UNIVERSITY OF SOUTHERN CALIFORNIA
EE 555 – Broadband Network Architectures
Course Syllabus - FALL 2016

Catalog Description: ATM and BISDN, switch designs, high speed local, campus and metropolitan area networks, lightwave and photonic networks, network management techniques, applications and gigabit testbeds. *Prerequisite:* EE 450 and EE 465.   (*needs updating*)

Lectures: Tuesday and Thursday 2:00 - 3:20, SOS B44

Discussion: Friday 12:00-12:50, VKC 102 (no class 8/26)

Instructor: Prof. John Silvester, EEB 240, silvester@usc.edu, +1.213.740 9730
Office hours: Tuesday, Thursday 3:30-5:00 EEB 240

TA: TBD
Office Hours: TBD

Textbook
- *Computer and Communication Networks (2nd Edition)*, Nader F. Mir, Prentice Hall 2015,ISBN-13: 978-0-13-381474-3

Other References
- *Multiwavelength Optical Networks*, Thomas Stern, Georgios Ellinas, Krishna Bala, Cambridge University Press, 2009
- *High Performance Switches and Routers*, H. Jonathon Chao, Bin Liu, Wiley Interscience, 2007.
- *Optical WDM Networks*, Biswanath Mukherjee, Springer, 2006.

Assignment and supplemental handouts will be available through the DEN Blackboard site.

Good texts for Computer Networks (EE 450 prerequisite material and more):
1) "Computer Networks: A Systems Approach" by L. Peterson and B. Davies
2) "Computer Networks" by A. S. Tanenbaum

Good texts for analytical modeling (EE 503 prerequisite material and more)
1) "Introduction to Probability Models" by S. Ross
2) "Queueing Systems Volume 1: Theory" by L. Kleinrock

Grading: There will be problem sets (assignments) roughly every 2 weeks (likely to include simple MATLAB simulations), and two exams, to be weighted in an overall score as follows: Assignments 20%, Exams 40% each. Homework assignments to be turned in on paper (not by e-mail).   Late assignments will generally not be accepted.

Statement for Students with Disabilities. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity. USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. Scampus, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: http://www.usc.edu/dept/publications/SCAMPUS/gov/. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: http://www.usc.edu/student-affairs/SJACS/.

Academic Conduct Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Section 11, Behavior Violating University Standards https://scampus.usc.edu/1100-behavior-violating-university-standards-andappropriate-sanctions. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the Office of Equity and Diversity http://equity.usc.edu or to the Department of Public Safety http://capsnet.usc.edu/department/department-public-safety/online-forms/contactus. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. The Center for Women and Men http://www.usc.edu/studentaffairs/cwm/ provides 24/7 confidential support, and the sexual assault resource center webpage http://sarc.usc.edu describes reporting options and other resources.

Support Systems A number of USC's schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the American Language Institute http://dornsife.usc.edu/ali, which sponsors courses and workshops specifically for international graduate students. The Office of Disability Services and Programs http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, USC Emergency Information http://emergency.usc.edu will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

TENTATIVE COURSE SCHEDULE – EE555 Fall 2016 (Silvester)

Week	Lect	Date	Topics	Reading (MIR)
1	1	08-23	Course Overview	1-5
	2	08-25	Broadband Networks and Modern Data Networks	
2	3	08-30	Basic Network Topics Review – EE 450 level set	1-5
	4	09-01		
3	5	09-06	Simple Performance Modelling – EE503 level set	App C, 11
	6	09-08		
4	7	09-13	Reliability Modelling	App C, Handout
	8	09-15		
5	9	09-20	Link Technologies, Core Network Technologies, Access Network Technologies	7.1, 7.4, 15.1, 15.2
	10	09-22		
6	11	09-27	High Speed Switch and Router Design	12
	12	09-29		
7	13	10-04	QoS, Performance Management, and Traffic Engineering Techniques	13
	14	10-06		
8	15	10-11	(expansion gap or review)	
	16	10-13	EXAM	
9	17	10-18	Tunnels, VPNs, and MPLS	14
	18	10-20		
10	19	10-25	All-Optical Networking	15.2 – 15.4
	20	10-27		
11	21	11-01	Wavelength Assignment, Blocking	15
	22	11-03		
12	23	11-08	Cloud Computing and Network Virtualization	16
	24	11-10		
13	25	11-15	SDN etc.	17
	26	11-17		
14	27	11-22	Networking for the Cloud, CDN	20
		11-24	THANKSGIVING – NO CLASS	
15	28	11-29	Networking for the Cloud, CDN	20
	29	12-01	(expansion gap or review)	
		12-06	STUDY DAY	
		12-08	FINAL 2-4 pm	