CMPE 150: Introduction to Computer Networks

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Lecture 1
Welcome to CE 150!

• Class information:
  – When: T Th 2-3:45.
  – Class Web page:

    http://courses.soe.ucsc.edu/courses/cmpe150/Winter13/01
Course Focus

• From the catalog:

“Addresses issues arising in organizing communications among autonomous computers. Network models and conceptual layers; internetworking; characteristics of transmission media; switching techniques (packet switching, circuit switching, cell switching); medium access control (MAC) protocols and local area networks; error-control strategies and link-level protocols; routing algorithms for bridges and routers; congestion control mechanisms; transport protocols; application of concepts to practical wireless and wireline networks and standard protocol architectures.”
About the Instructor

• Katia Obraczka.
  – Office: E2 323.
  – E-mail: katia ”at” soe.ucsc.edu
  – Office hours: Thu 12:30-1:45 and/or by appointment (starting next week).

• Research: Internetworking Research Group (I-NRG): E2 311

• For more info, visit:
  – http://inrg.soe.ucsc.edu
Pre-Requisites

- CE 16.
- CE 12 and CE 12L, or CS 12B and CS 12M.
- Knowledge of basic C programming for project.
Logistics

• CE 150/L: there is a lab companion to the class.
• Students must register for lecture AND one lab session.
• Lab session is not the only time you will need to use the lab!
  – Key code for lab access can be picked up from BE 399C.
Lab

- Located in BE 301A
Lab

• 7 weekly exercises
  – 2-person teams
  – Pre-labs and labs
  – Check-out Lab section of class Web page.
  – **Team members share data, but reports must be done independently**

• Lab project
  – Network programming.
  – Sockets.
Teaching Assistants

- Marc Mendonca
- msm@soe.ucsc.edu

- Judith Samson
- jtsamson@soe.ucsc.edu
Books

• Lecture:
  – *Computer Networks*, by Kurose and Ross

• Lab (optional):
  – *Mastering Computer Networks*, by Jorg Liebeher and Magda El Zarki
Grading

• 70% lecture
  – Midterm 30%
  – Final 30%
  – Homework 10%

• 30% lab
  – Lab exercises 20%
  – Project 10%

Only a single grade will be issued for both CE 150 and CE 150L
Class Web Page

- [http://courses.soe.ucsc.edu/courses/cmpe150/Winter13/01](http://courses.soe.ucsc.edu/courses/cmpe150/Winter13/01)
- **Lab Web** page linked to the main class page.
- **Students must check the Web page frequently!**
  - Lecture notes.
  - Labs and assignments.
  - News.
  - Project information.
  - Forum.
Student Responsibilities:

Academic Integrity

• All submitted work must be individual.
  – OK to have discussions on ideas but turn in your own work.
  – Ask instructor if there are any questions.
  – For more info, go to:
    www.ucsc.edu/academics/academic_integrity/
Students Responsibilities

• Attendance.
  – Lectures.
  – Lab sessions.

• Keep up with material covered in lecture
  – Readings.
  – Homeworks.

• Keep up with lab assignments and project.
Resources

• Instructor.
• TAs.
• Class Web page.
  – Lecture notes will be posted before class.
• Lab- and discussion sessions.
• Web forum.
Lectures

• The more interactivity, the better!
  – Ask questions!

• Lecture notes:
  – Will be posted on-line before class.
  – But…
More Lab Logistics

• Register for ONE lab session.
• Welcome to attend more sessions.
• There will be an additional session on Fridays.
  – They will be held as TA office hours but in the lab.
• Students are expected to be in the lab during their session and MORE!
Lab Sessions

• Monday: 12-2pm (BE 301A).
• Tuesday: 12-2pm (BE 301A).
• Wednesday: 10am-12pm (BE 301A).
• Thursday: 10am-12pm (BE 301A).
More Lab Logistics

• Pay attention to the lab schedule!
  – Pre-labs.
  – Labs.

• Submission due dates and guidelines will be strictly enforced!

• Lab usage guidelines must be followed!
More Lab Logistics

• TAs will introduce lab exercises during lab session.
• Pre-lab due by 11:55pm that night.
• Lab report due 1 week later.
• Note that at “steady state”, lab report “i” and pre-lab “i+1” will be due on the same day!
Lab Project

• Basic network programming project.
• Can be done individually or in teams of 2 students each.
• Need to be demo’ed during last week of the quarter’s lab session.
• There will be a tutorial on network programming when project is introduced.
Field Trips

• Typically, 3 field trips.
  – 2 on campus.
  – 1 off campus.
Course Outline

“Top-down Approach”
What’s “Top-Down”?

- “Top-down” means that we will start at the “Application” layer and make our way to the “bottom” of the “stack”.

**Internet Protocol Stack**

- application
- transport
- network
- link
- physical
Course Outline (tentative)

“Top-down Approach”

- Introduction
- Application layer
  - Fundamentals
  - Application layer protocols.
- Transport layer
  - Fundamentals
  - Transport protocols
- Network layer
  - Fundamentals
  - Internetworking
  - IP v4 and v6
  - Routing
- Data link layer
  - MAC
  - Ethernet, 802.11
- Wireless networking