Course Syllabus

CS 410 - 01 An Introduction to Software Engineering
Semester: Fall 2019
Lectures: Tuesdays and Thursdays 12:30pm – 1:45pm
Location: McCormack M01-0209

This course covers all aspects of the software development process from initial specification to final validation of completed software design. Implementation methodologies are discussed in the context of a major team project, to be chosen according to student and instructor interest. Oral presentations by students are an important part of the course. In addition, students will be introduced to the C++ programming language.

Instructor

Please contact the instructor if you have any questions or concerns regarding the course.

Kenneth K. Fletcher
Office: Science Center
3rd Floor, Room 75
Hours: Tuesdays (2:00pm – 4:00pm) & Thursdays (2:00pm – 3:00pm) or by appointment.
Email: kenneth.fletcher@umb.edu
Hangouts: kkfletch
Web: www.cs.umb.edu/~kkfletch/

Teaching Assistants

Please contact the teaching assistants if you have any questions or concerns about homeworks and grading.

Richard Anarfi and Benjamin Kwapong
Office: Science Center
1st Floor, Room 64
Email: Richard.Anarfi001@umb.edu and Benjamin.Kwapong001@umb.edu

Course Materials

There are no required books for this class.

Course Announcements

Announcements for this course will be posted on blackboard at: https://umb.umassonline.net/

Learning Outcomes

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

- Program in C++ programming language and use the C++ Standard Template Library (STL)
- Use Lambdas and Functors
- Work together in a team to have productive interactions with clients.
- Communicate effectively with other team members and clients to accomplish project outcomes.
- Perform software requirements elicitation and analysis.
- Use a software code management system to collaboratively implement a relatively large software project.
- Produce professional-quality code following some coding standard.
- Test and document a relatively large software.

Assessment of these outcomes will be done by a combination of homeworks, exam, project meetings, code review and document reviews.

Course Requirements

This class is like a part-time job! ☺ Students will be expected to spend a minimum of 10 to 15 hours per week outside of class.

Projects

This course involves working and managing a relatively large software development project. Students will work in teams and each team will be assigned a real-world project, typically from an industrial client, based on their preferences. A list of all available projects and descriptions will be made available on blackboard (https://umb.umassonline.net/) for students to choose. Students are expected to apply the software development lifecycle to realize the outcomes the project. Emphasis is placed on the quality of software artifacts produced at the end of each milestone and the overall client satisfaction of the project.

Exams

There will be **two** exams for this course.

Grade Breakdown

The final grade for this course will be based on homeworks, exams, software artifacts produced and submitted by each team, customer satisfaction, student participation in team and final project presentation. The specific breakdown is as follows:

Item	% of Total Score
Homeworks	**20**
Exams	**40**
Artifacts	**30**
Requirement document	5
Design document	5
Code	12
Test cases	5
Project documentation	3
Customer Satisfaction	**5**
Member Participation	**3**
Final Project Demo	**2**
Total	**100**

Letter Grades

Letter grades will be assigned according to the following scale:

A	≥	94%
A–	≥	90%
B+	≥	87%
B	≥	84%
B–	≥	80%
C+	≥	77%

C	≥	74%
C–	≥	70%
D+	≥	67%
D	≥	64%
D–	≥	60%
F	<	60%

Attendance Policy

Attendance for this class is **mandatory.** If for any reason, you will have to miss class, you need to let me know in advance.

Late Policy

All deadlines for submitting homeworks and software artifacts are **firm**. No late submissions will be accepted. Exceptions to this policy are made only in the case of verifiable medical or family emergency.

Class Schedule

Week	Session Date	Topics	Note
Week 1	Tuesday 9/3	Syllabus review/ Software Development Process	
	Thursday 9/5	Feasibility Studies/ Source Code Management	
Week 2	Tuesday 9/10	People/ Requirements I	Projects Available;
	Thursday 9/12	C++: Basics /STL / Control Structures	
Week 3	Tuesday 9/17	Requirements II	
	Thursday 9/19	C++: Functions / Lambdas* / Functors	
Week 4	Tuesday 9/24	Design I	
	Thursday 9/26	C++: Separate Files / Structs / Arrays	Homework 1;
Week 5	Tuesday 10/1	Design II	
	Thursday 10/3	C++: Vectors/ Lists/ Deque/ Forward List*	Homework 1 due
Week 6	Tuesday 10/8	C++: Exam 1	
	Thursday 10/10	C++: Iterators/ Queues/ Priority queues/ Stacks	
Week 7	Tuesday 10/15	Reliability and Performance I	
	Thursday 10/17	C++: Associative Containers	Homework 2
Week 8	Tuesday 10/22	Reliability and Performance II	
	Thursday 10/24	File I/O	
Week 9	Tuesday 10/29	C++: Classes and OOP I	
	Thursday 10/31	C++: Classes and OOP II	Homework 2 due Homework 3
Week 10	Tuesday 11/5		
	Thursday 11/7	C++: Exam 2	
Week 11	Tuesday 11/12	Project Status Meeting	
	Thursday 11/14	Guest Lecture	
Week 12	Tuesday 11/19	Project Status Meeting	
	Thursday 11/21	Guest Lecture	
Week 13	Tuesday 11/26	Project Status Meeting	
	Thursday 11/28	No Class – Thanksgiving	
Week 14	Tuesday 12/3	Project Presentations	
	Thursday 12/5	Project Presentations	
Week 15	Tuesday 12/10	Project Presentations	
	Thursday 12/12	Project Presentations	

*C++ 11 Features

Milestones, Deliverables and Deadlines

Milestone	Description	Deliverable	Due Date
Project Scope Meeting	Meeting between students and organization to confirm: project scope, communication styles, and important dates.	None	September 17, 2019
Requirements Review Meeting	Meeting between students and organization to finalize all requirements gathered. Copies of the finalized requirements document are due to the organization and instructor on this date.	Requirement Document	October 15, 2019 (2 weeks)
Software Design Review	Students finalize design document by inspecting design that aims to check whether the specified design requirements are adequate and the design meets all the specified requirements. Copies of the design document must be submitted to the organization and instructor by this date.	Design Document	October 22, 2019 (1 weeks)
Final Software Demo	Students complete software implementation. Software testing must be complete by this date and a final software demo must be presented to the organization. A copy of test case document must be submitted to the instructor.	Code & Test Case document	December 3, 2019 (6 weeks)
Final Documentation	Copies of software documentation due to the organization and instructor by this date.	Software documentation	December 10, 2019 (1 week)
Close-off Meeting	Meeting between students and organization to establish a formal project closure of the project and that the project is officially over. Students will also get the final acceptance from the organization.	None	December 24, 2019

Student Disability Services

Section 504 of the American with Disabilities Act of 1990 offer guidelines for curriculum modifications and adaptations for students with documented disabilities. If applicable, you may obtain adaptation recommendations from the UMass Boston Ross Center. For more information, please visit https://www.umb.edu/academics/vpass/disability or call 617-287-7430. You need to present and discuss these recommendations with the instructor within a reasonable period, prior to the end of the Drop/Add period.

Academic Honesty

Students are required to adhere to the Code of Student Conduct, including requirements for the Academic Honesty Policy, delineated in the University of Massachusetts Boston Undergraduate Program Catalog (https://www.umb.edu/life_on_campus/policies/community/code).