

# Welcome to CS 372, Introduction to Computer Networks (4 credit hours)

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## What CS 372 is about:

The theme of CS 372 is “How Computer Networks Work”. We will begin with an overview of the basic concepts of networking technologies. We will then delve deeper into these concepts by exploring networking functionality at each of the layers of the Internet Protocol Stack. Along the way, we will learn about the hardware and software that enable network communication, the protocols that control network communication, and some of the applications that make it possible for the general public to use and enjoy the Internet.

Computer networking is complicated. There is an enormous body of knowledge that encompasses multiple areas of specialization. We will attempt to handle the complexity by concentrating on theory, abstractions, and general concepts, and then using a few example technologies to illustrate the concepts. In addition, we will have some hands-on lab experience to reinforce the concepts.

**CS 372 is an introduction** to computer networking. As such, it is mostly theoretical, with some hands-on lab and programming work. It offers an overview of several aspects of networking (breadth), with details about a few networking technologies (depth). It can be a first step in earning certification in networking.

**CS 372 is not** a network administration course. It **is not** a certification course in any area of specialization. Additional courses are required in order to qualify for a CNA/CNE.

The university catalog description for CS 372 is:

*Introduction to wired/wireless network principles, organization, topologies, hardware, applications, and protocols in the context of the Internet protocol stack. Configuration and implementation of local area networks and intranets. Internet protocols, packet forwarding, and routing.*

## What you are expected to know before starting CS 372:

The prerequisites are **CS 261** and **CS 271** or equivalents.

You should be able to

- think logically and support your answers and ideas.
- write a high-level language program (in C and/or Python and/or C++ and/or Java) from a given problem description.
- test / debug program source code.
- represent numeric values in binary form
- install and learn to use a software system on your personal computer.

## What you will need in order to complete assignments in CS 372:

Required software is available for free download. It doesn't matter if you are using a Mac or a PC; we will help you get set up.

- an Internet connection
- an ENGR account (see <http://enr.oregonstate.edu/teach>)
- *Wireshark* Packet Analyzer (free online at <http://www.wireshark.org/>)

**Note:** do not install pingplotter until just before we use it, it is a trial!

- *Pingplotter* Standard Edition (free online at <http://www.pingplotter.com/download.html>)
- a system for implementing *C*, *C++*, *Java*, and *Python* programs.

**Additional Resources:** These online resources may be helpful during various parts of the CS372 course:

- Hall, Brian, “Beej’s Guide to Network Programming: Using Internet Sockets” (free online at <http://beej.us/guide/bgnet/>).
- Python Socket Programming Documentation: <http://docs.python.org/2/library/socket.html>