AMERICAN UNIVERSITY OF IRAQ
SULAIMANI

# SE455 – Software Testing
# Major program – Software Engineering

**Course Information**

*Lecture Meeting Days and Times:* Sunday, Tuesday and Thursday (11.45-12.45 pm)

*Room location (if not online):* B-B1-01

*URL of Course Website:* https://lms.auis.edu.krd/course/view.php?id=1196

*Credits and Contact Hours:* 3 Credits

*Prerequisites:* SE301 – Software Engineering Principles

*Co-requisites:* ITE303 – Introduction to Programming

**Instructor Details**


*Name:* Dr. Hoger Mahmud

*Office:* Building B- Ground Floor- Room 01

*Ext:* 1961

*Email:* hoger.mahmud@auis.edu.krd


*Office Hours:* Sunday, Tuesday and Thursday (10:30 - 11.30 am)

*Communications:*

- All class materials will be available on Moodle at least 12 hours before the class time
- Your emails and queries will be answered within 24 hours
- All quizzes, homework and other short assignments will be marked within 3 working days.
- All projects and long assignments will be marked within a week.
- If you need anything please email rather than phone call.

**Course Catalogue Description**

This course exposes students to the fundamental principles and processes of software testing. The aim is to increase the student's productivity as software engineers, and improve the reliability of the code they produce. The course starts by introducing how to examine testability of system requirements. The course then concentrates on code testability, which is essential to ensure automated regression testing. Students will actively learn a variety of strategies to systematically find software bugs and defects. The most recently developed techniques for automated testing, static analysis and passive monitoring are thoroughly covered in this course.

**Course Delivery: Teaching/Learning Approaches**

Teaching methods include lectures, videos, discussions, lab exercises and assignments.

**Class Meetings:** Important material from the text and outside sources will be covered during our regularly scheduled class meetings. Regular attendance is critical, and students should take careful notes. Discussions encouraged, as is student-procured outside material relevant to topics being covered. Bring your notebook, textbook, and other required materials to every class meeting. The instructor will strictly adhere to AUI-S's policy on attendance.

**Homework and Other Assignments:** Exercises and other activities will be assigned on a regular basis. Additional homework may be assigned based on the content of the class lecture. These will only be given at the discretion of the instructor to help clarify any weak points arising

from chapter materials. In-class work may consist of worksheets and lab exercises. A selected number of labs and worksheets will be used for evaluation towards the overall assessment.

**Quizzes**: Scheduled and/or **unscheduled,** in-class and online quizzes will be given to help ensure students stay up with reading assignments and come to class on a regular basis. ***There will be no make-up quizzes***. These tests will be assessed and graded. They will form part of the overall assessment.

**Exams:** Written exams and a comprehensive written final are given. The exams are designed to test students' comprehension of material in the reading assignments, as well as any additional material discussed in class. ***There will be no make-up exams except under rare circumstances. Decisions regarding make-up exams will be judged on a case-by-case basis.***

**Internet:** Some assignments for this course will require the use of the Internet. Internet work can be completed on campus or at home, if you have a home Internet Connection.

**Grading:** Letter grades will be determined based on the percentage of possible points earned during the semester, as outlined below.

**Special Arrangements for Fall 2024**

Lectures in this course are delivered using multiple methods as per the contents of each lecture material, including but not limited to PowerPoint slides, software demonstrations, lab works, online videos, and discussions.

The main exchange platform for the materials with students is Moodle. The course profile on Moodle can be accessed from the URL shared in Section 1 above. Various resources will be shared on the course's Moodle page including important and continuous updates. For example, PDF files of the PowerPoint slides, links to the lecture videos that will be shared via YouTube, as well as links to live Zoom sessions and office hours.

Students are required to check Moodle for continuous updates, notifications, plans, and expectations ***without receiving further notifications from the professor via email***, for example. Any information posted on Moodle is the responsibility and obligation of the students to check, understand, and follow.

***Note: The syllabus is designed for in class teaching. If this arrangement changes for whatever reason, the syllabus will be adapted accordingly.***

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**Textbook(s) and other required material**

**Primary Textbook 1**

Title: Software Testing concepts and Operation
Author: Ali Mili, Fairouz Tchier

ISBN: 978-1-4737-6479-8

Publisher: John Wiley

**Primary Textbook 2**

Title: Software Testing and Analysis: Process, Principles, and Techniques
Author: Mauro Pezz `e and Michal Young
ISBN: ISBN-13 978-0-471-45593-6
Publisher: Wiley

**Additional References:**

Title: Introduction to Software Testing, 2nd Edition
Author: Paul Ammann, Jeff Offutt.

ISBN: 978-1-107-17201-2 Hardback

Publisher: Cambridge University

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**Topics Covered**

- Introduction to software testing
- Software Quality
- Software testing fundamentals
- Test Documentation
- Software testing lifecycle
- Test planning and monitoring
- Software testing methodologies and techniques
- Test deployment and Analysis techniques
- Integration and Component-based Software Testing
- System, Acceptance, and Regression Testing
- Test Automation and tools

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**Program Learning Outcomes:**
***After completing this program*:**

**PLO 1**: Students will be able to apply appropriate foundational-level theories, models, and techniques to identify problems, analyze requirements, design solutions, and develop software systems.

**PLO 2**: Students will be able to design appropriate solutions for various application domains by employing software engineering methodologies that seamlessly incorporate ethical, legal, and economic considerations.

**PLO 3**: Students will develop project management competency and apply it to manage complex tasks resourcefully and work effectively individually and, in a team, to deliver quality software artifacts.

**PLO 4**: Students will be able to design, coordinate and work under software quality assurance plans with the aim to achieve predetermined software standards and qualities such as dependability, integrability, reusability, modifiability, and testability.

**PLO 5**: Students will be able to apply the current techniques, skills, and tools that are necessary to support best computing practices within the IT Industry.

**PLO 6**: Students will be able to identify and recognize user needs throughout the process of selecting, creating, evaluating, and administering computer-based systems.

**PLO7:** Students will be able to demonstrate an understanding of the importance of negotiation, effective work habits, leadership, and good communication with stakeholders in a typical software development environment.

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| **Course Learning Outcomes**<br>***After completing this course, the student will be able to:*** | **SE PLO** | **Emphasis: H/ M/ L** |
|---|---|---|
| **CLO1.** Determine testability of system requirements and use appropriate software verification and validation strategies | **1, 5** | **H,L** |

| | | |
|---|---|---|
| **CLO 1** | *Assessment Venue(s)* | |
| 1.1. The student is able to verify and validate software requirements using techniques such as requirement reviews. | - Quiz<br>- Lab works<br>- Assignment 1<br>- Midterm Exam 1<br>- Final Exam | |
| **CLO2.** Apply different testing techniques, such as unit testing, white/black box testing, mutation testing, regression testing, and integration testing. | **1, 5** | **H, L** |
| **CLO 2** | *Assessment Venue(s)* | |
| 2.1The student performs different testing techniques on a given software product and to document the testing results. | - Quiz<br>- Lab work<br>- Assignment 2<br>- Midterm Exam 2<br>- Final Exam | |
| **CLO3.** Recognize poor test coverage and measure test adequacy. | **4, 5** | **H, H** |
| **CLO3** | *Assessment Venue(s)* | |
| 3.1 The student is able to analyze an auto test coverage and decide on the coverage quality. | - Quiz<br>- lab work<br>- Assignment 1<br>- Midterm Exam 2<br>- Final Exam | |
| **CLO4.** Use static analysis tools to enforce coding standards and identify code anomalies and defects. | **4, 5** | **H, M** |
| **CLO4** | *Assessment Venue(s)* | |
| 4.1 The student is able to develop static testing models such as graphs for a given piece of code and is able to identify code defects and anomalies. | - Quiz<br>- Lab work<br>- Assignment 1<br>- Midterm Exam 1<br>- Final Exam | |
| **CLO5.** Perform root cause analysis by injecting defects into a software system. | **4, 5** | **M, L** |
| **CLO 5** | *Assessment Venue(s)* | |
| 5.1 The student is able to perform root cause analysis on a given piece of code after the code is being modified by defect injection. | - Quiz<br>- Lab work<br>- Assignment 2<br>- Midterm Exam 2<br>- Final Exam | |
| **CLO6.** Automate software testing and set a strategy for passive testing analysis. | **1, 4, 5** | **L,H, M** |
| **CLO 6** | *Assessment Venue(s)* | |
| 5.1 The student is able to identify and use the right auto testing tool and use it successfully to carryout auto testing. | - Quiz<br>- Lab work<br>- Assignment 2<br>- Midterm Exam 2<br>- Final Exam | |
| | | |
| **Graded Work** | | |
| The purpose of the below assessments is to provide you, the learner, with feedback regarding your level of knowledge, skills and competencies related to the above Course Learning Outcomes. Your performance on these items is also used to determine your overall final grade for the course. | | |

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| Assessment Component | Course Learning Outcome(s) | Weight | Due Date |
|---|---|---|---|
| Quiz and Lab Activities | CLO 1,2,3,4,5,6 | 15 % | During class times |
| Assignment 1 | CLO 1,3,4 | 20% | 02/11/2024 (Saturday) |
| Assignment 2 | CLO 2,3,5,6 | 20% | 10/12/2024 (Tuesday) |
| Midterm Exams 1 | CLO 1,3,4 | 10% | 24/10/2024 (Thursday) |
| Midterm Exams 2 | CLO 2,3,5,6 | 10% | 24/11/2024 (Sunday) |
| Final Exam | CLO 1,2,3,4,5,6 | 25% | TBD |
| **Total** | | **100 %** | |

**Description of major assessments:**
Below is a short description of each the assessment components:

1- **Quizzes and lab work:** At the beginning of each week students may be quizzed on the materials covered in the week before. The quizzes will not be announced in advance, students should be ready to be quizzed. Quizzes could be in a form of writing or it could be oral. Students will have one hour lab work each week, selected completed lab works could be collected for grading purpose.

2- **Assignment 1 and 2:** The assignments are expected to be done in groups (we will decide later on the number of students in a group); the assignments are one package but completed in two parts. The assignments are designed with the aim to take students through a number of essential testing stages and activities and teach students practically how to start and end testing a software product. More details on each assignment will be given to students later in the course and assessment rubrics will be made available for each assignment.

3- **Midterm and final exams**. Exams will cover materials provided throughout the course with the aim to assess students understanding of testing concepts, test analysis and development processes and test documentations.

## Grading Scale

| | | | |
|---|---|---|---|
| A | (4.0) | 93 - 100 | Superior |
| A- | (3.7) | 90 - 92 | |
| B+ | (3.3) | 87 - 89 | Good |
| B | (3.0) | 83 - 86 | |
| B- | (2.7) | 80 - 82 | |
| C+ | (2.3) | 77 – 79 | Satisfactory |
| C | (2.0) | 73 - 76 | |
| C- | (1.7) | 70 – 72 | |
| D+ | (1.3) | 67 – 69 | Unsatisfactory |
| D | (1.0) | 60 – 66 | |
| F | (0) | Below 60 | Fail |

**Technology Requirements:**

- In terms of technology skills, students will need a sound programming skill in one of the well-known languages such as Java and C++.
- In terms of technology, students will be asked to download and set up a number of testing software such as Selenium and programming IDE such as Eclipse. Students can use their own computers or use the ones provided by the university.

**Technical Support:**

- What support is in place at AUIS for students having any technical issues?

- What support do your products (like Moodle or Zoom) offer students?

Moodle Helpful Links:
- Moodle User Guide: https://docs.moodle.org/310/en/User_quick_guide
- Moodle Tutorials: https://docs.moodle.org/20/en/Student_tutorials

Zoom Helpful Links:
- Zoom User Guide: https://support.zoom.us/hc/en-us/articles/360034967471-Getting-started-guide-for-new-users
- Zoom tutorials: https://support.zoom.us/hc/en-us/articles/206618765-Zoom-video-tutorials

**Course Policies and Expectations**

**While You Are in the Class**

All students are responsible for following the requirements in the student handbook, including but not limited to the following expectations. Students should be alert and willing to participate in class activities and discussions and refrain from having disruptive conversations during class. Students must bring to the class: a copy of the textbook or its soft copy in laptop or tablet, a notebook for writing course notes, a calculator if the course requires it, all the relevant notes and handouts for the course, the needed stationery, and a copy of the syllabus.

Students are asked to limit the use of their laptop computers or tablets to class purposes. Students who violate this may not be allowed to use their personal laptop computers and tablets during the class lecture. Students should limit the usage of their smart/cell phones during the class lecture, whereas their usage is prohibited in quizzes, tests, exams and evaluations.

**Classroom Conduct**

Students are advised to conduct themselves in a collegial manner at all times when in class. Rude, disrespectful, aggressive, or threatening language or behavior will not be tolerated, and students displaying this will be asked to leave the class. Students should avoid distracting behavior; otherwise, they may be asked to leave the class and marked absent for the day. Examples of distracting behavior include:

- Side conversations while others are speaking.
- Any other behavior that a student is warned against during class.

**Grade Disputes**

Unless grades are added up incorrectly, the grades will not change after quizzes/exams are handed back to the students. Any grade related issue might be discussed in detail during office hours, and not in class time. If there is a dispute concerning the final grade for the course, students have the right to make a formal grade appeal within the period set by the Registrar office. Details on this process can be found in the Academic Catalog, page 40 (please check the catalog for updated page number).



**Incomplete Grades**

In the unlikely event that it becomes necessary to assign an "I", for incomplete, as the final grade in the course, the affected student(s) and professor will adhere to the incomplete grade policy on as described in the Student Services documentation: https://www.google.com/url?q=https://auis.edu.krd/student-services&sa=D&source=editors&ust=1620068715279000&usg=AOvVaw3VyhT3mgp5foy5Eu_XoIJC

**Revisions to the Syllabus**

This syllabus is subject to change. It is the duty of the instructor to inform students of changes in a timely fashion. Students are obliged to be cognizant of any changes.

**Expectations of Student Time**

Courses of four credit-hours: AUIS adheres to the United States federal definition of a credit hour, as established by the US Department of Education. As a four credit-hour course, you are expected to attend four hours of direct instruction per week, and spend a minimum of eight hours out of class per week in homework, studying, preparing, and otherwise engaging with the material of this course.

Courses of three credit-hours: AUIS adheres to the United States federal definition of a credit hour, as established by the US Department of Education. As a three credit-hour course, you are expected to attend three hours of direct instruction per week, and spend a minimum of six hours out of class per week in homework, studying, preparing, and otherwise engaging with the material of this course.

Courses of two credit-hours: AUIS adheres to the United States federal definition of a credit hour, as established by the US Department of Education. As a two credit-hour course, you are expected to attend two hours of direct instruction per week, and spend a minimum of four hours out of class per week in homework, studying, preparing, and otherwise engaging with the material of this course.

Courses of one credit-hour: AUIS adheres to the United States federal definition of a credit hour, as established by the US Department of Education. As a one credit-hour course, you are expected to attend one hour of direct instruction per week, and spend a minimum of two hours out of class per week in homework, studying, preparing, and otherwise engaging with the material of this course.

**Course Examinations/Assignments Policies**

Students should come to class having completed the assigned readings and prepared any written homework assignments given by the instructor. Active participation in class is expected and will make a difference in students' overall course grades.

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Classroom activities will include application-based instruction, large group discussion, and small group activities.

Students who do not show-up to an exam session at the scheduled time will receive a score of zero points for that exam. Make-up exams are only given under extraordinary circumstances and require a note from the Dean of Students office explicitly stating the nature of the circumstance.

**Extra-Credit:**

*3 Bonus points will be awarded to students who complete a credible online testing course approved by the instructor, provides proof and writes a reflection statement about the course as instructed by the instructor*.

**Due Dates**: All dates for Unit quizzes and main tests (midterm 1 and 2) including assignment due dates are in the syllabus. Students are urged to take special notice of these dates.
Assignments and Grading Procedures

**Late Work / Missed Work**

Assignments will not be accepted late, and there will be no make ups offered for missed quizzes or exams. Please tell the instructor as soon as possible if you have exceptional circumstances that might cause you to miss class. The further in advance you communicate your situation, the more likely it is that we can find a satisfactory solution.

**Diversity Statement**

Diversity, equity, and inclusion are important to AUIS, and we are committed to providing a safe and inclusive environment for all students. The different backgrounds, traits, values, and viewpoints that students bring to our university are a source of strength and enrich the

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| | experience for everyone. We engage with each other respectfully when we disagree, and we strive to increase our capacity for understanding others. Disruptive, insulting, or disrespectful language or behavior will not be tolerated. Together, we can create a positive learning environment for all members of AUIS. |
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| **12** | **Academic Support**<br>The students are encouraged to make use of an instructor's office hours. The Department will provide additional support for students such as tutorials and help sessions. |
| | **Disability Accommodations**<br>Students with disabilities may request reasonable accommodations through the AUIS Student Services. |
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| **13** | **Attendance Policy**<br>It is the student's responsibility to learn and follow the Attendance Policy in their course syllabi. Students are expected to return to campus for in-person classes. Instructors / faculty are no longer required to livestream their classes on Zoom, but they retain the option to do so based on their classroom needs. Instructors are required to continue the recording of class lectures and making them available for students after the class.<br><br>**Attendance**<br>Academic success requires class attendance and engagement. Students are expected to attend classes and to participate when given the opportunity.<br>All undergraduate students have a set minimum of absences before they incur a penalty in the course.<br>A student will incur a penalty after they miss:<br>○ Eight classes for courses that meet three times a week<br><br>**- A student will incur 5% penalty when he/she reaches 6 absences.**<br>**- A student will fail the course and will be awarded the grade F when he/she reaches 8 absences.**<br><br>Students will be notified when they are penalized. The Registration Office, the University Registrar, and the Dean of Students will be included in these notifications.<br><br>**Assessments**<br>If there are assessments occurring on a day a student is absent, it is the student's responsibility based on the course expectations to follow up with the faculty member as soon as they are able to do so. The instructor will determine if a make-up is possible due to the extenuating or emergency circumstances of the student.<br><br>**Exceptions**<br>Students with extenuating or emergency circumstances can submit documentation and a request for accommodations to the Director of Academic Success and the Dean of Students. Students have the right to privacy and communications between the members of the Student Services team and the student will not be shared without consent. Once the student approves how much information is permitted to be disclosed, either the Dean or the Director will notify the instructor so accommodations can be put in place.<br><br>● Extenuating circumstances are situations that could result in more time away from class than is permitted due to factors outside the student's control. Students with chronic health issues, acting as caretakers for immediate family, or working full-time while also enrolled in courses are examples of extenuating circumstances. |

- Emergency circumstances are unexpected situations that may not disrupt a student's physical attendance but may interfere with their learning. Major injuries, harassment/assault, and mourning/grief are all examples of emergency circumstances.

Accommodation requests are sent to faculty for approval and implementation. Faculty that would like to adjust or discuss the request before approval can meet with the Dean of Students and the Director of Academic Success.

**Emergency Evacuation**

**14** In case of an emergency or a fire alarm during a class, all students must follow the directions of the class/laboratory instructor and evacuate the room in an orderly manner to the assembly area. Failure to do so is a violation of AUIS Health and Safety Policy on emergency evacuation and will be subject to disciplinary action.

**Academic Integrity Policy**

**15** Academic Integrity is honest behavior in a school setting. Academic integrity is more than the absence of cheating. It is necessary for students to truly learn new skills and develop as human beings. By struggling with her own studies and by making honest mistakes and discoveries, a student learns about the world and herself. Using another's work inappropriately prevents this intellectual and emotional growth.

Intellectual Property Rights Any code or work that you submit as part of lab works, exams, or assignments for the course becomes the property of the university. The professor therefore, has full rights to reuse, distribute, and share the code with others for educational purposes in future classes of any course where the material may serve such a purpose.

Academic Dishonesty ("cheating") is any form of deceit, fraud, or misrepresentation in academic work. Academic dishonesty is the opposite of learning, because it prevents the student-writer from genuinely learning and responding to material. Plagiarism is one of the most serious forms of academic dishonesty.

Artificial Intelligence The Department of Computing and Informatics appreciates the challenges and opportunities that Artificial Intelligence (AI) presents to the teaching-learning process, and all major fields of human endeavor—business, industry, engineering, healthcare, media, arts, and governance. To that end, Information Technology instructors have full autonomy in specifying the use (or banning the use) of AI in their courses. Instructors must outline the terms of AI use—which assignments students may use AI and/or which AI tools students may or may not use. Allowing AI in one assignment does not represent a blanket permission for students to use AI in other assignments. Failure to pay attention to the instructor's instructions will be treated as Academic Misconduct. When in doubt, students should seek clarification from their instructor, the Director of Academic Success, and the Dean of Students

Plagiarism is using other people's ideas and/or words without clearly acknowledging the source of the information. If a student uses content or grammatical structures from the internet, a professional writer, or another student and does not inform the reader, he plagiarizes. A student who allows another student to use his writing without attribution is also guilty of plagiarism.

Cheating will not be tolerated in this class. All major written assignments completed outside of class time must be submitted via www.turnitin.com. A student found to be cheating for the first time will receive a zero for the assignment and the Dean of Students will be notified. In the event of a second offense confirmed by the Dean of Students, the student will fail the course. A third instance of cheating will result in that student being dismissed from the American University of

Iraq, Sulaimani. Students are directed to the AUIS Honor Code and the Academic Integrity policy section of the Academic Catalog (available online at www.auis.edu.krd). These documents provide guidance in cases of academic dishonesty, so we should all be familiar with them.

At the end of each assignment the following statement should be added and signed:

*"I pledge that I have neither given nor received any unauthorized assistance on this academic assignment, exercise, or examination."*

Signed: _____ ID: _____

**It is critical for students to remember that there are no "compassionate decisions" or "clemency" in the AUIS Academic Integrity System. Poor health, personal and/or family emergencies, or the difficulty of an assessment are not acceptable excuses for Academic Misconduct. Instructors and the Dean of Students will not accept such explanations from students as a defense.**

**Students facing family or personal emergencies and/or emotional or mental distress should contact their course instructor, the Director of Academic Success, and the Dean of Students before an assessment deadline or exam.**

For additional information on how to prepare assessments that follow the Rules on Academic Integrity at AUIS, students must review this video presentation from March 2021: https://www.youtube.com/watch?v=6J3X4kulSq8

In line with the above, the Office of the Dean of Students (ODOS) at AUIS has instituted the following rules.

**Academic Misconduct Severity Levels**

**(1)** ***Premeditated Academic Misconduct*** will result in an automatic "F" in the course. Examples include—but are not limited to—the comprehensive copying of sources or the recruitment of others for the completion of assignments (including copying another student's homework).
All faculty **must** forward such cases to the Dean of Students if they suspect this type of misconduct. The determination is made by the Dean of Students and may be appealed to the VPAA, whose decision is final.

**(2)** ***Grossly Negligent Academic Misconduct*** will result in a penalty of the instructor's choosing (including and up to an "F" on the assignment). Examples include—but are not limited to—having prohibited materials or tools on oneself during an examination **even if their use** cannot be proven (***prohibited materials and tools must be announced by the instructor***), or a systematic use of a source without attribution, or a systematic failure to adequately paraphrase sources.

Students are fully responsible for their work in this course under the "AUIS Student Honor Code" and "Rules Governing Academic Integrity

# SE455 – Software Testing

**Assignments/assessments are due in class on the day indicated. Assigned readings are to be read before class. The material will be discussed in class. Quizzes, Tests and Exams may cover material from the readings that was not presented in class.**

| Week | Dates | Topics | Assigned readings | Assessments / Assignments Due |
|---|---|---|---|---|
| 1 | Sep. 15, 2024 | Introduction<br>CLO 1 | • Chapter 1, Textbook 1<br>• Chapter 1, Textbook 2 | |
| 2 | Sep. 22, 2024 | Software Quality Attributes CLO 1 | • Chapter 2, Textbook 1 | |
| 3 | Sep. 29, 2024 | Planning and monitoring process CLO 3 | • Chapter 20, Textbook 2 | |
| 4 | Oct. 06, 2024 | Testing and Analysis Documentation<br>CLO 1,2,3,4,5,6 | • Chapter 24, Textbook 2 | |
| 5 | Oct. 13, 2024 | Software Testing fundamentals<br>CLO 4 | • Par2, Textbook 1<br>• Chapter 3, Textbook 2 | |
| 6 | Oct. 20, 2024 | Software Testing life-cycle CLO 1 | • chapter 3, Textbook 1<br>• Chapter 4, Textbook 2 | **Midterm Exam 1**<br>**Oct. 24** |
| 7 | Oct. 27, 2024 | Software Testing methodologies<br>CLO 2 | • Chapter 7, Textbook 1 | **Assignment 1 due Nov. 02** |
| 8 | Nov. 03, 2024 | Software Testing techniques<br>CLO 2 | • Par 2, Textbook 2 | |
| 9 | Nov. 10, 2024 | Test deployment and analysis techniques<br>CLO 3 | • Part 4, Textbook 1 | |
| 10 | Nov. 17, 2024 | Integration and Component-based Software Testing<br>CLO 5 | • Chapter 21, Textbook 2 | |
| 11 | Nov. 24, 2024 | Mutation testing<br>CLO 5 | • Mutation Testing References as provided. | **Midterm Exam 2**<br>**Nov.24** |

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|---|---|---|---|---|
| 12 | Dec. 01, 2024 | Regression Testing<br><br>CLO 5 | • Chapter 22, Textbook 2 | |
| 13 | Dec. 08, 2024 | Test automation and tools<br>CLO 4,6 | • Chapter 14&15, Textbook 1<br>Chapter 23, Textbook 2 | **Assignment 2**<br><br>**10/12/2024** |
| 14-15 | Dec. 14, 2024 | Final Exam | | |