Syllabus: Software Testing and Quality Assurance

I. Course

       Course Name: Software Testing & Quality Assurance
       Course/Sections: SE4930 (Lecture)

II. Teaching Staff

Instructor	
Name	Yu Zhao
E-mail	yzhao@ucmo.edu
Office	WCM 223
Phone	660-543-4449
Office Hours	Tuesday, Thursday: 9:30am~12:00 am
	Zoom Meeting ID: 4273609916
	https://ucmo.zoom.us/j/4273609916

III. Textbook

1. Introduction to Software Testing 2nd edition, Paul Ammann and Jeff Offutt, Cambridge University Press.
2. Prerequisite(s): CS 2300 : Data Structures

IV. Topics to be covered

Part I: Testing Fundamentals
    1. Introduction
      a. Basic Concepts and Preliminaries
      b. Software Testing Limitations and Terminology
      c. Coverage Criteria for Testing
      d. Testing Levels Based on Software Activity
    2. Testing Techniques
      a. General Testing Techniques
      b. Functional Testing Techniques
      c. Non-Functional Testing Techniques
    3. Testing tool practice: Selenium

Part II: Criteria-Based Test Design
    1. Graph Coverage
      a. Graph Coverage for Source Code
      b. Graph Coverage for Design Elements
      c. Graph Coverage for Specifications

2. Logic Coverage
    a. Logic Expression Coverage Criteria
    b. Disjunctive Normal Form Criteria
3. Input Space Partitioning
4. Syntax-Based Testing
5. Testing tool practice: Junit Testing and Mockito

Part III: The Traditional Testing process
1. Unit Testing, Integration Testing, System Testing, and System Integration Testing
2. Agile Testing
3. Testing practice: TDD

V. Evaluation

1. Undergraduate

Class participation	10%	A	90.0 or above
Homeworks	30%	C	70.0 – 79.99
Midterm Exam	30%	D	60.0 – 69.99
Final Exam	30%	F	Below 60.0

2. Graduate

Class participation	10%	A	90.0 or above
Homeworks	30%	C	70.0 – 79.99
Midterm Exam	30%	D	60.0 – 69.99
Final Exam	30%	F	Below 60.0

    If a student can answer some challenging questions or have inspired ideas in class, this student may get bonus credits for class participation.

VI. Policies:

Exams: Generally, makeup exams will not be allowed unless the student has made arrangements with the instructor before the original exam was missed.
Assignments: 10% points off, if submitted within 24 hours after the due date; 25% off, if submitted up to one week after the due date; no credit if submitted more than one week after the due date unless prior arrangements are made with the instructor with acceptable reasons.
Electronic Devices: Electronic devices may be used in the classroom for class purposes, however, to maintain a professional atmosphere, please do not use them for outside purposes which may distract other students.
Attendance: Students are expected to attend class, arrive to class on time, and stay for the duration of the class. Additionally, students are expected to be attentive and abstain from unrelated activities during the class time.

Academic Honesty: All in-class and out-of-class assignments must be the student's own work. Plagiarism will not be tolerated. Plagiarism consists of using another person's words, thoughts, or ideas as one's own. If you have any questions about this very serious issue, please ask me. Additionally, I follow the Academic Honesty policy as set forth in the UCM *Student Planner-Handbook* (pp.172-73). A student who plagiarizes will receive a failing grade on the assignment and may not receive credit for the course.

Bonus Questions: You may have opportunities to earn extra credits by answering some bonus questions in the class.

Accessibility Services: Students with disabilities who are seeking accommodation should contact the Office of Accessibility Services at Union 222, 660-543-4421. If you want to share information about your needs that I should be aware of, such as emergency medical information or special arrangements for field trips or internships, please see me privately after class or during office hours.

Sexual Discrimination and Sexual Misconduct Statement: The University of Central Missouri seeks to foster a safe and healthy environment built on mutual respect and trust. Sex discrimination, including sexual harassment, sexual violence, and other forms of sexual misconduct will not be tolerated. All faculty and most staff are considered mandated reports by the University and must disclose all information they receive about sexual misconduct to the Title IX Coordinator. As a faculty or staff member of the University, I am a mandated reporter. This means I am required to report information shared with me regarding sex discrimination and sexual misconduct. If you, or someone you know, has experienced sex discrimination or sexual misconduct, please know assistance and options are available. UCM strongly encourages all members of the community to seek support and report incidents of this nature to the Title IX Coordinator. Anyone who wishes to report sexual misconduct, to learn more about the University process and options available, or to utilize a confidential resource, please visit ucmo.edu/titleix.

Diversity, Equity, and Inclusion: The University of Central Missouri strives to develop a campus environment that welcomes and recognizes all dimensions of diversity and inclusiveness. What this means is that all students are welcomed in the classroom, and differences are to be recognized rather than erased or denied. Dimension of diversity can include sex, race, age, national origin, ethnicity, gender identity and expression, intellectual and physical ability, sexuality, income, faith, and non-faith perspectives, socio-economic class, primary language, family status, military experience, and more. Inclusive learning is facilitated by creative and innovative thought and mutual respect; being in this classroom means that you, your faculty member, and your peers pledge to foster a welcoming and equitable environment for all.

VII. Communication and Getting Help

1. Office Hours
   Prefer on zoom.

VIII. Student with Disabilities

1. Students with documented disabilities who are seeking academic accommodations should contact the Office of Accessibility Services, Union 220 (Voice and TTY) 660-543-4421.

IX. Library

1. You may access your library account, the online catalog, and electronic databases from James C. Kirkpatrick Library's website at http://library.ucmo.edu.For research assistance you may contact the Reference Desk: Phone: 543-4154. Email: reference@libserv.ucmo.edu

X. The Writing Center

1. Students who need to sharpen their writing skills can visit the writing center located in the Learning Center, JCKL 3160. No appointment is necessary.

XI. Student Learning Outcomes
    Software Engineering:

SE SO2 - an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

SE SO4 - an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

SE SO6 - an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

SE SO7 - an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.