

## **CS 3410: Introduction to Database Systems**

### **3 Credit Hours**

*Prerequisite: A grade of "B" or higher in both CSE 1322 and CSE 1322L*

Introduction to database management systems, database processing, data modeling, database design, development, and implementation. Particular emphasis is placed on the relational approach to database management and processing, which focuses more on the logical nature of a database than its physical characteristics. Relational database programming assignments are drawn from the fields of business. Includes implementation of current DBMS tools and SQL. Ethical and security topics related to databases will be introduced.

## **CS 3502: Operating Systems**

### **3 Credit Hours**

*Prerequisite: CS 3305 and CS 3503*

The course covers the basic concepts, design and implementation of operating systems. Topics include an overview of basic computing hardware components, operating system structures, process management, memory management, file systems, input/output systems, protection and security. The Windows and/or UNIX/Linux operating systems will be reviewed as example systems.

## **CS 3503: Computer Organization and Architecture**

### **3 Credit Hours**

*Prerequisite: A grade of "B" or higher in both CSE 1322 and CSE 1322L*

The course covers computer architecture. Topics include data representation and encoding, binary arithmetic, fixed- and floating-point representation, numbering systems, error-control, instruction set architecture, assembly language and programming, microcode, memory organization and addressing, I/O, interrupts, internal architecture, instruction pipelining, multi-core architectures and CPU/ALU basics. The course also covers computer organization. Topics include Boolean Algebra, logic gates, flip-flops, counters, registers, combinational and sequential circuits, K-maps, circuit design, and various digital components.