy@oregonstate.edu">anandy@oregonstate.edu</a> )
	Peiyuan Chen	( <a href="mailto:chenpeiy@oregonstate.edu">chenpeiy@oregonstate.edu</a> )
	Dongjun Lee	( <a href="mailto:leedongj@oregonstate.edu">leedongj@oregonstate.edu</a> )
<b>Prerequisites:</b>	CS 261, and either ECE 271 or CS 271	

## Course Description

Computer network principles, fundamental networking concepts, packet- switching and circuit switching, TCP/IP protocol layers, reliable data transfer, congestion control, flow control, packet forwarding and routing, MAC addressing, multiple access techniques.

## Communication

Please post all course-related questions in the **Ed Discussions** forum so that the whole class may benefit from our conversation. Please contact your instructor privately for matters of a personal nature. We will strive to reply to course-related questions within 48 business hours. We will strive to return your assignments and grades for course activities to you within one week of the due date. You can find a detailed communication policy as well as information on **Microsoft Teams** Office Hours on the Course Homepage.

**Note:** Students in one section of this course may be required to interact with teachers, teaching assistants, and students in other concurrent sections of this same course.

## Course Credits

This course combines approximately 90 hours of instruction, online activities, and assignments for 4 credits.

## Technical Assistance

If you experience any errors or problems while in your online course, contact 24-7 Canvas Support through the Help link within Canvas. If you experience computer difficulties, need help downloading a browser or plug-in, or need assistance logging into a course, contact the IS Service Desk for assistance. You can call (541) 737-8787 or visit the [IS Service Desk](#) online.

## Learning Resources

Textbook:

- Kurose and Ross, Computer Networking: A Top-Down Approach, 8<sup>th</sup> Edition, Pearson

Other references, books, and resources:

- Python Socket Programming Documentation
  - Free online at <http://docs.python.org/3/library/socket.html>
- Hall, Brian, "Beej's Guide to Network Programming: Using Internet Sockets"
  - Free online at <http://beej.us/guide/bgnet> (Old, but good for those coming in with a C background).

- Wireshark Packet Analyzer
  - Free online at <http://www.wireshark.org/>
- Pingplotter Full Edition
  - 14-day Trial at <http://www.pingplotter.com/download>. Don't download Pingplotter until we get there in the labs.

**Note:** Check with the OSU Beaver Store for up-to-date information for the term you enroll ([OSU Beaver Store website](#) or 800-595-0357). If you purchase course materials from other sources, be very careful to obtain the correct ISBN

## Measurable Student Learning Outcomes

At the completion of the course, students will be able to...

1. **Explain** the concept of packet-switching, and identify and analyze the different types of packet delay in packet-switched networks (CLO1).
2. **Describe** the essential principles of a transport layer protocol (reliable data transfer, flow control, congestion control) (CLO2).
3. **Use** IP addressing and **apply** routing algorithms to find shortest paths for network-layer packet delivery (CLO3).
4. **Describe** and **compare** data link layer services and multiple access techniques (CLO4).
5. **Describe** network security issues and some of the methods that address them (CLO5).
6. **Use** networking tools to observe and analyze behaviors of networking protocols (CLO6).

## Evaluation of Student Performance

Various activities will be evaluated. Percentages are approximate.

- Weekly summary exercises (20%): These are weekly exercises available and automatically graded within Canvas. A student may take these two times, and the highest score is taken.
- Labs and their reports (20%) These assignments require running specified tests with *Wireshark*.
- Programming Projects (30%): These assignments require programming to solve specific problems. These are done offline, and programs will be submitted for evaluation of documentation, correctness, completeness, fulfillment of requirements, and readability. Evaluation criteria will be posted before the due date.
- Discussions and Demonstration Videos (10%): These will be completed in Canvas.
- Midterm Exam (10%)
- Final Exam (10%)

## Letter Grade

Grade	Percent Range
A	93-100
A-	90-92.99
B+	87-89.99
B	83-86.99
B-	80-82.99
C+	77-79.99
C	73-76.99
C-	70-72.99
D+	67-69.99
D	63-66.99
D-	60-62.99

F	0-59.99
---	---------

## Course Content

Module	Topic	Reading Assignments	Learning Activities
1	Networking Basics	K&R Chapter 1.1 – 1.4	Summary exercises Lab 1 Discussion: Intros
2	Physical media, Layering models, Application Layer	K&R Chapter 1.5 – 1.8, 2.1	Summary exercises Project 1
3	Application Layer Protocols, DNS	K&R Chapter 2.2 – 2.4, 2.7, (2.6 optional)	Summary exercises Lab 2
4	Socket Programming and the Transport Layer	K&R Chapter 3.1 – 3.3, 3.5.4	Summary exercises Project 2
5	Transport Layer Part Deux, TCP	K&R Chapter 3.4 – 3.5, (re-read 3.5.4)	Summary exercises Lab 3 Discussion: modules 1-5
6	More on the Network Layer	K&R Chapter 3.6 – 3.8	Summary exercises Midterm exam
7	Finishing the Network Layer and Starting on the Link Layer	K&R Chapter 4.1 – 4.3	Summary exercises Lab 4
8	Routing, ICMP, NAT, and IP fragmentation	K&R Chapter 5.1 – 5.3, 5.6	Summary exercises Project 3
9	IPv6, Link-layer and Ethernet	K&R Chapter 6.1 – 6.4, 6.7	Summary exercises Lab 5 Project 4
10	Wireless, Mobility, and Network Security	K&R Chapter 7.1 – 7.3, 8.1 – 8.3	Summary exercises Discussion: modules 6-10 Prepare for final
Finals			Final exam

## Course Policies

### Late Work Policy

All assignments must be submitted before the due date. Late submissions will not be accepted. If you do not submit before the due date, you will receive no credit.

### Revision Grace Period

The "revision grace period" policy is for labs and programming projects. If you are unable to fulfill a lab or programming project requirement to your satisfaction before the due date **for any reason** you may notify the learning assistants and instructors (via a Canvas comment along with an initial **on-time** submission) that you plan to submit a revision. You may then submit a revision within 3 days. Summary exercises, discussion posts and exams are not eligible for revisions.

If you

1. submit a partial fulfillment of the requirements before the due date,
2. notify the learning assistants and instructors when you submit your initial attempt, and then
3. resubmit a revised version of your work within 3 days,

your grade will reflect only your final submission, without incurring penalties. If you do not resubmit within 3 days, then your grade will reflect your initial, potentially incomplete, submission.

Exceptions may be made at an instructor or learning assistant's discretion for emergencies or extenuating circumstances.

## Makeup Exams

Makeup exams will be given only for missed exams excused in advance by the instructor. Excused absences will not be given for airline reservations, routine illness (colds, flu, stomach aches), or other common ailments. Excused absences will generally not be given after the absence has occurred, except under very unusual circumstances.

## Incompletes

Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or birth of your child), and if the student has turned in 70% of the points possible (in other words, usually everything but the final exam). If you are having any difficulty that might prevent you completing the coursework, please don't wait until the end of the term; let me know right away.

## Statement Regarding Religious Accommodation

Oregon State University is required to provide reasonable accommodations for employee and student sincerely held religious beliefs. It is incumbent on the student making the request to make the faculty member aware of the request as soon as possible prior to the need for the accommodation. See the [Religious Accommodation Process for Students](#).

## Guidelines for a Productive and Effective Online Classroom

(Adapted from Dr. Susan Shaw, Oregon State University)

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility. Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course, paying particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

## Expectations for Student Conduct

Student conduct is governed by the university's policies, as explained in the Student Conduct Code (<https://beav.es/codeofconduct>). Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the university's regulations regarding civility.

## Academic Integrity

Integrity is a character-driven commitment to honesty, doing what is right, and guiding others to do what is right. Oregon State University Ecampus students and faculty have a responsibility to act with integrity in all of our educational work, and that integrity enables this community of learners to interact in the spirit of trust, honesty, and fairness across the globe.

Academic misconduct, or violations of academic integrity, can fall into seven broad areas, including but not limited to: cheating; plagiarism; falsification; assisting; tampering; multiple submissions of work; and unauthorized recording and use.

It is important that you understand what student actions are defined as academic misconduct at Oregon State University. The OSU Libraries offer a [tutorial on academic misconduct](#), and you can also refer to the [OSU Student Code of Conduct](#) and the [Office of Student Conduct and Community Standard's website](#) for more information. More importantly, if you are unsure if something will violate our academic integrity policy, ask your professors, GTAs, academic advisors, or academic integrity officers.

## TurnItIn

Your instructor may ask you to submit one or more of your writings to Turnitin, a plagiarism prevention service. Your assignment content will be checked for potential plagiarism against Internet sources, academic journal articles, and the papers of other OSU students, for common or borrowed content. Turnitin generates a report that highlights any potentially unoriginal text in your paper. The report may be submitted directly to your instructor or your instructor may elect to have you submit initial drafts through Turnitin, and you will receive the report allowing you the opportunity to make adjustments and ensure that all source material has been properly cited. Papers you submit through Turnitin for this or any class will be added to the OSU Turnitin database and may be checked against other OSU paper submissions. You will retain all rights to your written work. For further information, visit [Academic Integrity for Students: Turnitin – What is it?](#)

## Statement Regarding Students with Disabilities

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval, please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

## Accessibility of Course Materials

All materials used in this course are accessible. If you require accommodations please contact [Disability Access Services \(DAS\)](#).

Additionally, Canvas, the learning management system through which this course is offered, provides a [vendor statement](#) certifying how the platform is accessible to students with disabilities.

## Tutoring and Writing Assistance

TutorMe is a leading provider of online tutoring and learner support services fully staffed by experienced, trained and monitored tutors. Access TutorMe from within your Canvas course menu.

The Oregon State [Online Writing Suite](#) is also available for students enrolled in Ecampus courses.

## Ecampus Reach Out for Success

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about [resources that assist with wellness and academic success](#).

Ecampus students are always encouraged to discuss issues that impact your academic success with the [Ecampus Success Team](#). Email [ecampus.success@oregonstate.edu](mailto:ecampus.success@oregonstate.edu) to identify strategies and resources that can support you in your educational goals.

- **For mental health:**

Learn about [counseling and psychological resources for Ecampus students](#). If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741- 741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

- **For financial hardship:**

Any student whose academic performance is impacted due to financial stress or the inability to afford groceries, housing, and other necessities for any reason is urged to contact the Director of Care for support (541-737-8748).

## **Student Evaluation of Courses**

During Fall, Winter, and Spring term the online Student Evaluation of Teaching system opens to students the Wednesday of week 8 and closes the Sunday before Finals Week. Students receive notification, instructions and the link through their ONID. They may also log into the system via Online Services. Course evaluation results are extremely important and used to help improve courses and the hybrid learning experience for future students. Responses are anonymous (unless a student chooses to “sign” their comments, agreeing to relinquish anonymity) and unavailable to instructors until after grades have been posted. The results of scaled questions and signed comments go to both the instructor and their unit head/supervisor. Anonymous (unsigned) comments go to the instructor only.

## **Student Bill of Rights:**

OSU has twelve established student rights. They include due process in all university disciplinary processes, an equal opportunity to learn, and grading in accordance with the course syllabus:

- <https://asosu.oregonstate.edu/advocacy/rights>