Electrical Engineering & Computer Science
University of Kansas

EECS 800
Internet Routing Architectures
Tuesday and Thursday, 3:30 PM to 5:00 PM
3015 Learned Hall

Dr. Joseph B. Evans 204 Nichols Hall, 785-864-4830, evans@ittc.ukans.edu
Office Hours: Tuesday and Thursday, 1:30 - 2:30 PM, Nichols Hall, otherwise by appointment

Topics

- Evolution of the Internet Architecture
  - NAPs, Autonomous Systems, etc.
- IP Services and Characteristics
  - Internet Protocol review
  - Basics, forwarding versus routing
  - IP address depletion
- Routing Protocols
  - Distance vector and link state, Dijkstra's algorithm
  - IGPs and EGPs
  - Overview of RIP, OSPF, ISIS
  - Introduction to BGP – EBGP and IBGP
- Interdomain Routing and BGP
  - Border Gateway Protocol details
    - messages and state machines
    - route aggregation
  - Multicast – MBGP
- Policy and BGP
  - BGP decision process
  - Access lists, prefix lists, AS paths, Community
  - Route maps
  - Attributes – AS_Path, local preference, MED, Community, ATOMIC_AGGREGATE, Aggregator, Origin, NEXT_HOP, AS-SET
  - Route filtering
- Architecture and BGP
  - Redundancy, symmetry, load balancing
  - Confederations, route reflectors
- Laboratory

Texts/References:
- Notes
- Internet Routing Architectures, Bassam Halabi, Cisco Press, New Riders Publishing, ISBN 1-56205-652-2

Anticipated Schedule

Date	Topic
January 19	Evolution of the Internet Architecture
January 21	Evolution of the Internet Architecture
January 26	IP Services and Characteristics
January 28	IP Services and Characteristics
February 2	Routing Protocols – Distance vector & link state, Dijkstra's algorithm, IGPs & EGPs
February 4	Routing Protocols – Overview of RIP, OSPF, ISIS
February 9	Routing Protocols – Introduction to BGP – EBGP and IBGP
February 11	Interdomain Routing and BGP - Border Gateway Protocol details
February 16	Interdomain Routing and BGP - Border Gateway Protocol details
February 18	Interdomain Routing and BGP - Border Gateway Protocol details
February 23	Policy and BGP – review of attributes
February 25	Policy and BGP – BGP decision process
March 2	Exam
March 4	Policy and BGP – access lists, prefix lists, AS paths, community strings
March 9	Policy and BGP – access lists, prefix lists, AS paths, community strings
March 11	Policy and BGP – access lists, prefix lists, AS paths, community strings
March 16	Policy and BGP – route maps
March 18	Policy and BGP – route maps
March 23	Spring Break
March 25	Spring Break
March 30	Policy and BGP – route filtering
April 1	Policy and BGP – route filtering
April 6	Policy and BGP – route filtering
April 8	Policy and BGP – route filtering
April 13	Architecture and BGP – redundancy, symmetry, load balancing
April 15	Architecture and BGP – redundancy, symmetry, load balancing
April 20	Architecture and BGP – redundancy, symmetry, load balancing
April 22	Architecture and BGP – confederations, route reflectors
April 27	Architecture and BGP – confederations, route reflectors
April 29	Architecture and BGP – confederations, route reflectors
May 4	Special Topics – QoS features
May 6	Special Topics – Multicast and MBGP
May 17	Final Exam, 3:00 PM – 6:00 PM

Note that this schedule may be modified in order to adapt to currently unforeseen circumstances.

Grading Policy

The class will be graded competitively according to the percentages listed below. Each assignment within a category will be weighted equally. The course grade thresholds (that is, the numerical grade required to get a particular letter grade) will be set by the instructor to reflect the relative performance of the students. Class attendance is expected unless otherwise indicated.

Exam	25%
Final	25%
Project	40%
Homework, Miscellaneous	10%

Note: failure to complete the "Project" portion of the course will result in a grade of F for the course.

3% per day will be subtracted from assignments turned in late, except under extraordinary circumstances and with adequate prior notification of the instructor.

The student must notify the instructor within 48 hours of a missed exam and present adequate justification. If illness is the justification, a doctor's note must be provided to the instructor.

An appeal on grades for individual assignments must be within 14 days of the date the assignment is returned.

Further details of the project grading procedure may be announced in class or via e-mail as required.