CS 5020: FUNDAMENTALS OF COMPUTER SCIENCE

Semester Hours: 3.0
Contact Hours: 3
Coordinator: Venu Dasigi
Text: Computer System Architecture, Operating Systems Concepts, Head First Software Development
Author(s): VARIOUS
Year: Various

SPECIFIC COURSE INFORMATION
Catalog Description:
This course provides an intensive study of fundamental concepts in computer organization, operating systems, and software engineering. Cannot be counted towards MS in CS. Approved for distance learning. Prerequisite: Admission to MS in CS program or permission of instructor. Approved for distance education.

Course type: REQUIRED

SPECIFIC COURSE GOALS

- I can explain the fundamental concepts of computer organization.
- I can utilize an assembler tool to write and execute simple assembly language programs.
- I can describe process scheduling algorithms, and compare their performance.
- I can describe concurrency issues and compare approaches to solving them.
- I can describe real and virtual memory management algorithms.
- I can describe certain scheduling algorithms for device management.
- I can analyze and document software requirements for a software system.
- I can analyze and compare various software development lifecycle methods that include requirements analysis, design, implementation, testing and maintenance.

LIST OF TOPICS COVERED

- Computer Organization (~5 Weeks)
  - Assembly Language
  - Sequential & Combinatorial Logic
  - Data Representation
  - Register Transfer Logic
  - Arithmetic Logic Unit
- Control Logic
- Operating Systems (~5 Weeks)
  - Scheduling
  - Concurrency
  - Communication
  - Memory Management
  - Device Management
  - Platform Specifics
- Software Engineering (~5 Weeks)
  - Software Process & Models
  - Planning and Requirements Analysis
  - Design and Development Methodologies
  - Documentation, Testing, and Evaluation
  - Project Management