COMP 4081 – Software Engineering
Fall 2017

Instructor: Dr. James Yu
Email: jyu8@memphis.edu
Office: Dunn Hall 320
Office Hours: Mon, Wed, Fri 1000 – 1130, or by appointment.

Course Team TA: Kathryn Bridson

Textbook: No explicit required textbook. Reading assignments from various sources will be specified throughout the course.

Meeting Times:
Lectures:
Mon, Wed 1600 to 1725 DH 122

Catalog Description:
COMP 4081 - Software Engineering (3) Scope of software engineering; software life cycle models; software process; team organization; requirements analysis and design methodologies; metrics, inspections, testing strategies and maintenance; software risks; professional and ethical responsibilities. Computer Science majors should plan to take COMP 4882 during the following spring semester. It is recommended that students take COMP 3115 before taking this course. PREREQUISITE: COMP 2150, permission of instructor.

List of recommended textbook resources:

- Agile Project Management, by Jim Highsmith
- The Pragmatic Programmer, by Andrew Hunt, David Thomas.
- Design Patterns, Elements of Reusable Object-Oriented Software, Eric Gamma, Richard Helm, Ralph Johnson, John Vlissides (GOF).
- Refactoring, Improving the design of exiting code, Martin Fowler
- Refactoring to Patterns, Joshua Kerievsky
- Design Patterns Explained, A new perspective on Object Oriented Design, Alan Shalloway, James Trott.
- Test-Driven Development by example, by Kent Beck.
- UML for Java Programmer, by Robert Martin.
- Agile Estimation and Planning, by Mike Cohn.
- Agile Principles, Patterns, and practices in C#, by Robert Martin.
• Software Architecture in Practice, 3/E by Len Bass
• Essential skills for the Agile Developer, A Guide to Better Programming and Design, by Alan Shalloway.
• Documenting Software Architectures: Views and Beyond, 3/E by Paul Clements.

Topics: (Subject to change during the course)

<table>
<thead>
<tr>
<th>Topics</th>
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<tbody>
<tr>
<td>1 Introduction to software Engineering</td>
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<tr>
<td>2 Software process (models, activities, and approaches)</td>
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<tr>
<td>3 Agile development (XP and SCRUM*)</td>
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<td>4 Change configuration management and continuous integration</td>
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<td>5 Requirements Engineering and documentation</td>
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<td>6 UML review and design details.</td>
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<td>7 Software Architecture; and system modelling</td>
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<td>8 Object Oriented Design principles (OOD)</td>
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<td>9 Design Patterns (DP)</td>
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<td>10 Test Driven Development (TDD)</td>
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<tr>
<td>11 Refactoring</td>
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<tr>
<td>12 UX/GUI design*</td>
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<td>13 Software Agile Retrospective*</td>
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* may skip this topic if time is not allowed.

Expected course outcomes:

After COMP4081 you should be able to:
- Understand challenges in software engineering and development.
- Realize the advantages and disadvantage of various software development processes
- Comprehend the principles behind Agile software development process.
- Strategize different tactics in software project planning and execution.
- Have a sound understanding of activities in software engineering from requirements gathering, through analysis/design, implementation, building, integration, testing, and to product release.
- Appreciate the various approaches in building software project/product as a team.

Expectations

This is not a course to teach you how to code. You should have enough programming background to build the selected project with your teammates. You might have to pick up a (learn or refresh) new language or framework needed for your project. It would be great if all students pass the course, receive good grades, and feel the course was useful. To make that happen, I expect that you will attend all classes, participate in class, team project meeting discussions, review the lecture notes before the lecture, submit all your assignments on time, practice on the course materials, and have fun building software with your team. I also expect that you will spend (on average) at least seven hours per week in out-of-class relevant activities (homework, team project planning and execution). It
is mandatory to attend all your project team meetings. You are expected to deliver your part of the contributions towards the project incrementally that are graded accordingly. If you have to miss a team meeting, you need to tell your team members and let the TA know before the meeting begins with sufficient documentation to justify your absence.

**Evaluations (Total 100%)**

40% Assignments (assignments, project reports)
20% Midterm
30% Final Exam
10% Participation

Grading scale.
A+ ≥ 97%
A  91–96%
A−  89–90%
B+  87–88%
B   81–86%
B−  79–80%
C+  77–78%
C   71–76%
C−  69–70%
D+  67–68%
D   60–66%
F ≤ 59%

**Assignments (40%):** There will be 7 to 8 assignments in form of project preparation results and sprint project reports. The first 3 to 4 assignments focus on the team formation, project problem statement, development environment preparations as well as tutorials on frameworks and tools. The last 3 to 4 assignments focus on project sprint releases. There will be three sprint project reports required starting in early October. The actual date depends on your team readiness in starting a Scrum sprint. Each sprint project release deliverables will consist of an Individual Contribution Report (ICR)(70%), a live demonstration (10%), and one team report (20%). Only one team report per team is required representing the overall project results from the entire team. This team report is built incrementally from each sprint and graded accordingly. 20% of the assignment mark comes from this team report grade weighted by your ICR result as shown in the following example:

Team A has a score of 88 on a sprint team report:
Team A has 5 team members with the ICR scores of (80, 75, 30, 90, 95)

The team report distributed among the five team members will be
(80/95 * 88) = 74
(75/95 * 88) = 69
(30/95 * 88) = 28
(90/95 * 88) = 83
(95/95 * 88) = 88
Final assignment score after the weighted team report results:

Student 1 = 80*0.8 + 74*0.2 = 79  
Student 2 = 75*0.8 + 69*0.2 = 74  
Student 3 = 30*0.8 + 28*0.2 = 30  
Student 4 = 90*0.8 + 83*0.2 = 89  
Student 5 = 95*0.8 + 88*0.2 = 94

Students with missing individual sprint report (ICR) will receive zero for that entire assignment (ie no team report or demo marks).

Every team member needs to contribute in building the team report. However, it does require an “author” to organize and integrate materials from all team members. To do a proper job, it does require time and effort. This author will receive an additional 5% of the team report mark as bonus. The team report authorship should be rotated among the team members. However, it is up to the team to decide among themselves. Every team member should do a final review on the team report to ensure their contributions are included before it is submitted for grading. Within each ICR, every team member will have an opportunity to perform a peer-to-peer evaluation of each other (individually) as shown in the following:

**Participation (10%):** This category is contributed by students of the same team as a peer-to-peer evaluation. This is needed in each of the submitted assignments using the following criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Marks</th>
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<tbody>
<tr>
<td>1  Absent: not around</td>
<td>0</td>
</tr>
<tr>
<td>2  Present but does not participate</td>
<td>1</td>
</tr>
<tr>
<td>3  Comments are rude and destructive</td>
<td>2</td>
</tr>
<tr>
<td>4  Comments are not genuine, superficial, and do not advance the discussion</td>
<td>3</td>
</tr>
<tr>
<td>5  Comments are appropriate, and move the discussion ahead constructively</td>
<td>4</td>
</tr>
<tr>
<td>6  Comments are timely, concise, considerate, and advancing the discussion</td>
<td>5</td>
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<tr>
<td>7  If this person were not in this team, the quality of discussion would greatly diminished</td>
<td>1 to 5</td>
</tr>
<tr>
<td>8  Consistently providing new ways to look at material</td>
<td>1 to 5</td>
</tr>
<tr>
<td>9  Respecting and recognizing the dignity of others.</td>
<td>1 to 5</td>
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Maxi = 20 points

If item 1 (Absent > 25%) is true (0), all the rest of the entry is zero
Between items 1 to 6, only one entry is needed
Between items 7 to 9, 1 is disagreed and 5 is strongly agreed

**Submission and late policy.** Assignments are to be submitted via eLearn.memphis.edu. Late submissions are acceptable with the following penalty policy:

- 0 to 24 hours late: 20% penalty
- 24 to 48 hours late: 40% penalty
- more than 48 hours: no mark
**Exams (midterm 20%, final 30%):** All the exams (mid-term and final) are closed book. There will be one midterm exam. The exam format will be a mixture of multiple choices, short answers, and diagram-based questions with explanations. The final exam will be a standard two hours classroom exam with the format similar to that of the mid-term. Details of the exams and study guide will be provided just before the exam date.

- **Missing Exams:** Missed exams will receive a zero mark unless a medical note is provided. Students will have to do a makeup later but limited to the course calendar allowed.
- Students must pass both the final exam and the project assignment to pass the course. Failure to achieve that will result in a ‘F’ grade.
- All appeals to marks, except to that of the final exam, must be registered with the instructor before the scheduled final examination date.

**Important Dates and Deadlines for fall 2017**


**Academic Integrity**

Plagiarism or cheating behavior in any form is unethical and detrimental to proper education and will not be tolerated. All work submitted by a student (projects, programming assignments, lab assignments, quizzes, tests, etc.) is expected to be a student's own work. The plagiarism is incurred when any part of anybody else's work is passed as your own (no proper credit is listed to the sources in your own work) so the reader is led to believe it is therefore your own effort. Students are allowed and encouraged to discuss with each other and look up resources in the literature (including the internet) on their assignments, but appropriate references must be included for the materials consulted, and appropriate citations made when the material is taken verbatim. If plagiarism or cheating occurs, the student will receive a failing grade on the assignment and (at the instructor’s discretion) a failing grade in the course. The course instructor may also decide to forward the incident to the Office of Student Conduct for further disciplinary action. For further information on U of M code of student conduct and academic discipline procedures, please refer to: [http://www.memphis.edu/studentconduct/misconduct.htm](http://www.memphis.edu/studentconduct/misconduct.htm).

**Student with Disabilities**

If you require disability-related accommodations to meet the course objectives, please contact the Coordinator of Disability Resources located in the Student Development and Advising area of the student services building. For more information about Disability Resources or academic Accommodation, please visit the website at: [http://www.memphis.edu/drs/](http://www.memphis.edu/drs/)