

ICS 451 : Data Networks (3 cr.)			
Description	Network analysis, architecture, digital signal analysis and design; circuit switching, packet switching, packet broadcasting; protocols and standards; local area networks; satellite networks; ALOHA channels; examples.		
Prerequisites	141 , 212 , or consent		
Learning Objectives	<ul style="list-style-type: none"> • have in-depth knowledge of the major networking technologies. • have in-depth knowledge of the major Internet protocols. • have programmed substantial networked applications, including writing a simple web client or server from scratch. 		
Topic List	#	Topic	Lecture Hours
	1	Networking overview, reviews, exams	7.0
	2	Sockets API	1.0
	3	Application-level networking, including HTTP, DNS, SMTP and email, FTP, NFS, SNMP, network security	8.0
	4	Physical layer, framing, error detection	4.0
	5	Data-link layer, LANs, topology, Aloha, Ethernet, public networks, ATM	8.0
	6	IP and network layer, forwarding, routing, addressing, ARP, fragmentation, IPv6, ICMP	9.0
	7	Transport layer, TCP, reliable transmission, windows and flow control, connection management, congestion control, UDP	3.0