Computer Science and Engineering
Ferguson Hall – 0115
472-2402

Course Specification

CSCE-101
Fundamentals of Computing

Catalogue Description:

101. Fundamentals of Computing (3 cr) Lect 3. Introduction to the breadth of computer science. The topics covered are in hardware, software, networks, theory, and social issues. This is a course in the science of computation, suitable for non-majors and prospective majors alike. The coverage is of sufficient depth that non-majors can get a head start on subjects from many future courses. May not be used to satisfy CSE major or minor requirements.

Textbook(s) and/or Other Required Materials:

1. Brookshear, *Computer Science: An Overview.*

Prerequisites by Topic:

1. **Familiarity** with high school algebra, keyboarding.
2. **Exposure** to microcomputer use and applications.

Course Objectives:

1. **Familiarity** with Elementary data representation - ASCII, binary and hexadecimal number systems; combinational logic gates; very basic machine organization and machine language; programming control and simple data structures; procedures and functions; ethical and social issues.
2. **Exposure** to interrupt processing; context switching; OS services; networking protocols; recursion; elementary searching and sorting; programming languages and their implementation; relational database concepts; complexity.

March 15, 2000

Topics Covered:

1. Data representation and manipulation: binary (signed, unsigned, and floating), hexadecimal, ASCII, addition and subtraction. (1 1/2 weeks)
2. Logic design: gates, simple adder and flip-flop. (1 1/2 weeks)
3. Machine organization: ALU, registers, main memory, fetch/decode/execute cycle, machine language, memory mapped I/O, interrupts. (1 1/2 weeks)
4. Operating systems: context switching and process management, services, shells, critical section problem, deadlock and starvation. (2 weeks)
5. Networks: architectures, protocols, routers, address resolution. (1 1/2 week)
6. Algorithms and data structures: control structures, elementary searching and sorting, arrays, procedures and functions, recursion. (2 weeks)
7. Programming languages and translation: assemblers, compilers, and interpreters; Visual Basic; examples of alternative language paradigms. (2 weeks)
8. Databases: relational database concepts, queries, transactions, files. (1 1/2 week)
9. Ethics and social issues: history, current events discussions. (1 week)

Relationship of Course to Program Objectives:

Contribution of Course to Meeting the Professional Component:

Class/Laboratory Schedule:
Lecture: 45 hours
Laboratory: (see CSCE 101L Syllabus)

Prepared by:
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