

A decorative graphic consisting of a vertical line and a horizontal line intersecting at a point, with the vertical line extending slightly above and below the intersection, and the horizontal line extending to the right.

EECS 122: Introduction to Communication Networks

Unit 0: Organizational

People (all office hours TBA – see bspace)

Lecturer:

- Prof. Adam Wolisz (wolisz@eecs)
 - Chaired Professor TU Berlin (Germany) www.tkn.tu-berlin.de
 - Adjunct Professor UC Berkeley
 - Research in networking since >30 years...

Office hour: Thursday 10.am-12 am

or Thursday 2.30p- 4p (room TBA)

Also available after the Class!!

- **TA:** Eric Turner
 - PhD. Student working in communications and networking

Office Hour: TBA

Course Books

- Textbook : William Stallings: ***Data and Computer Communications, 10th Edition***, Prentice Hall, 2014
- Recommended additional references
 - A. S. Tanenbaum and J. Wetherall, *Computer Networks, 5/E*, Prentice Hall, 2011
 - J. Kurose and K. Ross, *Computer Networking: A Top-Down Approach*, 6th Edition, Addison Wesley, 2012 (web site open!)
 - A. Leon-Garcia & I. Widjaja, *Communications Networks*, 2nd Edition, McGraw-Hill
 - Bartsekas D. and Gallagher R. (1987) *Data Networks*, second edition.
<http://web.mit.edu/dimitrib/www/datanets.html> (LEGAL DOWNLOAD!!)
 - J. Walrand, S. Parekh "Communication Networks: A Concise Introduction", Morgan and Claypool Pubs, Synthesis Lectures, *Free download at UC*
<http://www.morganclaypool.com/toc/cnt/1/1>
- Supplementary reading (papers, tutorials, chapters of free books!) will be uploaded for individual topics!

Web Site- <https://bcourses.berkeley.edu/>

- You are already included into the list of participants
- What is there ? – Everything!

Watch the Syllabus: you will find links to

- lecture slides (*mostly* before lecture)
- Reading, supplementary literature
- Assignments!
- Use bcourses to hand in homework (details to be announced)

Lecture slides:

- Sorted in units. A single unit
 - addresses a specific TOPIC
 - does not necessarily correspond to a single lecture.
- The slides are taken from
 - The textbook and the recommended books
 - Lectures offered in previous editions of EECS 122 spring (lecturers Jean Walrand, Shyam Parekh, Abhay Parekh, Adam Wolisz) and EECS122 Fall (Scott Shenker, Ion Stoica)
 - Slides developed by myself while teaching over several years a similar class at TU Berlin
- Some slides publicly available from different universities...(those will be mentioned in individual units, as appropriate) have occasionally be used as well.

Assumptions

- You can program
 - Knowledge of C or C++
- You know (some) basic probability
- You have general understanding of computer architecture.

Be active!

- Give me a feedback if you believe I am to quick/slow
 - I will focus on what I believe it “essential to understand” and might be misunderstood
 - Will speed over what is possibly “tedious but not so challenging intellectually”
- Even the best of you won’t understand everything
 - We always can explain something things better – but YOU have to give us the trigger!
 - Interact during the class –
- Come to office hours, request an appointment, communicate by e-mail
 - We are here to help, including general advice!
 - **TA is your first line for help** – especially with assignments!

Grading

Homeworks	20%	TBA
Projects	25%	TBA
Midterm exam	20%	TBA (March 12th or March 17 th)
Final exam	35%	Friday, May 15, 2015 3-6pm

- Mind the time schedule for the assignments:
 - **No delivery after deadlines!**
- Exams are: **closed books no "cheat sheet"**
- Cooperation among students is encouraged
 - but individual solutions of homework and individual understanding of project assignments is expected.
 - Do not cheat! – no copying of whatever! What you hand in is understood as your own work!
 - In case of cheating the procedures of the EECS dept. will be followed: *<http://www.eecs.berkeley.edu/Policies/acad.dis.shtml>*

What is this Course About ?

- Fundamentals of networking.
 - The focus is on "concepts", related to basic organization of information exchange. Networking as a service for creating distributed systems. Networks as a distributed system itself... Some fundamental models.
- Principles of Networking
 - Mechanisms to achieve desired properties in information exchange ("how things work") will be systematically studied, alternatives - their features and performance will be discussed.
 - There are "**basic bricks**" and styles to compose them "**architectures**".
- The operation of the key networking technologies (Telephone, Ethernet, WiFi, etc) as well as their composition within **The Internet** will be discussed. The role of individual network elements (adapters, switches, bridges, routers) will be presented
 - ➔ You are **not** expected to re-invent the actual solutions:
 - You are expected to understand what has been the motivation to do it that way... or different...

Two Dialects of EECS 122

- **Spring** offering: taught by **EE** faculty
 - More emphasis on diverse link technologies, bringing together communication and networking, modeling. Programming exercises both for network usage and modeling!
- **Fall** offering: taught by **CS** faculty
 - More emphasis on Internet architecture and Internet Protocols. Practice in network programming.
- Classes are different in content and style

Rough Overview of Topics

- Networking: Introduction; Basic concepts: Services and Protocols, Switching, Layered Architecture/Internet Transmission; Multilexing, Framing/Error detection/Transmission Systems; Telephone Networks/Telematic Services; Error Correction/Flow Control; Reliable Link Layer/MAC; MAC/Ethernet; WLAN;;
- Routing Algorithms; Bridging/Network components Network Layer; Internetworking- IP; Global Networking; E-t-E Connection Management, Congestion Control; TCP Cont.; QoS; Multimedia; Application Level – WWW, CDNs;