BMI 546/BMI 646: Software Engineering
3.0 credit hours
Spring 2016
On campus: Wednesdays 9:00am-10:30am / BICC124
Revised 1/4/2016

PREREQUISITES: BMI 540/640 or BMI 565/665, or consent of instructor.

COURSE DESCRIPTION: This course covers the basic principles of software engineering geared towards providing students with a solid understanding of the process of producing quality software systems on time and on budget. The main activities in software process models are covered in detail, including: proposal creation, requirements gathering and specification, architecture design, software development methodologies, verification and testing, quality management and maintenance. Students will be expected to demonstrate their mastery of the material by the creation of written documentation for several of these main activities on a hypothetical software project of their choice, as well as by answering homework questions based on assigned reading and passing written exams.

INSTRUCTOR: Aaron M. Cohen, M.D., M.S. office: 3030 Moody, Suite 160D, email: cohenaa@ohsu.edu, office phone: (503) 494-0046. Office hours by appointment, please email instructor.


COURSE COORDINATION: This course will be taught in a “flipped classroom” style. Students are expected to come to class prepared. This includes reading the assigned weekly chapters and watching the videotaped lectures prior to the classroom session. During the classroom session the instructor will answer questions and lead a discussion on the assigned topics. On campus students are required to attend the live discussion sections.

Weekly homework will be assigned to enable students to apply what they have learned. Homework will include both short answer and short essay questions.

Course handouts and homework assignments will be made available at the beginning of the week on Sakai. Homework will be assigned at the beginning of each week and due the next week before class on Monday. Completed homework assignments should be turned into the course Sakai site in MS Word DOC or DOCX format. Late homework will be accepted but penalized 10% per day late.

EVALUATION: Students will be evaluated based on homework, discussion participation, and midterm and final exams. The final grade will be weighted as follows: Midterm 25%, Final 25%, Homework 30%, Discussion Participation 10%, Final Project Presentation 10%.
Significant contribution to 80% of the weekly on campus or forum discussion sessions is required for full credit in discussion participation.

Final Project Presentation will be done in class and consist of short 5-10 minute slide talks from each student presenting their hypothetical software system overview, major requirements, high level architecture and the most interesting or novel aspects of the project in terms of: design, verification/validation, quality management, cost estimation, etc.

Time and location of the Midterm and Final examinations will be announced in class and via Sakai.

**GRADING SCALE:** Grading will be done on the standard OHSU A-F scale:

- A: 90-100%
- B: 80-89%
- C: 70-79%
- D: 60-69%
- F: Below 60%

Graduate Studies in the OHSU School of Medicine is committed to providing grades to students in a timely manner. Course instructors will provide students with information in writing at the beginning of each course that describes the grading policies and procedures including but not limited to evaluation criteria, expected time needed to grade individual student examinations and type of feedback they will provide.

Class grades are due to the Registrar by the Friday following the week of finals. However, on those occasions when a grade has not been submitted by the deadline, the following procedure shall be followed:

1) The Department\(^1\) /Program Coordinator\(^2\) will immediately contact the Instructor requesting the missing grade, with a copy to the Program Director and Registrar.
2) If the grade is still overdue by the end of next week, the Department\(^1\) /Program Coordinator\(^2\) will email the Department Chair directly, with a copy to the Instructor and Program Director requesting resolution of the missing grade.
3) If, after an additional week the grade is still outstanding, the student or Department\(^1\) /Program Coordinator\(^2\) may petition the Office of Graduate students for final resolution.

\(^1\) For courses that are run by a specific department.
\(^2\) For the conjoined courses (course number is preceded by CON_ that are run by Graduate Studies.

**COPYRIGHT INFORMATION**

Every reasonable effort has been made to protect the copyright requirements of materials used in this course. Class participants are warned not to copy, audio, or videotape in violation of copyright laws. Journal articles will be kept on reserve at the library or online for student access. Copyright law does allow for making one personal copy of each article from the original article. This limit also applies to electronic sources.
To comply with the fair use doctrine of the US copyright law, Sakai course sites close three weeks after grades are posted with the Registrar. Please be sure to download all course material you wish to keep before this time as you will have no further access to your courses.

DMICE COMMUNICATION POLICY
1. If the syllabus directs the student to contact the TA before contacting the instructor, the student should do so. Otherwise, the student should contact the instructor and allow 2 business days (not including weekends) for a response.
2. If the student does not receive a response from the instructor within 2 business days, s/he should contact the TA (if there is one). When contacting the TA s/he should cc the instructor and Diane Doctor at doctord@ohsu.edu.
3. If a student does not receive a response from the TA within 1 business day (not including weekends), s/he should contact Diane Doctor at doctord@ohsu.edu and cc the instructor and the TA.
4. If Diane does not reply within 1 business day (not including weekends), the student should contact Andrea Ilg at ilgan@ohsu.edu.
5. Students having difficulties with Sakai should contact the Sakai Help Desk at sakai@ohsu.edu or at (877) 972-5249. Sakai help is available M-F from 8am to 10-pm and weekends from Noon to 5pm. Do not contact the instructor.

STUDENT ACCESS
OHSU is committed to providing equal access to qualified students who experience a disability in compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and the ADA Amendments Act (ADA-AA) of 2008. If you have a disability or think you may have a disability (physical, sensory, chronic health, psychological or learning) please contact the Office for Student Access at (503) 494-0082 or studentaccess@ohsu.edu to discuss eligibility for academic accommodations. Information is also available at www.ohsu.edu/student-access. Because accommodations may take time to implement and cannot be applied retroactively, it is important to have this discussion as soon as possible. All information regarding a student’s disability is kept in accordance with relevant state and federal laws.

ACADEMIC HONESTY
Course participants are expected to maintain academic honesty in their course work. Participants should refrain from seeking past published solutions to any assignments. Literature and resources (including Internet resources) employed in fulfilling assignments must be cited. See http://www.ohsu.edu/xd/education/library/research-assistance/plagiarism.cfm?WT_rank=1# for information on code of conduct for OHSU and http://www.ohsu.edu/xd/education/teaching-and-learning-center/for-students/index.cfm for more information on citing sources and recognizing plagiarism.

In an effort to uphold the principles and practice of academic honesty, faculty members at OHSU may use originality checking systems such as Turnitin to compare a student’s submitted work against multiple sources.
To protect student privacy in this process, it will be necessary to remove all personal information, i.e. student name, email address, student u-number, or any other personal information, from documents BEFORE submission.

USE OF SAKAI
This course will have an online component, which can be accessed through Sakai, OHSU’s online course management system. For any technical questions or if you need help logging in, please contact the Sakai Help Desk.

Hours: Sakai Help Desk is available Mon – Fri, 8 am – 9 pm and weekends 12 pm – 5 pm. The help desk is closed on OHSU observed holidays.

Contact Information:
(Toll-free) 877-972-5249
(Web) http://atech.ohsu.edu/help
(Email) sakai@ohsu.edu

COURSE OBJECTIVES: Understand the principles of and be able to apply the following aspects of Software Engineering:

- Requirements
- Specification
- Architecture
- Design
- Development
- Verification
- Validation
- Cost Estimation
- Quality Management
- Configuration Management
<table>
<thead>
<tr>
<th>Dates in 2016</th>
<th>Readings</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>In Class Discussion on Wednesdays</td>
<td>(Sommerville text unless stated otherwise)</td>
<td>Assigned on Mondays, due on the Wednesday of the following week.</td>
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| Week 1: March 28 - April 1 | Chapter 1: Introduction  
Chapter 2: Software processes | Homework 1 assigned. |
| Week 2: April 4 - April 8 | Chapter 4: Requirements Engineering  
Chapter 10: Dependable Systems | Homework 1 due, 2 assigned. |
| Week 3: April 11 - April 15 | Chapter 11: Reliability Engineering  
Chapter 12: Safety Engineering | Homework 2 due, 3 assigned. |
| Week 4: April 18 - April 22 | Chapter 5: System modeling  
Chapter 6: Architectural design | Homework 3 due, 4 assigned. |
| Week 5: April 25 – April 29 | Chapter 7: Design and Implementation  
Chapter 22: Project management | Homework 4 due, 5 assigned. |
| Week 6: May 2 - May 6 | Chapter 23: Project planning  
Midterm Exam: In class or online, details to be announced. | No Homework due or assigned this week. |
| Week 7: May 9 - May 13 | Chapter 8: Software testing  
Chapter 13: Security Engineering | Homework 5 due, 6 assigned. |
| Week 8: May 16 - May 20 | Chapter 9: Software evolution  
No Chapter: User interface design | Homework 6 due, 7 assigned. |
| Week 9: May 23 - May 27 | Chapter 24: Quality management  
Chapter 25: Configuration management | Homework 7 due, 8 assigned. |
| Week 10: May 30 - June 3 | Chapter 3: Agile software development  
Final Project 5 minute presentations | Homework 8 due. |
| Finals Week June 6 - June 10 | Final Exam, time and location to be announced | |

**NOTE:** The syllabus and class schedule are subject to change by the instructor. Changes will be made with as much advance notice given as possible.