SE 3540 : INTRODUCTION TO SOFTWARE ENGINEERING

Semester Hours: 3.0  
Contact Hours: 3

Coordinator: Robert Green

Text: Head First Software Development

Author(s): DAN PILONE AND RUSS MILES

Year: 2007

SPECIFIC COURSE INFORMATION

Catalog Description:
Overview of software engineering as a discipline. Software life-cycle models and phases of the software development process. Introduction to Human Computer Interaction (HCI), user-centered development, teams and project management. Prerequisite: Grade of C or better in CS 2020.

Course type: REQUIRED

SPECIFIC COURSE GOALS

- I can understand key terms used when analyzing human interaction with software.
- I can analyze, specify and document software requirements for a software system.
- I can understand user interface design standards.
- I can express and understand the importance of professional ethics, etiquette, and communication in a software development environment.
- I can develop alternative design solutions to a given problem and recommend the best one within limitations of cost, time, knowledge, existing systems, and organizations.
- I can apply the process of project initiation, planning, execution, and management.
- I can analyze and compare various software development lifecycle methods that include requirements analysis, design, implementation, testing and maintenance.
COMPUTER SCIENCE STUDENT OUTCOMES ADDRESSED BY THIS COURSE

- CS 1 Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions
- CS 4 Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles
- CS 5 Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline
- CS 6. Apply computer science theory and software development fundamentals to produce computing-bas6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

SOFTWARE ENGINEERING STUDENT OUTCOMES ADDRESSED BY THIS COURSE

- SE 1 An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- SE 2 An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
- SE 4 An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
- SE 5 An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
- SE 6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
- SE 7 An ability to acquire and apply new knowledge, as needed, using appropriate learning strategies
LIST OF TOPICS COVERED

• Software Processes and Models
  o Software engineering concepts
  o SDLC, Process model
  o Agile Software Development

• Planning and Requirements Analysis
  o User and/or system requirements
  o Effort estimation

• Design and Development Methodologies
  o Human and Computer Interaction and Design
  o Team design
  o Architecture and design patterns
  o Internal and external design factors
  o Coding methods and guidelines

• Documentation, Testing and Evaluation
  o Standards and best practices
  o Testing methods
  o Assurance and acceptance criteria
  o Reliability and performance

• Project Management
  o Resources and configuration control
  o Risk analysis
  o Product integration
  o Best practices
  o Release management and source control