SWEN 670 9040 Software Engineering Capstone (2248)

SWEN-670

Fall 2024   Section 9040   3 Credits   08/14/2024 to 11/05/2024

👤 Faculty Contact

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🖥 Course Description

Prerequisite: 30 credits of program coursework, including all core courses. A comprehensive examination of the tools, skills, and techniques of software engineering and their application. Completion of a major team project is designed to integrate knowledge and skills gained through previous study and provide experience of the constraints commonly experienced in industry (scheduling, vagueness of clients). Project requires forming teams (organization) and scheduling work to meet the deadlines imposed by the contract (syllabus).

◎ Course Introduction

This course will focus on putting together everything that you have learned in your coursework at UMGC.

The last date to withdraw may be found online at: www.umgc.edu/withdrawals

📊 Course Outcomes

At the end of this course, students should be able to:

1. Be able to work in a team to develop software packages in any part of the software development lifecycle (SDLC)
2. Have a thorough understanding of each element of the SDLC
3. Be able to work in an asynchronous manner in a globally distributed team.
4. Be able to prepare and participate in asynchronous Project Reviews over the Internet

📗 Course Materials

[Click to access your course materials information (http://webapps.umgc.edu/grcmBook/BPage.cfm?C=SWEN%20670&S=9040&Sem=2248)](http://webapps.umgc.edu/grcmBook/BPage.cfm?C=SWEN%20670&S=9040&Sem=2248)

✳ Class Guidelines

Faculty Information

See the "Start Here" section located under the Content tab for information about the faculty member teaching this course.

Contacting your Faculty Member

See the "Start Here" section located under the Content tab for information about how to contact the faculty member teaching this course. You may also find this information under the Additional Course Information section of the syllabus.

Required Texts and Materials

Find this course in the Interactive Schedule of Classes to view the required and recommended course materials: http://webapps.umgc.edu/soc/us.cfm?fAcad=GRAD

The following texts and materials must be ordered by students and serve as a basis for graded assignments:

American Psychological Association. (2009). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Note: The first printing of the sixth edition of the *Publication Manual* contained errors; however, the APA fully corrected all errors in the **second printing**. In the textbook, the printing version is noted on the copyright page, opposite the Table of Contents. If it is a second printing, the second paragraph will read "Second printing: August 2009 (or more recent date)." If it is the first printing, that information will appear on the last line, near the bottom of the page.

✔ Grading Information

Grading Criteria

Assignment / Project Title	Individual or Team Activity	Assignment Frequency	Grading Scale	% of Overall Course Grade	Outcome(s) Addressed

Milestone 1 Group	Group	1	100%	15%	#1, 2, 3, 4
Milestone 1 Individual	Individual	1	100%	5%	#1, 2, 3, 4
Milestone 1 Peer	Individual	1	100%	5%	#1, 2, 3, 4
Milestone 2 Group	Group	1	100%	15%	#1, 2, 3, 4
Milestone 2 Individual	Individual	1	100%	5%	#1, 2, 3, 4
Milestone 2 Peer	Individual	1	100%	5%	#1, 2, 3, 4
Milestone 3 Group	Group	1	100%	15%	#1, 2, 3, 4
Milestone 3 Individual	Individual	1	100%	5%	#1, 2, 3, 4
Milestone 3 Peer	Individual	1	100%	5%	#1, 2, 3, 4
Milestone 4 Group	Group	1	100%	15%	#1, 2, 3, 4
Milestone 4 Individual	Individual	1	100%	5%	#1, 2, 3, 4
Milestone 4 Peer	Individual	1	100%	5%	#1, 2, 3, 4
Total				100%	

≔ Project Descriptions

Students will work in groups to develop a software application in a modern programming language for a specifically-identified client. The application must be complex enough to require serious thought yet feasibly be identified, designed, built and tested in one semester. In addition to delivering a working application, each team will deliver appropriate documentation throughout the SDLC. Deliverable dates are spaced throughout the semester to allow the stakeholders to measure the progress of each team towards their goal.

Milestone One - Project Initiation

In Milestone 1 you must include a Project Plan. This milestone may include other artifacts. The Project Plan must include what is to be delivered in the other 3 milestones.

For the first milestone, please submit:

- Project Plan
- Software Requirements Specification (SRS)

You will need to work with the client to gather requirements. Incorporate elements of PMBOK Project Plan into your Project Plan. The SRS should have all the elements that you studied in SWEN 645. All the requirements for the final deliverable should be clear to you by this time.

Milestone Two

Deliverables for this milestone should be defined in the Project Plan.

Please use Review | Track Changes feature of Word to make updates to the earlier submissions and submit them along with the following documents:

- Technical Design Document
- Software Test Plan

You should have explored all technical options, worked on prototypes to determine viability, and your proposed solutions should be clear to all, including the customer. There are multiple SWEN courses that you already took that will help you for this deliverable.

Checkpoint Meeting

There are no submissions for the checkpoint meeting. The checkpoint meeting is to asses the progress made, any course corrections needed, and any useful guidance. Please present your progress and a clear plan of how you are going to arrive at Milestone Three with a completed project. The core of your project should be completed by this time and you should have a working prototype for the core functionality.

Milestone Three

Deliverables for this milestone should be defined in the Project Plan.

Please use Review | Track Changes feature of Word to make updates to the earlier submissions and submit them along with the following documents:

- Programmer Guide
- Deployment and Operations Guide
- Software Test Plan

As you develop the software, you should also prepare a Programmer Guide to guide future programmers working on the software that you developed. The Deployment and Operations Guide should guide deployment of your software. There are multiple SWEN courses that you already took that will help you for this deliverable.

Milestone Four

Deliverables for this milestone should be defined in the Project Plan. This milestone must include the finished software.

Please use Review | Track Changes feature of Word to make updates to the earlier submissions and submit them along with the following documents:

- User Guide
- Test Report
- Programmer Guide

There are multiple SWEN courses that you already took that will help you for this deliverable. Please feel free to use prior courses notes and materials. You may also use online resources.

Presentation

Each team must make a presentation to the faculty member after each milestone. This presentation may include the customer. Teams may also have separate presentations for the customer.

Peer Evaluations

Peer evaluations are mandatory in this course and must be submitted at the end of each week. You may do so by filling out the form at: https://docs.google.com/forms/d/1JZ81vZ9CrkUkvUjI1CTtX8hs9vldINzCwvbBqdGEow8 (https://docs.google.com/forms/d/1JZ81vZ9CrkUkvUjI1CTtX8hs9vldINzCwvbBqdGEow8) . You do not have to submit the Peer Evaluations in LEO. Please give 85 to a team member if he or she did everything that was expected of him, 90 or more only if he or she did more than what was expected of him or her, a zero if he or she did not contribute anything to the project. This course is designed to fail the students that their peers give zeroes as peer evaluations without intervention from the instructor.

Student On-boarding

<u>Week 1 (Microsoft Teams & GitHub Orientation)</u>

- Check the UMGC course page like you do for any other course to start. You'll quickly find that this course will be conducted a bit differently than most courses – **all communication from here will be done within Microsoft Teams.**
- This Teams instance is a little different than your normal instance through your school account – make sure to check your account drop-down towards the right top of MS Teams and **switch to the "United Global Master Coders"** account to see the activity.
- Teams has several channels, a "General" channel for discussion that is relevant to everyone, and special channels per team (this may vary depending on student count).
- **It is strongly recommended that you check in to Teams often (a mobile application is available in addition to the desktop app), and to consider enabling notifications for the General channel and any others that will be relevant to you.** Communication and awareness are key.
    - You can do this in the menu per channel

<u>Week 1 Assignments</u>

Within Microsoft Teams, you will see (at least) three posts requesting your response:

- **Get access to GitHub:** each student should respond to the posted message in the MS Teams General channel requesting each student's GitHub account. If you don't already have a GitHub account, please create one as you'll need it to commit code and access the application.
- **Decide your Team**: each student should respond to the posted message(s) in the General channel about which team they would like to be on. Please share your relevant experience in the industry if you would like, as it's ideal that experience is balanced between the teams.
- **Volunteer to be a Team Lead**: You will also see a post in the General channel about volunteering to be a team lead. Please respond if you're interested in the position(s). If there are no volunteers by the end of week 1, they will be chosen by the professor.

<u>Week 2 and Beyond</u>

- Project manager(s) take it from here to further refine their team's organizational structure and methodology to complete the outlined course work. Feel free to utilize your own knowledge as well as that learned from the course to craft your management style and technology usage. All team members are strongly encouraged to voice their concerns, opinions, and knowledge to benefit the team.

🏛 Academic Policies

ACADEMIC INTEGRITY

University of Maryland Global Campus (UMGC) has adopted a [Philosophy of Academic Integrity (https://www.umgc.edu/current-students/learning-resources/academic-integrity/philosophy)](https://www.umgc.edu/current-students/learning-resources/academic-integrity/philosophy) to guide the university's commitment to a culture of academic integrity. Our approach cultivates socially responsible personal and professional behaviors and traits. All members of the University community must maintain the highest level of integrity across the academic experience.

Resources - UMGC provides an [Academic Integrity Tutorial (https://www.umgc.edu/current-students/learning-resources/academic-integrity/tutorial)](https://www.umgc.edu/current-students/learning-resources/academic-integrity/tutorial) and an Integrity & Ethics Badge as learning resources. These resources include information on the fundamentals of academic integrity and how to apply your own personal ethics to coursework as a UMGC student and in other settings. Other Academic Integrity resources and guidelines are found at [https://www.umgc.edu/current-students/learning-resources/academic-integrity (https://www.umgc.edu/current-students/learning-resources/academic-integrity)](https://www.umgc.edu/current-students/learning-resources/academic-integrity).

Role of Instructor - Your instructor is your primary resource for how to uphold the highest ethical standards in the context of the specific requirements for this course.

Student Responsibility – You are responsible for using UMGC-approved resources to understand key academic integrity concepts and to support your own academic success through practices that uphold values of integrity: honesty, trust, fairness, respect, responsibility, and courage.

Turnitin - Turnitin is enabled within the classroom to support the development and assessment of authentic student writing. To learn more about Turnitin, the feedback it provides, how to use that feedback to improve your work, and your options regarding the inclusion of your work in the Turnitin database, visit University guides for Turnitin at [https://libguides.umgc.edu/turnitin-faq (https://libguides.umgc.edu/turnitin-faq)](https://libguides.umgc.edu/turnitin-faq).

ARTIFICIAL INTELLIGENCE

In keeping with our mission to prepare learners for careers and life after college, UMGC embraces the importance of artificial intelligence (AI) as part of that future. The efficient, effective, and ethical use of artificial intelligence tools to assist learning can prepare you for your career, especially tasks involving the top abilities that employers are seeking: problem solving, creativity, critical thinking, collaboration, and analysis. But, while using AI in some stages of your assignments will help to prepare you for your job, your use must also reflect the ethical requirements of your chosen profession and UMGC's Academic Integrity policy.

Within the context of professional ethics and academic integrity, the University generally permits the use of Generative Artificial Intelligence (GenAI) tools, like ChatGPT, for tasks such as generating ideas, brainstorming, finding background information, clarifying research questions, and improving one's grasp of coding or math concepts. These and other uses of artificial intelligence (AI) tools are acceptable as long as they align with an assignment's requirements and its intended learning goals. In addition, any AI content a student submits as part of an assignment should include citation or other forms of attribution. To assist you, student resources on proper use and attribution of AI tools to support learning can be found on UMGC's Library Website at this link: [https://libguides.umgc.edu/artificial-intelligence (https://libguides.umgc.edu/artificial-intelligence)](https://libguides.umgc.edu/artificial-intelligence).

CLASSROOM CIVILITY

University of Maryland Global Campus is committed to the success of our global community and values the diverse identities and backgrounds of our students, faculty, and staff. Each one of us has a broader life and set of experiences beyond UMGC that we bring with us to each interaction. Sharing your story with your classmates provides opportunities to learn, relate, and gain inspiration from each other. Engagement often

begins with introductions at the beginning of the course. Sharing your preferred name, preferred pronouns, and other details about yourself and your life builds a foundation for connection, understanding, and a richer and more personalized learning experience.

We also recognize that some of life's responsibilities and challenges outside of the classroom, such as childcare, a change in employment status, or illness, have an impact on success in a course. To the extent you are comfortable, we encourage you to communicate with your faculty member or Success Coach about any concerns you have for this course or as a student at UMGC so we can help you navigate potential obstacles and stay on track to achieve your goals.

Students are expected to work together cooperatively, and treat fellow students and faculty with respect, showing professionalism and courtesy in all interactions. Please review the Code of Civility for more guidance on interacting in UMGC classrooms: [https://www.umgc.edu/current-students/student-life-and-support/student-handbook/civility-code (https://www.umgc.edu/current-students/student-life-and-support/student-handbook/civility-code)](https://www.umgc.edu/current-students/student-life-and-support/student-handbook/civility-code).

POLICIES AND GUIDELINES

UMGC is committed to creating a climate in which everyone can thrive. UMGC's [Non-Discrimination and Anti-Harassment Policy (https://www.umgc.edu/administration/policies-and-reporting/policies/administration-policies/non-discrimination-and-anti-harassment)](https://www.umgc.edu/administration/policies-and-reporting/policies/administration-policies/non-discrimination-and-anti-harassment) (Policy VI-1.00) and [Sexual Misconduct Policy (https://www.umgc.edu/administration/policies-and-reporting/policies/administration-policies/sexual-misconduct)](https://www.umgc.edu/administration/policies-and-reporting/policies/administration-policies/sexual-misconduct) (Policy 041.00) protect students, faculty, and staff.

Here you will find UMGC's [Non-Discrimination Statement (https://www.umgc.edu/terms-conditions/nondiscrimination-statement)](https://www.umgc.edu/terms-conditions/nondiscrimination-statement).

Students with disabilities who need accommodations in a course are encouraged to contact the Office of Accessibility Services (OAS) at [accessibilityservices@umgc.edu (mailto:accessibilityservices@umgc.edu)](mailto:accessibilityservices@umgc.edu), or call 240-684-2287.

The following academic policies and procedures apply to this course and your studies at UMGC.

150.25	**Academic Integrity Policy** (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/academic-integrity) The University expects all members of the university community—students, faculty, and staff—to use guidelines to work with and promote integrity. If you are aware of any academic misconduct, please contact integrity@umgc.edu. All cases of academic misconduct will be addressed in accordance with Policy 150.25 (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/academic-integrity) and associated procedures. You are expected to engage in new learning that furthers your development of knowledge, skills, and abilities in each course. According to this policy, you may not submit a substantial portion of any coursework that you have submitted to any course previously without express written approval through assignment guidelines or other forms of communication. You must use UMGC course materials responsibly. Uploading course materials to any website outside of UMGC's online classroom is prohibited by this policy.
V-1.03	**Code of Student Conduct** (https://www.umgc.edu/administration/policies-and-reporting/policies/student-affairs/code-of-student-conduct)
170.40 170.41 170.42	The following policies describe the requirements for the award of each degree: Degree Completion Requirements for Graduate Students (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/graduate-school-degree-completion-requirements) Degree Completion Requirements for a Bachelor's Degree (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/bachelors-degree-completion-requirements) Degree Completion Requirements for an Associate's Degree (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/associates-degree-completion-requirements)
V-1.30	**Student Reasonable Accommodation Policy** (https://www.umgc.edu/administration/policies-and-reporting/policies/student-affairs/reasonable-accommodations-students) - Students are responsible for self-identifying with Accessibility Services to inform the university about medical conditions and request academic accommodations.
170.71	**Policy on Grade of Incomplete** (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/grade-of-incomplete-policy) - Additionally, the mark of I depends on the following two criteria: Students who have completed 60% of their coursework with a grade of B or better for graduate courses or C or better for undergraduate courses and students who request an I before the end of the term. The mark of I is not available for noncredit courses.

170.72	Course Withdrawal Policy (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/course-withdrawal) - Students must follow drop and withdrawal procedures and deadlines available at https://www.umgc.edu/admission/academic-calendar (https://www.umgc.edu/admission/academic-calendar) under Academic Calendar.
130.80	Procedures for Review of Alleged Arbitrary and Capricious Grading (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/capricious-grading-review) – Appeals may be made on final course grades as described herein.
IV-3.20	Intellectual Property (https://www.umgc.edu/administration/policies-and-reporting/policies/research/intellectual-property) - All university faculty, staff, and students must comply with University guidelines on the use of copyrighted material. Uploading UMGC or faculty copyrighted material without authorization degrades and corrupts the integrity of the teaching and learning experience and is a potential violation of UMGC policy and copyright law. You must obtain permission to post UMGC or other's copyrighted material to third-party websites, including social learning network sites. UMGC reserves the right to take appropriate action to remove copyrighted material uploaded without authorization.
205.06	Calculation Of Grade-Point Average (GPA) for Inclusion on Transcripts and Transcript Requests (https://www.umgc.edu/administration/policies-and-reporting/policies/academic-affairs/grade-point-average-calculation-for-inclusion-on-transcripts-and-transcript-requests) - Note: Undergraduate and graduate courses have different Grading Policies. See the Grading Policies section of the Course Syllabus.
X-1.12	Acceptable Use (https://www.umgc.edu/administration/policies-and-reporting/policies/info-governance-security-technology/acceptable-use) - The security of the online classroom is critical to ensuring a strong culture of academic integrity and authentic education at the University. It is a violation of the University's policies for anyone to share logon, password, and any other secure information about a UMGC online account, including credentials required to access the online learning environment.

GRADING

According to UMGC's grading policy, the following marks are used:

	Undergraduate	Graduate
A	90-100%	90-100%
B	80-89%	80-89%
C	70-79%	70-79%*
D	60-69%	N/A**

F	59% or below	69% or below
FN	Failure-Non attendance	Failure-Non attendance
G	Grade Pending	Grade Pending
P	Passing	Passing
S	Satisfactory	Satisfactory
U	Unsatisfactory	Unsatisfactory
I	Incomplete	Incomplete
AU	Audit	Audit
W	Withdrew	Withdrew

* The grade of "B" represents the benchmark for graduate courses. Students must maintain a Grade Point Average (GPA) of 3.0 or higher. Classes where final grade of C or F places a student on Academic Probation must be repeated.

** UMGC does not award the grade of D in graduate courses.

GRADE ROUNDING

Scores to individual assignments are calculated based on rubrics in the class and are not rounded to the whole point. The final grade for the course is determined by weighted average and will be rounded to the nearest whole point using mathematical rule (grades with .5 and above to be rounded to the next whole point).

EXTRA CREDIT

Assignments are designed to enable students to achieve course objectives and succeed in the program. In the interest of equity and fairness, there will be no extra credit opportunities. All assignments are identified in the syllabus.

COURSE EVALUATION SURVEY

UMGC values its students' feedback. You will be asked to complete an online evaluation toward the end of the term. The primary purpose of this evaluation process is to assess the effectiveness of classroom instruction in order to provide the best learning experience possible and make continuous improvements to every class. Responses are kept confidential. Please take full advantage of this opportunity to provide your feedback.

LIBRARY SUPPORT

Extensive library resources and services are available online, 24 hours a day, seven days a week at https://libguides.umgc.edu/home (https://libguides.umgc.edu/home) to support you in your studies. The UMGC Library provides research assistance in creating search strategies, selecting relevant databases, and evaluating and citing resources in a variety of formats via its Ask a Librarian service.

EXTERNAL LINK DISCLAIMER

This course may contain links to external sites neither owned nor maintained by UMGC. UMGC bears no responsibility for the accuracy, legality, or content of external sites or for that of subsequent links. In addition, the terms of use, security policies, and privacy policies may differ from those of UMGC. Contact the external site for answers to questions regarding its content, terms of use, and policies.

LEARNING MANAGEMENT SYSTEM SUPPORT

Those requiring technical assistance can access Help@UMGC Support directly in LEO under the Help menu. Additional technical support is available 24 hours a day, seven days a week via self-help and live chat at https://www.umgc.edu/help (https://www.umgc.edu/help) or by phone toll-free at 888-360-8682.

SYLLABUS CHANGES

All items on this syllabus are subject to change at the discretion of the Instructor and the Office of Academic Affairs.

📅 Class & Assignment Schedule

Milestone	Readings/Assignments	Due Date
1	Milestone 1	Aug 31
2	Milestone 2	Sep 14
3	Milestone 3	Oct 26
4	Milestone 4	Nov 5