Brooklyn College
Department of Computer and Information Science

CISC 3800 [13.2] **Advanced Personal Computer Techniques for Business Applications**

3 hours; 3 credits

In-depth analysis of software and hardware available for current business applications. Advanced use of application packages. Critique and comparison of current application software. Designing a proper interface. Examination of current trends toward office automation. System design and analysis.

Syllabus

1. The Computer Revolution: Historical development of the PC (1 week)
2. Hardware (2 weeks)
    a. CPU Architecture
    b. Address and Data lines
    c. Interrupts
    d. Pipelining
    e. Cache
    f. RISC vs. CISC
    g. ALU, FPP, MMX and SSE
    h. RAM/ROM
    i. Internal and external bus design (local bus, PCI, AGP)
    j. Memory allocation and management
    k. Memory addressing schemes
    l. Multiprocessing algorithms
    m. Interfaces
    n. I/O and storage devices
    o. Graphics (hardware, resolution, color depth, etc.)
3. Software (2 weeks)
    a. Instruction hierarchy
    b. Program interpretation and execution
    c. Data representation (ASCII, Unicode, graphics, music, and video)
    d. The role of the operating System
    e. Windows 9x architecture
    f. Windows memory management
    g. Data exchange DDE vs. OLE
4. Programming Methodologies (1½ week)
    a. Programming abstraction (APIs, MFC)
    b. Multiplatform development (simulators, virtual machines)
    c. Java vs. Active-X
    d. Security issues
5. Networking (3 weeks)
    a. Mode of use (servers vs. file sharing, distributed databases)
    b. Peer-to-peer architectures

    c. Client-server architectures
    d. Point-to-point vs. packet based networks
    e. ISO/OSI model
    f. Network operating systems
    g. Topologies, cabling and protocols
    h. Switches and routers
    i. TCP/IP (addressing and protocols)
    j. LANs and WANs
    k. Internet (historical development and architecture)
    l. Internet applications (Telnet, FTP, USENET, SMTP/POP, WWW)
    m. MIME
    n. WIFI and Bluetooth
    o. Video Conferencing
    p. SOHO/Home networking issues
6. Social issues (2 week)
    a. Legal, ethical and moral issues
    b. Copyright
    c. Privacy
    d. SPAM
    e. Free speech vs. Filtering
    f. Viruses, Trojan horses and worms
    g. Computing limits – artificial intelligence – A historical approach
7. Communication (PC to PC, PC to mainframe) (1 week)
    a. Simulators
    b. Communication parameters
    c. Modems and broadband
8. Compression (1½ week)
    a. Lossless vs. lossy
    b. Symmetric vs. asymmetric
    c. RLE
    d. Huffman coding
    e. Review of popular multimedia CODECS

Textbook

biweekly readings from *PC magazine*