ECE/CS 658   **Internet Engineering**   **Spring 2008**

4 credits (3-3-0)

Instructor: Prof. Anura Jayasumana, C201D Engr, Anura.Jayasumana@colostate.edu
Course URL: http://www.engr.colostate.edu/EE658/2008
Time/Place: 2:00-3:15 T,Th ENGR B4

Objectives: The field of computer and communication networking continues its exponential growth posing new challenges and opportunities for the networking industry and researchers. Convergence of video/voice/data, high-performance wireless networks, mobile networking, optical networking, novel high-bandwidth applications, and sensor networking are examples of areas of active research and development. This course attempts to provide an understanding of the broad landscape of existing and emerging networking and inter-networking technologies.

Outcomes: Students successfully completing this course will be able to
- **a)** Use network programming concepts to develop and implement distributed applications and protocols over the Internet
- **b)** Develop and implement next generation protocols required for emerging applications
- **c)** Evaluate performance of simple networking systems
- **d)** Carry out research and development work in networking

The course would be extremely useful for those who would like to gain a fundamental understanding of the principles and practical aspects of communication and data networks. It will open new career paths in these hot areas for those who want to join industry. Those involved or interested in thesis research related to networking will find this course invaluable.

Prerequisites: CS 457 – Data Communications, or EE456 – Computer Networks, or equivalent background; Expertise in computer programming. Assignments may be carried out in any language familiar to student.

Texts: Selected conference and journal papers (*class handouts, on-line documents*)
Selected Internet Society RFC (Request for Comment) Standards

Topics:
- Internet protocol suite (TCP/IP)
    - Transport and routing protocols , Quality of Service (QoS) provisioning, Overlay networks, Applications (VOIP, etc.)
- Network programming
- Performance evaluation of protocols and architectures
    - Analytical and simulation models, Queing Systems and Markov Chains, Case studies
- Switching, routing and network processing architectures
    - Packet processing, packet classification, table lookup, etc.,
- Wireless networking
    - Selected examples and standards (WiFi, WiMax), Mesh networks
- Optical Networks   - Selected examples
- Sensor networking   - Hardware, protocols, standards and applications
- Future of networking

Additional information will be available at   http://www.engr.colostate.edu/ECE658/2008/ after Jan. 15.