CSCI 4717  

Computer Architecture

Credit Hours: 3

Contact Hours: 4

Course Coordinator: David Tarnoff

Text(s): None

Catalog Description:

Computer systems are viewed as consisting of a series of layers or levels, one on top of another. Topics of computer architecture are presented. Microprogramming stack computers, parallel computers, pipeline processing, multiprocessors, virtual storage, cache storage, addressing schemes, I/O and interrupt structure.

Prerequisite(s): CSCI 2160 and CSCI 2210

CS: REQUIRED
IS: MAJOR ELECTIVE
IT: MAJOR ELECTIVE

Course Outcomes:

Demonstrate an understanding of the organization and architecture of computer systems - ETSU Outcomes 3, CS-1; ABET Outcomes b

Demonstrate an understanding of the relationship of higher level, abstract ideas to the features of a machine's architecture - ETSU Outcomes 3, CS-1; ABET Outcomes CS-k

Demonstrate an understanding of the issues that influence designs of programming languages, operating systems, databases, and algorithms - ETSU Outcomes 4b, 5c, CS-2; ABET Outcomes,CS-k

Demonstrate through both simulation and the development of performance measuring applications an understanding of how different architectures affect performance - ETSU Outcomes 4b, 5c, CS-1; ABET Outcomes CS-j

Demonstrate an understanding of the concepts and techniques of constructing machines as a series of levels (Multilevel Machines) - ETSU Outcomes 3, CS-1; ABET Outcomes CS-j

Demonstrate a basic understanding of some advanced topics, such as stack computers, parallel computers, overlap and pipeline processing, and performance evaluation - ETSU Outcomes 3, 5c, CS1; ABET Outcomes b
Major Topics:

- History, and evolution
- Performance measurements and single-processor architectures
- Memory concepts
- Internal memory details and memory management
- Storage media
- I/O issues and classic bus standards
- Buses
- Operating Systems
- Assembly language issues
- CPU operations and pipelining
- RISC Processors
- Instruction level parallelism
- Parallel Organization