THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Computer Architecture

CSE 6421

Credit Hours:
3.00 - 3.00

Course Levels:
Graduate (5000-8000 level)

Course Components:
Lecture

Course Description:
Principles and tradeoffs behind the design of modern computer architectures, including instruction-level parallelism, memory system design, advanced cache architectures, cache coherence, multiprocessors, energy-efficient and embedded architectures.

Prerequisites and Co-requisites:
Prereq: 3431 (660) or 5431, and 3421 (675), 5421, or ECE 5362 (662).

Course Goals / Objectives:
- Master quantitative and qualitative design issues in modern architectures
- Master techniques for exploiting instruction-level parallelism
- Be familiar with instruction set architecture design principles
- Be familiar with multiprocessors and thread-level parallelism
- Be familiar with memory system design
- Master advanced cache architectures and cache coherence
- Be exposed to energy-efficient microprocessor design
- Be exposed to vector and VLIW architectures
- Be exposed to emerging directions in computer architecture

Course Topics:

- Quantitative and qualitative design principles and introduction to modern computer architectures
- Instruction set design principles
- Techniques for exploiting instruction-level parallelism
- Multiprocessors and thread-level parallelism
- Memory system design, advanced cache architectures, cache coherence
- Energy-efficient microprocessor design
- Vector and VLIW architectures
- Architectures for embedded systems
- Emerging directions in computer architecture

Designation:

Elective