

SYLLABUS: CEN 5035, SOFTWARE ENGINEERING

Fall 2012

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; it focuses instead on surveying some of 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 (e.g., reviews and inspections, formal methods) 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.) **Taking CEN 5035 is generally inadvisable for students who have successfully completed an undergraduate-level software engineering survey course. Also, students wishing to take CEN 5035 who have already completed CEN 6070 (for which CEN 5035 is a prerequisite) may do so, but in modified form. Instead of being tested on the "Intro to Proofs of Correctness" material in Exam 2, students will be tested on 2-3 additional chapters from the Sommerville text.**

Instructor: Steve Thebaut, E314-A, E-mail: smt AT cise DOT ufl DOT edu, Phone: 352-505-1564.

Course Office Hours: Wed/Fri 9:30-10:30 or by appointment (brief matters: whenever present in office).

On-Campus Class Meeting Times and Location: Wednesday: 6th (12:50-1:40), Friday: 5th and 6th (11:45-1:30) Room: CSE 107.

Course Web Site: www.cise.ufl.edu/class/cen5035/fa12.html

Text: *SOFTWARE ENGINEERING*, 9th Ed., by Ian Sommerville, Addison-Wesley. A copy of the text will be placed on reserve in Marston Science Library. Note that access to the **9th 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) | (8) Software Evolution (Ch 9) |
| (2) Software Processes (Ch 2) | (9) Formal Specification (Ch 27: on-line) |
| (3) Agile Development (Ch 3) | (10) Introduction to Proofs of Correctness (LNO) |
| (4) Requirements Engineering (Ch 4) | (11) Distributed Software Engineering (Ch 18) |
| (5) Architectural Design (Ch 6) | (12) Aspect-Oriented Software Engineering (Ch 21) |
| (6) Design & Implementation (Ch 7) | (13) Project Management (Ch 22) |
| (7) Software Testing (Ch 8) | (14) Process Improvement (Ch 26) |

Lecture notes will be made available on the course web site in a JIT (Just-In-Time) fashion.

Examinations and Grades: Course grades will be based *SOLELY* on two equally weighted 90-minute exams. (Please do NOT ask if there are additional things you can do to improve your grade.) The exams are designed to be challenging, and students are often unable to complete all the problems.

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, based, in part, on the difficulty of the exams. The nominal course grade distribution is A: 10-20%, A-: 25-35%, B+: 25-35%, B: 10-20%, lower than a B: 5-15%.

Exam schedule: Exam 1 (covers topics 1-8) -- Friday, October 19 (tentative) (Non-Gainesville area EDGE students: October 22-24); Exam 2 (covers topics 9-14) -- Friday, November 30 (Non-Gainesville area EDGE students: December 3-5)

Grading Errors: General exam re-grade requests are NOT accepted. Suspected grading errors (e.g., errors in summing your points) should be brought to the instructor's attention ASAP (but no later one week after graded exams are made available for review) for appropriate consideration. Your original, UNALTERED, exam must be returned (together with a correction request

form to be made available) to the instructor by the specified deadline. (Note that correction requests should only be made when you believe a grading error was made; partial credit policies, in particular, are not subject to debate.)

Grade requirements for graduation: Graduate students must have an overall GPA of 3.0 (B average) or better. (Note: a B-average is equivalent to a GPA of 2.67, and therefore does NOT satisfy this requirement.) Undergraduate students must have an overall GPA and an upper-division GPA of 2.0 (C average) or better. (Note: a C- average is equivalent to a GPA of 1.67, and therefore does NOT satisfy this requirement.)

Exam Procedures for Non-Gainesville area EDGE Students: Proctors will be instructed to schedule a SINGLE EXAM TIME for all students at each site or location during each of the two specified 3-day exam periods. 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 e-mail or FAX directly to the instructor.

Make-Up Exam Policy: Students are expected to be available at scheduled exam times. Do not schedule elective activities (family gatherings, interview trips, vacations, 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: Optional, self-check problem sets will be recommended and discussed in class as appropriate.

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

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 acknowledging 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.* Note that graded exams are routinely copied before being returned to students for security reasons.

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.