School of Computer Science

Course Title: Software Engineering II **Date:**

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: Information Technology Project Management, Schwalbe, Kathy, Third Edition, Course Technology, 2004, ISBN 0-619-15984-7.	
References: **The Mythical Man-Month: Essays on Software Engineering, A**ddison-Wesley Pub. **The CHAOS Report:** **http://www.standishgroup.com/sample_research/chaos_1994_1.php** **COCOMO II Definition Manual:** **http://sunset.usc.edu/research/COCOMOII/Docs/modelman.pdf**	
Prerequisites Courses: CEN 4010	
Co-requisite 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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Topic	Number of Lecture Hours	Outcome
• Introduction o Project Management Knowledge Areas o Project Management Process Groups	3	O1
• Project Organizational Structure o Functional Structure o Project Structure o Matrix Structure o Extreme programming	3	O4
• Project Integration Management o Project Management Knowledge Areas o Project Management Process Groups o Change Control	3	O1
• 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	O1
• Project Time Management o Activity Definition and Sequencing o Network Diagrams o Critical Path Method o PERT	6	O1
• Cost Estimation o Cost Estimation Models o Size Estimation o COCOMO I o COCOMO II	6	O2
• Quality Assurance o Testing o Pre and Post Conditions o Software verification	3	O1
• Software Architectures o Pipes and Filters o Object-Oriented Event-Driven o Repositories o Virtual Machines o Client Server	6	O4

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Course Outcomes Emphasized in Laboratory Projects / Assignments

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

Oral and Written Communication:

Number of written reports: 3

Approximate number of pages for each report: 10

Number of required oral presentations: 2

Approximate time for each presentation: 20-25 minutes per group. Each group will consist of 3-4 students

Social and Ethical Implications of Computing Topics

Topic	Class time	student performance measures
Various	Throughout the course	Not Measured

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Approximate number of class hours devoted to fundamental CS topics

Topic	Core Hours	Advanced Hours
Algorithms:		
Software Design:		**.5**
Computer Organization and Architecture:		
Data Structures:		
Concepts of Programming Languages		

Theoretical Contents

Topic	Class time
Program verification	3

Problem Analysis Experiences

1. Software Project Charter

Solution Design Experiences

1. None

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

Knowledge Unit	Topic	Lecture Hours
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
SE 10	Formal Methods	3

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