COMP 4882 – Capstone Project
Spring 2020

Instructor:  Dr. James Yu
Email:  jyu8@memphis.edu
Office: Dunn Hall 320
Office Hours: By appointment (email) or drop by in the mornings, all my classes are in the afternoons

Course Team TA/GA:  MdMaminur Islam (mislam3@memphis.edu)
Textbook:  No explicit required textbook. Lecture note, and reading material from various sources will be specified throughout the course.

Meeting Times:
Lectures/ Project team meetings:
MW 2:40 pm to 4:05 pm. Dunn Hall 118

Catalog Description:
Development of significant team project; continuation of COMP 4081; software project management; risk assessment. Software requirements and specifications; software design; software validation; professional and ethical responsibilities. PREREQUISITE: COMP 3115, 4030, and 4081, or permission of instructor.

List of highly recommended reference textbook resources:

- Agile Project Management, by Jim Highsmith
- Agile Estimation and Planning, by Mike Cohn.
- Design Patterns, Elements of Reusable Object-Oriented Software, Eric Gamma, Richard Helm,
- Design Patterns Explained, A new perspective on Object-Oriented Design, Alan Shalloway, James Trott.
- Documenting Software Architectures: Views and Beyond, 3/E by Paul Clements.
- Refactoring, Improving the design of existing code, Martin Fowler
- Refactoring to Patterns, Joshua Kerievsky
- Software Architecture in Practice, 3/E by Len Bass
- The Pragmatic Programmer, by Andrew Hunt, David Thomas.
- Test-Driven Development by example, by Kent Beck.
- UML for Java Programmer, by Robert Martin.
**Capstone Project Course Objectives:**

By the end of the capstone project course, students will have demonstrated their proficiency to:

- work in a self-collaborative team organization environment,
- understand the principles and practices of Agile software development
- gather and prioritize user requirements with clients and team members
- decompose complex problem, formulate, and provide rapid prototype for feedbacks,
- explore and propose alternative solution,
- present to an audience in various forms, oral, written, live demo, and formal presentations

**Expectations:**

Each student is expected to spend on average 10 hr/week for the semester. These hours include 2.5 hrs of class (Tuesday, Thursday) time and 7.5 hrs outside of class time each week. Most of the class time (80%) are used for SCRUM (< 10 mins), sprint planning discussions, requirement analysis, user stories brainstorming and mapping, architecture and design layout, sprint demo presentation, interaction with the instructor. Every team member should have specific roles and responsibilities. The rest of the class time (20%) will focus on announcement, brief lecture, and discussion of topics related to the current sprint and results. It is not easy to have every team member altogether during the week, plan your meeting time wisely with proper agenda and goals. **Attending all your classes and project team meetings is mandatory.** Your team scrum master is expected to record scrum meeting minutes with attendants. You are expected to deliver your part of the contributions towards the project incrementally (per sprint release). Your project contributions are graded based on each spring release results.

Note that not attending the class or your team meetings without a valid reason is unprofessional and will be reflected in your grade. The same applies to tardiness.

**Evaluations (Total 100%)**

90% Sprint Releases (Live Demo, Presentation, Reports)
10% Participation (Peer-Peer Reviews)

<table>
<thead>
<tr>
<th>Project (Sprint) Release</th>
<th>Sprints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project assignment, Team formation, sprint plan (PBL), gitHub (SVC)</td>
<td>Sp0: 15%</td>
</tr>
<tr>
<td>PBL, and SBL (sp1 plan ready), retro</td>
<td>SPO: demo</td>
</tr>
<tr>
<td>Key/Arch components, prototype, Tracking, documentation, version control</td>
<td>SP1: 10%</td>
</tr>
<tr>
<td>Live demo, proj reports, SP2 plan</td>
<td>SP1:demo</td>
</tr>
<tr>
<td>SP2: start: SBL update; ICR prep, user stories and points, retro / client</td>
<td>SP2: 15%</td>
</tr>
</tbody>
</table>
The schedule and detail for each sprint release (dates / contents) will be available in the class announcement and eLearn assignment posting. Depending on the sprint release status, we may reduce the number of releases to four. If that happens, the weight from sprint 4 (30%) will be redistributed to the SP1, 2, and 3 releases. For those teams that complete all five sprints will receive extra 10 bonus points.

- Students must pass both the sprint 4 (last sprint before the Showcase demo + reports completeness), and the participation (peer-peer) scores (> 50%) to pass the course. Failure to achieve that will result in a ‘F’ grade.
- Absent in sprint demo: not present in sprint demo 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 and other team members availability.

**Grading scale.**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100 -&gt; 89</td>
</tr>
<tr>
<td>A+</td>
<td>97%</td>
</tr>
<tr>
<td>A−</td>
<td>89 – 91%</td>
</tr>
<tr>
<td>B</td>
<td>88 -&gt; 76</td>
</tr>
<tr>
<td>B+</td>
<td>85–88%</td>
</tr>
<tr>
<td>B−</td>
<td>76–79%</td>
</tr>
<tr>
<td>B−+</td>
<td>80–84%</td>
</tr>
<tr>
<td>C</td>
<td>75 -&gt; 65</td>
</tr>
<tr>
<td>C+</td>
<td>71–75%</td>
</tr>
<tr>
<td>C−</td>
<td>67 –70 %</td>
</tr>
<tr>
<td>D</td>
<td>64 -&gt; 60</td>
</tr>
<tr>
<td>D+</td>
<td>62–64%</td>
</tr>
<tr>
<td>D−</td>
<td>60–62%</td>
</tr>
<tr>
<td>F</td>
<td>59 -&gt; 0</td>
</tr>
<tr>
<td>F ≤</td>
<td>59%</td>
</tr>
</tbody>
</table>

There are five (SCRUM/Sprint) releases in the form of live demonstration and sprint project reports (team + ICR). Each team member needs to include the participation score of their team members with their ICR report. Failure to do so will forfeit their participation marks from his/her team members.

The first and second releases focus on project selection, team formation, project problem statement, prototyping, development environment preparations as well as tutorials on frameworks and tools. The third and fourth releases focus on the project features sprint execution. The last sprint (fifth) focuses on final wrap-up and showcase preparation.

Each sprint project release deliverables consists of an Individual Contribution Report (ICR)(80%), 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 sprint 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 five team members with the ICR scores of (80, 75, 30, 90, 95) % (demo score is not included)

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

The sprint report 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

The total score for a sprint = (demo*0.2 + report*0.8)*0.9 + participation*0.1

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

Every team member needs to contribute to 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 need time and effort. This author will receive an additional 5% of the team report mark as a bonus. The team report authorship should rotate among the team members. However, it is up to the team to decide among themselves. Every team member shall do a final review to ensure their contributions are in the team report before submitting for grading. Within each ICR, every team member needs to perform a peer-to-peer evaluation of each other (individually) as shown in the following: (ICR without filling out the participation form will forfeit your participation score)

**Participation (10%)**: In a separate file with a template (excel spreadsheet), each team member needs to fill out the following table as a peer-to-peer evaluation (individually). Failure to do so will forfeit their participation marks from his/her team members

<table>
<thead>
<tr>
<th>Criteria (1 worst ... 5 best)</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Absent: not around (0 or 1) if 0 (absent), all the rest is 0.</td>
<td></td>
</tr>
<tr>
<td>2 Present but does not participate (1 don’t care — 5 fully engaged)</td>
<td></td>
</tr>
<tr>
<td>3 Comments are rude and destructive (1 rude... 5 nice)</td>
<td></td>
</tr>
<tr>
<td>4 Comments are not genuine, superficial, and do not advance the discussion (1 fake – 5 real)</td>
<td></td>
</tr>
<tr>
<td>5 Comments are appropriate, and move the discussion ahead constructively (1 -ve – 5 +ve)</td>
<td></td>
</tr>
<tr>
<td>6 Comments are timely, concise, considerate, and advancing the discussion (1 no – 5 yes)</td>
<td></td>
</tr>
<tr>
<td>7 If this person were not in this team, the quality of discussion would significantly diminish (Leadership) 1 not so — 5 for sure.</td>
<td></td>
</tr>
<tr>
<td>8 Consistently providing new ways to look at the material (informative) 1 mini – 5 maxi</td>
<td></td>
</tr>
<tr>
<td>9 Respecting and recognizing the dignity of others. (Respectful) 1 bad – 5 good</td>
<td></td>
</tr>
</tbody>
</table>

Maxi = 41 points
For item 1 (absent), if the team member is in/our of the meeting and absent > 25% of the time, his/her score is zero, all the rest of the participation entries are zero as well.

**Submission and late policy.** You need to submit project (team and ICR) reports on time into 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:** There are no exams for this class. All appeals to the sprint result marks, except to that of the final project sprint demo/report, must be registered with the instructor before the scheduled last project sprint demo date.

**Important Dates and Deadlines for Spring 2020**

**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 project, programming, reports 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 work, 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 project results (live demo and reports) 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/)