CSCI 420: Software Engineering UPDATED

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E-mail: william.killian@millersville.edu	**Lecture Hours:**
Web: cs.millersville.edu/~wkillian/2020/spring/csci476	M F 2:00PM – 3:00PM
	Lab Hours:
Lecture Zoom: 113-738-094	T 1:00PM – 3:00PM
Lab: Via Discord	**Office Hours:**
Office Zoom: 518-579-808	M W F 10:00AM – 12:00PM

Course Description

Overview of software engineering concentrating on phases of the software development life cycle including models, agile software development processes, project management, stories and features, specifications, architecture design (APIs, scalability, microservices), specification-based testing, coverage-based testing, and formal verification. Software management topics covered include source control, issue tracking, continuous integration, test automation, quality assurance, and code reviews. Team project provides students with practical experience applying techniques. Offered every semester.

Prerequisite(s): Grade of C- or better in both CSCI 330 and CSCI 362

Course Outcomes

At the end of this course, a successful student will

1. Develop experience in working (in various roles) as a member of a software development team.

2. Present technical material to a group

3. Create precise and informative documents related to software development.

4. Differentiate between various processes of software development

5. Apply design patterns to various components of a software project.

6. Compare several approaches to software design (data flow, data structure, object oriented).

7. Apply various testing strategies and evaluate their effectiveness.

8. Recognize the importance of quality assurance and reliability of software systems.

9. Understand professional responsibilities and the software engineering code of ethics.

10. Analyze a situation using the SE software engineering code of ethics (disseminated through a paper)

Textbook

There is no required textbook for this course, however *Debugging Teams* by Fitzpatrick and Collins-Sussman will have required readings (ISBN: 978-1491932056)

Course Policies

Responses

I will respond to emails within 24 hours unless an exception is noted through email, D2L, or in class. Please note that this means if you email me the night before an exam or assignment submission, I am not guaranteed to respond. Start labs when they are assigned.

Announcements

I will frequently post announcements through email and new/additional material on the course website. Under inclement weather, due dates may be pushed back or changed at my discretion, so please pay attention to all announcements.

D2L (Desire2Learn)

Link to D2L I will primarily use D2L as the grade portal for classes. The submission portion may also be leveraged for homework assignments. Lecture material and notes are accessible through the course website (found on my homepage).

Office Hours

I hold office hours for your benefit. Please do not hesitate to show up to office hours! If you find that my office hours do not fit your schedule, let me know so we can arrange for a time that does work.

My Expectations of Students

- Arrive prepared and on time for class

- Engage in active discussion during lecture

- Ask questions. Do not hesitate to clarify a concept

- Do your best work and be confident in your abilities

- Check email frequently for announcements and additional information

- Adhere to Millersville University's Academic Honesty Guidelines

Lecture

Attendance of the lecture is strongly recommended. I encourage everyone to make an active attempt toward participating. There are times where many examples throughout the lecture are better suited to be done with pen and paper. Please refrain from using your computer for any other reason than note-taking for the class. I also do not expect to see any mobile phones in use during class. I will ask you to leave my class if I observe misuse of technology. **Missing class periods prior to Spring Break can result in a 2% grade reduction per occurrence**

Laboratory

Attendance of any laboratory component is also mandatory. You are expected to be working with your team. **Missing lab periods will result in a 2% grade reduction per occurrence**

Grading Policy

- **30%** of your grade will be determined by four quizzes (7.5% each)

- **65%** of your grade will be determined by a semester-long group project

- **5%** of your grade will be determined by a ethics paper

I will grade on a ten-point grading scale. I will **NOT** round any grades. An 89.51 will be classified as a B+

≥ 93	≥ 90	≥ 87	≥ 83	≥ 80	≥ 77	≥ 73	≥ 70	≥ 67	≥ 63	≥ 60	< 60
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

YOU **MUST ATTEMPT** ALL EXAMS, HOMEWORKS, AND ASSIGNMENTS TO PASS THE COURSE.
YOU **MUST** HAVE A PASSING GRADE (≥ 60%) ON THE PROJECT TO PASS THE COURSE.
YOU **MUST** HAVE A PASSING GRADE AVERAGE (≥ 60%) ON THE EXAMS AND QUIZZES TO PASS THE COURSE.

Project

Software Engineering is a capstone course — some of you are preparing to graduate while others may be in their sophomore year. Use this course as an opportunity to take what you have learned in other courses and apply it here! You will be working in a group with 4-6 members throughout the semester. You will be tasked with creating a *graphical*, *interactive* application that will act as a testbed for concepts we will be covering throughout the semester. Your grade will be weighted by anonymous peer review and based on your individual and group performance. **I will not be grading based on comparing one group's work to another group's**

Homeworks

Homework assignments will be submitted digitally through D2L. **No late submissions will be permitted with homework assignments**. All homeworks will have a grading turnaround time of one (1) week from the due date. Homework grades may only be contested for up to one week from when the grade is posted on Desire2Learn.

Paper

You will be tasked with writing a short paper (approximately two pages) related to the ethics of software engineering. This will most likely be 5% of your overall grade.

Exams

Exams will be graded by the next class (e.g. Tuesday-Thursday class with a test on Thursday will have the tests returned the immediately following Tuesday. Monday-Wednesday-Friday class with a test on Friday will have the tests returned the immediately following Monday). **You do not get to keep your exams.** Failure to return an exam will result in an updated grade of zero (0). I will hand them out in class and go over any answers, but I will collect them during the class period.

University Policies

Academic Dishonesty Policy

Copying or extensive collaboration on assignments is not permitted and may result in failure of the course and expulsion from the University. You may discuss approaches to solving a problem, as long as the discussion remains above the level of detail expected for the course. You may also seek aid in resolving compiler messages. However, if you copy a code fragment verbatim, you are likely committing academic dishonesty. If you copy a code fragment and rename variables, you are likely committing academic dishonesty. *Obtaining a solution on the Internet or elsewhere and submitting it as your own work is plagiarism and will result in severe disciplinary measures.* Be sure you can explain every line of every program you submit. **Writing code is no different than writing a paper — if it was not your original idea, then you should not submit it as your own work.**

Title IX

Millersville University and its faculty are committed to assuring a safe and productive educational environment for all students. In order to meet this commitment, comply with Title IX of the Education Amendments of 1972, 20 U.S.C. §1681, et seq., and act in accordance with guidance from the Office for Civil Rights, the University requires faculty members to report to the University's Title IX Coordinator incidents of sexual violence shared by students. The only exceptions to the faculty member's reporting obligation are when incidents of sexual violence are communicated by a student during a classroom discussion, in a writing assignment for a class, or as part of a University-approved research project. Faculty members are obligated to report to the person designated in the University Protection of Minors policy incidents of sexual violence or any other abuse of a student who was, or is, a child (a person under 18 years of age) when the abuse allegedly occurred.

Information regarding the reporting of sexual violence, and the resources that are available to victims of sexual violence, is available at http://www.millersville.edu/sexualviolence/index.php

Counseling Resources

Students sometimes face mental health or drug/alcohol challenges in their academic careers that interfere with their academic performance and goals. Millersville University is a caring community and resources are available to assist students who are dealing with problems. The Counseling Center (717-871-7821) is an important resource for both mental health and substance abuse issues. Additional resources include: Health Services (871-5250), Center for Health Education & Promotion (871- 4141), Campus Ministries, and Learning Services (717-871-5554).

My Teaching Philosophy

First and foremost, as an educator, my primary role is to support students' well-being. This includes but is not limited to: physical, mental, and emotional health. I am here to help develop students into outstanding individuals. From the academic side, I will teach key concepts related to the computer science curriculum. From the advisement side, I will support students to achieve personal success.

Teaching Methods

I will challenge students to do the absolute best work they are able to do, even if they may not have the confidence in their own abilities. I am a proponent of providing captivating lectures through consistent interaction with students and building up lectures as miniature case studies. This methodology molds well to the computer science curriculum since problem solving is a core component of the foundations of computer science.

Practical Skills

In addition to the required course materials covered, I will also cover other practical industry skills. Knowing the theory of computer science is important, but knowing how to leverage that knowledge in industry, academia, or a business setting is also just as crucial. Through the incorporation of real-life application to my lectures, it is my goal that students feel more empowered and ready for any post-graduate position they may pursue.

Self Determinism

I believe that everyone is capable of achieving greatness. Some concepts will be harder to grasp than others, but I will do my best to engage your mind. I also believe in self mastery. Self mastery does not mean that you will be an expert at everything you do. Instead, self mastery focuses on understanding yourself, specifically your thought process, learning process, and how you react to external events. You should know your strengths and your weaknesses — embrace your strengths and improve upon your weaknesses. Everyone learns in different ways. Even if you may not enjoy the material covered in my lectures, I will do my best to help expand and explore your self-awareness.

Work-Life Balance

I know the majority of students are commuting and work part time jobs. When I was a student (here, at Millersville), I also fit into this category. I understand that you wear many hats in your day-to-day life, but I also expect that you will be able to establish a good school-work-life balance. This can be a bit tricky in the beginnings of your college career, but I believe in you! If you want any examples of what to do (and not to do) I can speak from my own experiences — in no way was I an ideal student.