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)
  o Assembly Language
  o Sequential & Combinatorial Logic
  o Data Representation
  o Register Transfer Logic
  o Arithmetic Logic Unit
  o Control Logic
• Operating Systems (~5 Weeks)
  o Scheduling
  o Concurrency
  o Communication
  o Memory Management
  o Device Management
  o Platform Specifics

• Software Engineering (~5 Weeks)
  o Software Process & Models
  o Planning and Requirements Analysis
  o Design and Development Methodologies
  o Documentation, Testing, and Evaluation
  o Project Management