Department of Computer & Electrical Engineering and Computer Science
Florida Atlantic University
Course Syllabus

1. Course title/number, number of credit hours	
CEN 5035 Software Engineering	3 credit hours

2. Course prerequisites, corequisites, and where the course fits in the program of study
COP 3530 (Data Structures & Algorithm Analysis) CEN 4010 Principles of Software Engineering (preferred)

3. Course logistics
Term: Fall 2016 Class Location and Time: CM 130; Wednesdays and Fridays: 12:30pm – 1:50pm

4. Instructor contact information	
Instructor's name *Office address* *Office Hours* *Contact telephone number* *Email address*	Dr. Shihong Huang Engineering East (EE 96) Room 434 Wednesday & Friday: 9:30am – 12:20pm, and by appointments 561-297-1275 shihong@fau.edu

5. TA contact information	
TA's name *Office address* *Office Hours* *Contact telephone number* *Email address*	Sara Landset <slandset@fau.edu>

6. Course description

Catalog Description:

An introduction to basic principles and practices of software engineering. Emphasis is placed on programming language support for software engineering principles, especially techniques for data abstraction, code reusability, and programming-in-the-large. Other topics include software life cycle models, general design, implementation and testing issues, specification and design methodologies, and model-based approaches to software design.

Course Special Features:

This graduate course focuses on advanced concepts in software engineering, including both technical and non-technical issues. Software engineering is the disciplined application of engineering principles to the creation of complex, long-lived applications. It is an amalgam of people, process, and technology. The objective of this course is to expose students to a wide range of software engineering concepts and state-of-the-art technologies. In addition to software engineering acumen, students are expected to develop excellent writing and presentation skills.

This course will first review basic principles of software engineering, and then will focus on more specific and advanced topics.

The course focuses on model driven software development. It covers fundamental concepts of different aspects of software modeling, model transformation, model driven development, and deployment.

This course also introduces the recent work of SEMAT, a community effort to the establishment of Software Engineering Method and Theory, and its result of the new OMG Standard: *Essence – Kernel and Language for Software Engineering Methods*.

The course will contain practical project exercises and use of tools at different phase of software life cycle. A special feature of this course is that we will have exclusive academic use of Ivar Jacobson International (IJI) commercialized Essential Unified Process and Use Case 2.0 material and tooling in our class. Students will work in groups on some of the projects. During the course of different milestones and deliverables, students will have close interaction with team members and instructor. Students will learn and demonstrate their understanding of the theory of different software development methods and practices.

Students will also be required to read top-tier academic papers and do tool evaluations and present in class.

Note: Students, including Distance Learning Students, will be required to present in class a couple of times during the semester.

7. Course objectives/student learning outcomes/program outcomes

Course objectives (based on ABET criteria)	2. Proficiency in the areas of software design and development, data structures, and operating systems 3. An ability to plan and execute an engineering design to meet an identified need 6. An understanding of the overall human context in which engineering and computing activities take place
Student learning outcomes & relationship to ABET a-k objectives	(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability (e) an ability to identify, formulate, and solve engineering problems (f) an understanding of professional and ethical responsibility (g) an ability to communicate effectively (k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

8. Course evaluation method

Course projects (Divided by different milestones)	80%	*Note*: The minimum grade required to pass the course is C.
Paper reviews and presentations	20%	

Grading Scale:
90 and above: "A", 87-89: "A-", 83-86: "B+", 80-82: "B", 77-79 : "B-", 73-76: "C+", 70-72: "C", 67-69: "C-", 63-66: "D+", 60-62: "D", 51-59: "D-", 50 and below: "F."

10. Policy on makeup tests, late work, and incompletes

Need proper university accepted documents to have permissions on makeup tests, late work and incompletes

11. Special course requirements

N/A

12. Classroom etiquette policy

University policy requires that in order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular phones and laptops, are to be disabled in class sessions.

13. Disability policy statement

In compliance with the Americans with Disabilities Act (ADA), students who require special accommodations due to a disability to properly execute coursework must register with the Student Accessibility Services (SAS), located on Boca Raton campus, SU 133 (561) 297-3880 and follow all SAS procedures.

14. Honor code policy

Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and place high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. See University Regulation 4.001 at www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf

15. Required texts/reading

Software Engineering (9th Edition) by Ian Sommerville (Addison-Wesley) march 2010; ISBN-10: 0137035152

16. Supplementary/recommended readings

Lecture notes, working environments, tooling, and other references will be posted on Blackboard

17. Course topical outline, including dates for exams/quizzes, papers, completion of reading

Tentative course topic outline (subject to change depending on lecture progresses):
1. Overview of software engineering
2. New OMG standard – *Essence – Kernel and Language for Software Engineering Methods*
3. BPMN problem/business modeling
4. Use case modeling
5. User interface specification with Balsamiq
6. System architecture and design
7. UML Information modeling – with UML class diagrams, Database modeling
8. Process modeling with BPMN and UML activity diagrams
9. General principles of Model driven development (MDD)
10. IFML User Interaction modeling
11. Design and implementation of Project with WebRatio
12. UML service modeling and Service Oriented Architecture (SOA)
13. Empirical studies
14. Agile software development
15. Software maintenance & Evolution

Project Assignments with tentative dates (subject to change depending on schedule):
1. Milestone 1: Project proposals
2. Milestone 2: Use case modeling
3. Milestone 3: Process modeling
4. Milestone 4: First prototype and feedback
5. Milestone 5: Beta delivery, QA plans and usability feedback, final functionality check.
6. Milestone 6: Final Project demo and delivery
7. Milestone 7: Paper presentations

Exams (tentative dates):
1. Midterm presentation: Wednesday September 21 – Friday September 30, 2016, in class
2. Paper presentations: second half of November
3. Final project presentation: Friday December 9th, 2016; 10:30am – 1:00pm