

SYLLABUS: CEN 5035 SOFTWARE ENGINEERING

Fall 2009

Description: CEN 5035, Software Engineering, is a graduate-level introductory survey course on the fundamental concepts and principles that underlie current and emerging methods, tools, and techniques for the cost-effective *engineering* of high-quality software systems. Software engineering (SE) is concerned with all aspects of software development, from the early stages of system specification to maintaining the system after it has gone into use. This includes technical processes of software development as well as activities such as software project management and the development of tools, methods, and theories to support software development. CEN 5035 is NOT a "programming" course, but focuses instead on surveying the critical aspects of SE that may be less familiar to students of computer science, such as identifying a development process appropriate to the circumstances, eliciting and documenting requirements, identifying appropriate design techniques, employing effective verification and validation strategies (including formal reviews and inspections) throughout the software development lifecycle, software maintenance, and software project management.

Prerequisites: Familiarity with programming using a high-level language (C, C++, Java, etc.); basic knowledge of algorithms, data structures, and discrete math. (A few program/design examples in the text are given in Java, but no previous knowledge of this language is required.)

Instructor: Steve Thebaut, E314-A, Phone: (352) 450-5530, E-mail: smt AT cise DOT ufl DOT edu. Office Hours: Mon/Wed 9:30-10:30, EST, or by appointment

On-Campus Class Meeting Times and Location: Tuesday: 5th and 6th (11:45-1:30), Thursday: 6th (12:50-1:40), Room: CSE 122 (tentative)

Course Web Site: Temporary Site (no password required): www.cise.ufl.edu/class/cen5035/fa09.html After the first week of classes, registered students will need a GatorLink account and password to access the website. Instructions will be provided in class.

Text: *SOFTWARE ENGINEERING*, 8th Ed., by Ian Sommerville, Addison-Wesley. One or more copies of the text will be placed on reserve in Marston Science Library. Note that access to the **8th Edition** is required.

Outline of Course Topics: The following topics will be covered in the order given. Chapter numbers refer to the SOMMERVILLE text; "LNO" = Lecture Notes Only.

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| (1) Introduction (Ch 1) | (9) Distrib & Service-Oriented Sys (Chs 12, 31) |
| (2) Software Processes (Ch 4) | (10) Object- and Aspect-Oriented Design (Chs 14, 32) |
| (3) Project Management (Ch 5) | (11) Software Reuse (Ch 18) |
| (4) Software Requirements (Ch 6) | (12) Verification and Validation (Ch 22) |
| (5) Reqmts. Eng. Process (Ch 7) | (13) Proofs of Correctness (LNO) |
| (6) Prototyping/Rapid Development (Ch 16.4, 17) | (14) Software Testing (LNO) |
| (7) Formal Specification (Ch 10) | (15) Software Evolution (Ch 21) |
| (8) Architectural Design (Ch 11) | (16) Process Improvement (Ch 28) |

Note that you are only responsible for the *assigned parts* of Sommerville Chapters 18, 19, 21, 22, 28, 31, and 32. Details will be provided under "Reading" at the course web site.

Lecture notes will be made available on the course web site.

Examinations and Grades: Course grades will be based *SOLELY* on two equally weighted 90-minute exams. A histogram of numeric scores will be provided with solution notes for each exam. Course letter grades will be determined at the end of the semester.

Note that effective with the Summer 2009 term, UF's grading scale has been changed to include minus grades. The intent is to provide instructors with more options for assigning grades. Please see www.registrar.ufl.edu/DDD.doc for details.

Exam schedule for BOTH on- and off-campus students: Exam 1: (covers topics 1-9) -- Tuesday, October 20 (tentative); Exam 2: (covers topics 10-16) -- Tuesday, Dec. 8

Exam Procedures for EDGE Students: Proctors will be instructed to schedule a SINGLE EXAM TIME for all students at each site or location on each of the two specified exam dates. If this is not possible for any reason, students must contact the instructor well in advance to discuss making other arrangements. Proctors should return electronic copies of completed exams via FAX or e-mail directly to the instructor ASAP after administration.

Make-Up Exam Policy: Students are expected to be available at scheduled exam times. Do not schedule elective activities (family gatherings, business or interview trips, etc.) that conflict with scheduled exams. If missing an exam is unavoidable (e.g., due to sickness, accident, or other reasons beyond your control), contact the instructor as far in advance as possible. Make-up exams may be administered orally.

Note that depending on the circumstances, it may NOT be possible to administer a make-up exam before the end of the term. In such cases, a course grade of "I" (incomplete) may be assigned.

Homework: Exercises will be recommended and discussed in class as appropriate, but will not be graded.

Class Attendance Policy: Students are expected to view all recorded lectures and are responsible for any recorded announcements made in class. On-campus students are NOT required to attend live lectures.

Considerations Related to Anticipated Influenza Outbreak: UF officials expect the anticipated outbreak of H1N1 as well as seasonal influenza to occur on campus as early as September. The prescribed strategy is for affected students and faculty to stay away from classes, so as not to infect others. If you develop flu-like symptoms, or if you have had recent contact with others who have such symptoms, PLEASE DO NOT COME TO CLASS. Also, please note that students who exhibit flu-like symptoms in class will be asked to excuse themselves immediately. All lectures may be viewed via streaming video outside the classroom, and accommodations will be made for affected students to take scheduled exams outside the classroom as appropriate.

Computer Facilities: Access to e-mail and the WWW is required.

Academic Integrity: All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

You will be asked to sign the following statement on all exams in this course: *On my honor, I have neither given nor received unauthorized aid on this exam and I pledge not to divulge information regarding its contents to those who have not yet taken it.*

Accommodation for Students with Disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

UF Counseling Services: Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling.
- SHCC Mental Health, Student Health Care Center, 392-1171, personal counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

Software Use: All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Instructor Biography: Steve Thebaut received the BA in Mathematics from Duke University in 1977, and the MS and PhD in Computer Science from Purdue University in 1979 and 1983, respectively. He is currently Associate Chair of the CISE Department. Dr. Thebaut's research interests include software requirements engineering, testing and verification, and software engineering technology transfer. He has received funding from the National Science Foundation, IBM, the Florida Department of Education, the Florida High Technology and Industry Council, the Sino-Software Research Center at HKUST, the Software Engineering Research Center, and the Software Engineering Institute (SEI) at Carnegie Mellon University, where he was an invited lecturer in the SEI production of "Software Project Management," a nationally distributed video-based continuing education course. He has been a course developer and consultant for IBM's IS&PG Technical Education program, and has served on the program committee of the Conference on Software Engineering Education. He was Associate Editor of the International Journal of Computer and Software Engineering from 1990-1996.