

CSL351: Computer Networks

Anand Baswade

anand@iitbhilai.ac.in



CSL 351: Computer Networks



WHAT DO YOU EXPECT TO
LEARN FROM THIS COURSE?

CSL 351: Computer Networks



What do you expect to learn
from this course?



How do you think it will be
useful to you?

Goal of the Course



Understand how two
computer on the Internet
interact with each other

Basics of network
architecture & protocols

See the packets in the
network

Packet analyzer tools
(Wireshark/Tshark/tcpdump)

Program the network for
communication

To train you towards
research in networking
field

To become familiar with the field of Computer networking

Tentative Syllabus

Intro: Basics, Layer Approach, Packet Switching Techniques, Performance Metrics

Application Layer: HTTP & Web, DNS, SMTP

Transport Layer:
Connection-oriented,
Flow control, Congestion control
• TCP & UDP

Socket Programming:
TCP & UDP Socket programming

Network Layer: IP addressing, Header, Fragmentation, Routing

Protocols: ARP, ICMP, RARP, DHCP, RIP, OSPF, IPV6, NAT

Data link Layer: Framing, Medium access mechanism

Network Security: Public & Private Key Cryptography, Digital signature, Firewall

Advance Topic: SDN & Open Flow Architecture

Administration

Course management through Google Classroom

- Register for CSL351 at <https://classroom.google.com/> by using code:mf77lmra
- Slides, Assignments, URLs, news, Reading material, discussions posted here

Teaching Slot

- Slot-F (Wednesday @11:30AM, Thursday @ 8:30AM and Fri @11.30 AM)
- Lab: V23 (Tuesday 10:30 to 12:30 PM)

TAs for the Course

- Mr. Arindam (M.Tech-CSE)
- Mr. Shivam (M.Tech-CSE)
- Mr. Satyam (PhD-CSE)
- Mr. Anmol (M.Tech-CSE)
- Mr. Ishan (M.Tech-CSE)

Tentative Grading Policy



Assignments: 30%

(Assignments: 25% and Lab Exam: 5% if lab exam is conducted, otherwise Assignments: 30%)



Exams: 55% (Mid Sem (25%) + End Sem(30%))



(Surprise) Quiz: 10%

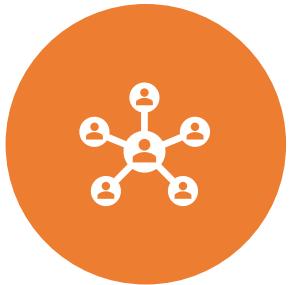


Class Assessment: 5%

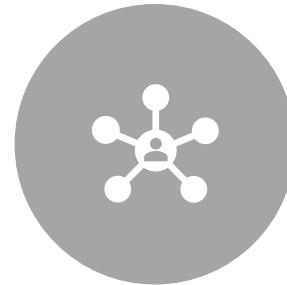
Assignment Policy:

- Individual Assignment
- **Deliverables:** Design document/Report, README, Code files, test files in a tar ball and submit to google classroom.
- Submitted work should be your own
- If found guilty of copying assignments (high similarity in submitted assignments) → gets 0 Marks/FR grade
- No extension of deadlines
- Late Policy:
 - Flexible slip dates
 - 7 days for the whole course
 - 10% off per day after exhausting slip dates

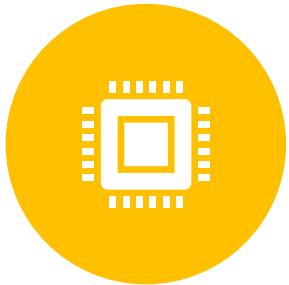
Reference Book/Material



“Computer Networking: A Top Down Approach” by Ross and Kuros [Primary book to follow]



“Computer Networks” by Tanenbaum



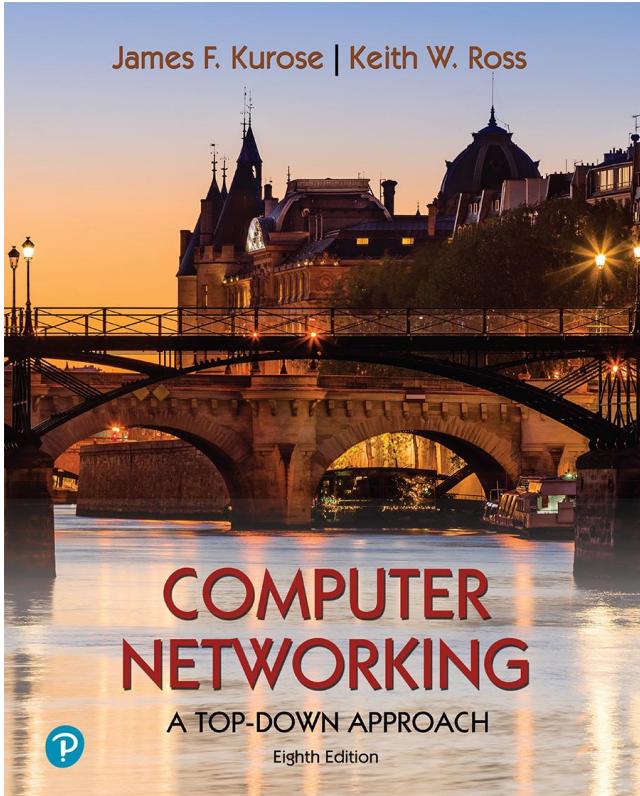
“TCP/IP Protocol Stack” by Forouzan



Online resources and research papers announced through Google Classroom course page time-to-time

Chapter 1

Introduction



*Computer Networking: A
Top-Down Approach*
8th edition
Jim Kurose, Keith Ross
Pearson, 2020

Chapter 1: introduction

Chapter goal:

- Get “feel,” “big picture,” introduction to terminology
 - more depth, detail *later* in course
- Approach:
 - use Internet as example

Overview/roadmap:

- What *is* the Internet?
- What *is* a protocol?
- **Network edge:** hosts, access network, physical media
- **Network core:** packet/circuit switching, internet structure
- **Performance:** loss, delay, throughput
- Security
- Protocol layers, service models

The Internet: a “nuts and bolts” view



Billions of connected computing **devices**:

- **hosts** = end systems
- running **network apps** at Internet's “edge”

Packet switches: forward packets (chunks of data)

- routers, switches

Communication links

- fiber, copper, radio, satellite
- transmission rate: **bandwidth**

Networks

- collection of devices, routers, links: managed by an organization

