Computer Science CSC 235
System Requirements and Testing

Credits and Contact Hours: 3 Credits, Contact Hours: 42 (1 contact hour = 50 minutes)

Instructor: Dr. Vinitha Hannah Subburaj

Textbook:


Course description:

a. Catalog description: This course focuses on theoretical and practical aspects of system requirements gathering and testing. Students will be introduced to the fundamental concepts in system requirements gathering and testing process. The requirements gathering process includes techniques for eliciting requirements, analyzing, writing, and validating requirement for software systems. Testing process includes introduction to different types of testing models and testing techniques. Testing process also includes analyzing, and developing different components of a test plan using a specific standard. This course will be a combination of traditional lectures and in class activities that emphasize on real world requirements gathering and testing practices.

b. Prerequisites: CSC 160

c. Required/Elective:
   a. Computer Science – Required
   b. Software Engineering – Required

Specific Goals of Course:

a. Specific outcomes of instruction

After completing this course successfully students should be able to:

i. Describe the role of requirements analysis in software development life cycle
ii. Elicit requirements using a variety of techniques
iii. Represent functional and non-functional requirements for different types of systems using formal and informal techniques
iv. Develop requirements specification document for software systems
v. Validate requirements according to criteria such as correctness, completeness, consistent, ambiguity, etc.
vi. Describe the role of testing in software development life cycle
vii. Discuss the challenges and limitations of software testing, and its relation to other software engineering activities, such as requirements engineering, design and implementation.
viii. Understand and use basic testing processes, different testing types, and different testing strategies
ix. Understand and create portions of a test plan using industry standard techniques

b. CAC Criterion 3 outcomes addressed by the course:
   b. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution.
   c. An ability to design, implements, and evaluate a computer-based system, process, component, or program to meet desired needs
   d. An ability to function effectively on teams to accomplish a common goal
   f. An ability to communicate effectively with a range of audiences

c. EAC Criterion 3 outcomes addressed by the course:
   b. An ability to design and conduct experiments, as well as to analyze and interpret data
   d. An ability to function on multidisciplinary teams
   e. An ability to identify, formulate, and solve engineering problems
   g. An ability to communicate effectively
   j. A knowledge of contemporary issues

Brief list of topics to be covered:
   a. Requirements engineering principles and process
   b. Requirements elicitation techniques – Use Case modelling, JAD, Interviewing, Prototyping, etc.
   c. Functional and Non-Functional Requirements
   d. Requirements Specification Document
   e. Reviewing and auditing requirements specification
   f. Software testing principles and concepts
   g. Software testing lifecycle
   h. Software testing types, techniques, and tools
   i. Software test plan