School of Computing and Information Sciences

Course Title: Software Engineering II **Date:** 03/05/10

Course Number: CEN 4021

Number of Credits: 3

Subject Area: Software Engineering	**Subject Area Coordinator:** Peter Clarke **email:** clarkep@cis.fiu.edu
Catalog Description: Issues underlying the successful development of large scale software projects: Software Architectures; Software Planning and Management; Team Structures; Cost Estimation	
Textbook: Frank Tsui, "Managing Software Projects". Jones and Bartlett, ISBN 0-7636-2546-3.	
References: The Mythical Man-Month: Essays on Software Engineering, Addison-Wesley Pub. The CHAOS Report: http://www.projectsmart.co.uk/docs/chaos-report.pdf COCOMO II Definition Manual: http://sunset.usc.edu/research/COCOMOII/Docs/modelman.pdf	
Prerequisites Courses: CEN 4010	
Corequisites Courses: None	

Type: Elective for Computer Science; Required for Software Design and Development Track

Prerequisites Topics:

- Software Development Life Cycle
- Requirements specifications
- Software Design and implementation

Course Outcomes:

1. Master techniques of planning and monitoring the progress of a software project
2. Master software project cost estimation techniques
3. Be familiar with software architectures
4. Be familiar with software development team structures

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Relationship between Course Outcomes and Program Outcomes

BS in CS: Program Outcomes	Course Outcomes
a) Demonstrate proficiency in the foundation areas of Computer Science including mathematics, discrete structures, logic and the theory of algorithms	
b) Demonstrate proficiency in various areas of Computer Science including data structures and algorithms, concepts of programming languages and computer systems.	
c) Demonstrate proficiency in problem solving and application of software engineering techniques	1, 2, 3, 4,
d) Demonstrate mastery of at least one modern programming language and proficiency in at least one other.	
e) Demonstrate understanding of the social and ethical concerns of the practicing computer scientist.	
f) Demonstrate the ability to work cooperatively in teams.	1, 4
g) Demonstrate effective communication skills.	1, 4

Assessment Plan for the Course & how Data in the Course are used to assess Program Outcomes

Student and Instructor Course Outcome Surveys are administered at the conclusion of each offering, and are evaluated as described in the School's Assessment Plan: http://www.cis.fiu.edu/programs/undergrad/cs/assessment/

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Outline

Topic	Number of Lecture Hours	Outcome

• Introduction
  o Project Management Knowledge Areas
  o Project Management Process Groups
	3	1

• Project Organizational Structure
  o Functional Structure
  o Project Structure
  o Matrix Structure
	3	4

• Project Integration Management
  o Project Management Knowledge Areas
  o Project Management Process Groups
  o Change Control
	3	1

• Project Scope Management
  o Scope Planning and Project Selection
  ▪ Net Present Value
  ▪ Payback Analysis
  ▪ Weighted Scoring
  o Project Charter
  ▪ Work Breakdown structure
  ▪ Gantt Charts
	6	1

• Project Time Management
  o Activity Definition and Sequencing
  o Network Diagrams
  o Critical Path Method
  o PERT
	6	1

• Cost Estimation
  o Cost Estimation Models
  o Size Estimation
  o COCOMO I
  o COCOMO II
	6	2

• Quality Assurance
  o Inspections and Reviews
  o Software process assessment
	3	1

• Software Architectures
  o Pipes and Filters
  o Object-Oriented Event-Driven
	6	3

○ Repositories ○ N-tier ○ Client Server		

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Course Outcomes Emphasized in Laboratory Projects / Assignments

Outcome	Number of Weeks
1. Software Project Charter Outcomes: 1	3
2. Software Project Cost Estimate Outcomes: 2	3
3. Schedule Tracking: Outcomes: 2	3

Oral and Written Communication:

Written Reports		Oral Presentations	
Number Required	Approx. Number of pages for each	Number Required	Approx. Time for each
3	20	2	20-25 minutes per group (5 minutes per student)

Social and Ethical Implications of Computing Topics:

No significant coverage

Topic	Class time	Student Performance Measures

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Approximate number of credit hours devoted to fundamental CS topics

Topic	Core Hours	Advanced Hours
Algorithms:		
Software Design:		0.5
Computer Organization and Architecture:		
Data Structures:		
Concepts of Programming Languages:		

Theoretical Contents

Topic	Class time

Problem Analysis Experiences

Software Project Charter

Solution Design Experiences

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The Coverage of Knowledge Units within Computer Science Body of Knowledge[1]

Knowledge Unit	Topic	Lecture Hours
SE 4	Software life-cycle and process models	3
SE 8	Team management: Roles and responsibilities in a software team, Project tracking, Team problem resolution; Project scheduling; Software measurement and estimation techniques; Risk analysis; Software quality assurance; Software configuration management.	27

[1]See http://www.computer.org/education/cc2001/final/chapter05.htm for a description of Computer Science Knowledge units