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)
    - 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