

logistics

main textbooks (1)

Peterson and Davie, Computer Networks: A Systems Approach
available online <https://book.asystemsapproach.org/>, also paper version
focused on higher-level goals, not details of specific implementations

Fall and Stevens, TCP/IP Illustrated: Volume 1, Second Edition: The Protocols
available via O'Reilly through library
link on schedule page, or search library catalog
make account with your UVa email
focused on details of the Internet and related systems

textbooks (2)

Dordal, An Introduction to Computer Networks

secondary textbook

<https://intronetworks.cs.luc.edu/>

more coverage of low-level wireless, ethernet

coursework

weekly quizzes

- approx 4 questions/week

- mostly autograded, will manually adjust based on work/comments

- 20% of overall course grade, lowest dropped automatically

homework assignments

- mostly programming-based, mostly Python

- approx. weekly deadlines

- 60% of overall course grade

final exam

- 12 December

- 20% of overall course grade

homeworks preview (1)

reliable1/2 — stream of messages with automatic resending

P4 — forwarding messages locally

AIMD — simulating variations on TCP

packet scheduling — prioritizing network traffic

DV routing — forwarding messages far

DNS — mapping names to addresses

webserver

other application layer* (not made yet)

wireless

assignment infrastructure

most assignments in Python

P4 — requires some VM setup

network/switch emulation software that really needs root on Linux

AIMD — using C++ simulator

goal: tweak and measure working TCP implementation

mostly small modifications, shouldn't need much C++ knowledge

(the other obvious simulator is mainly in Tcl, which seems worse idea)

notable changes

framing assignment removed

new application layer assignment(s), topic TBD, a possible short list:

- SMTP (email)

- HTTP proxy/reverse proxy

- HLS (HTTP Live Streaming)

- ...

may rework some assignments

due times/late policy

assignments usually due Friday @ 11:59pm

90% credit for submissions up to 72 hours late, no questions asked

quizzes usually due Tuesday @ 12:15pm

done online, untimed, open notes/book

late submissions not normally accepted (may discuss during lecture)

unusual circumstances — contact me

can often grant exceptions/alternate arrangements

more flexibility if contacted earlier

collaboration

quizzes, homeworks are individual

yes:

- review examples in textbook/lecture/etc.

- discuss high-level concepts (without detailed psuedocode for assignment, etc.)

- lookup up syntax/standard library documentation

no:

- sharing code/detailed psuedocode/answers

- getting code/etc. from web forums, LLMs, etc.

gen AI

rule of thumb: can ask things you could ask fellow students

.5cm

no: having LLM write your code, your writeup, ...

aside: selected standard python libraries

bisect — search/insert within sorted list

collections's deque — ordered list with fast insertion/deletion at both ends

heapq — priority queue (using a heap)

struct — convert between integers and bytes and vice-versa

array — convert between integers and bytes in less flexible way

not intending for you to reimplement common, non-networking tasks

may grant exceptions to use other libraries/etc. for generic tasks

lectures

will attempt to record (but sometimes technical stuff happens)

will link recordings from schedule page

will not take attendance

homework/topic sync

rough plan on schedule page

imagine things might get out of sync