GEORGE MASON UNIVERSITY  
Electrical and Computer Engineering Department  
Course Information

ECE 643 Network Switching and Routing

Prerequisites: ECE 528 and ECE 542, or equivalent  
Spring semester 2015  
Time: Tuesday 7:20 -10:00 pm  
Location: Nguyen Engineering Building 1107

Professor: Bijan Jabbari  
Office: Eng. Bldg, Room 3232  
Phone: 703.993.1618  
Email: bjabbari at gmu dot edu  
Web: http://cnl.gmu.edu/  
Office hours: Tuesday 4:00 - 5:30 pm, other times by appointment

Goals:  
Fundamentals of switching and routing with application to communications networks, both wireline and wireless. Topics include concepts of space and time for switching and forwarding of data, scalability and performance, label swapping, algorithms for routing and path computation, constrained route optimization, traffic theory, control and signaling, and traffic engineering. The course also covers the concepts and issues underlying the design and implementation of the contemporary switched networks. For a detailed list of topics covered and a schedule please visit: http://cnl.gmu.edu/bjabbari/courses/ece643_2015/ece643.html

Course Outline:  
Theory and applications of switching  
Overview of circuit-switching and packet-switching  
Switching in space and time  
Link state and vector-based routing examples  
Routing and path computation  
Traffic engineering and performance analysis  
Switch and router architectures, Optical Switching, QoS and forwarding  
Control architecture and signaling protocols  
Software Defined Networks (SDN)  
Software, services and features

Textbooks References and Additional Readings:  
Class notes will be distributed  
Additional references and readings will be posted on the course web pages and assigned in class.
Grading:
There will be homework assignments, a mid-term and final exams, and a term-paper/project on advanced topics. The percentage of items is given as follows:

- Homework 5%
- Projects/Term-paper 35%
- Mid-term Examination 30%
- Final Examination 30%

The mid-term exam will be on Tuesday March 17. The final exam is scheduled for Tuesday May 12.