Econ 590: INFORMATION TECHNOLOGY: COMPUTER SYSTEMS AND NETWORKING

This course covers the fundamentals of computer systems, networking and Internet tools.

1. Introduction
    - Course outline, motivation and objectives
    - Computer science and engineering during the last 40 years
    - Brief overview of IT, use cases and the needs of modern work forces
    - Tracking technology evolution and evaluating options

2. Fundamentals of Computer Systems
    - Overview of computer architectures and organization
    - CPUs, Memory, System interconnects
    - Peripherals and I/O architectures
    - The software layers: Operating systems, interpreters & compilers, libraries
    - Concepts of distributed and parallel computing
    - Scalability, load-balancing, and interoperability issues

3. Fundamentals of Networking
    - Introduction to the Ethernet, LANs, WANs, and Wireless Networks
    - Introduction to the Internet
    - Routing and transport fundamentals (TCP/IP, UDP, RTP)
    - Security solutions (Firewalls, Spam and URL Filters)
    - Access networks alternatives (DSL, 2.5G/3G Wireless, WiFi, etc)
    - Convergence and the triple-play challenge (Data, Video, Audio)
    - Monitoring the health and protecting your network infrastructure

4. Fundamentals of Programming and Internet Tools
    - Introduction to programming language concepts
    - Java as an Internet programming platform
    - Basics on data structures and object libraries
    - Software interoperability and APIs (Sockets, POSIX, Linux)
    - Open Source software tools

5. Conclusion and Summary