



Overview & Responsibilities

Software Testing

SWE 437/637

go.gmu.edu/SoftwareTestingFall24

Dr. Brittany Johnson-Matthews

(Dr. B for short)

Welcome!

Software Testing (SWE 437 & 637)

Roughly...

50% theory (lectures and reading)

50% application (exercises and assignments)

Learn about:

- > history and state of practice in software testing
- > practical approaches to testing software systems
- > foundations and theoretical knowledge of software testing

About me



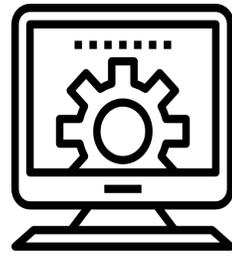
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CHARLESTON

NC STATE UNIVERSITY

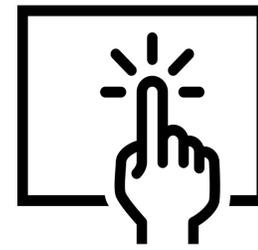
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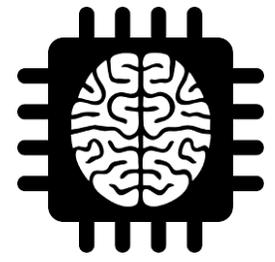
About my lab



Software Engineering



Human-Computer Interaction



Artificial Intelligence

Understanding Software Development

Perceptions of AI and AI-assisted technologies

Existing and Desired Tool Support

Improving Software Development

Causal Testing & Debugging

Conversational APR

Open Source Onboarding & Retention

Developing Equitable Software

Ethics & Equity in Open Source

Engaging Marginalized Communities in Tech

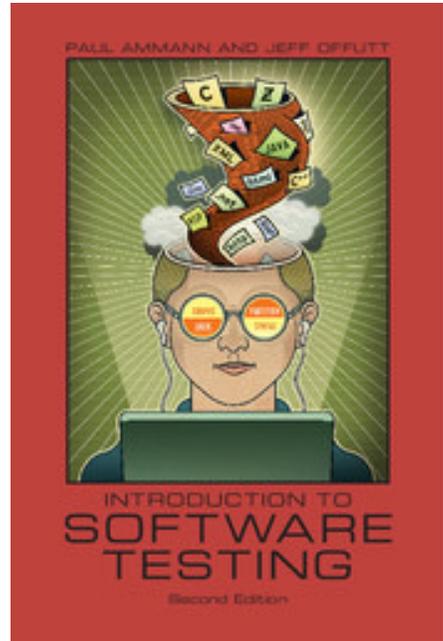


INSPIRED Lab

(Interdisciplinary Software Practice Improvement Research and Development)

<http://inspired.cs.gmu.edu>

Course Materials

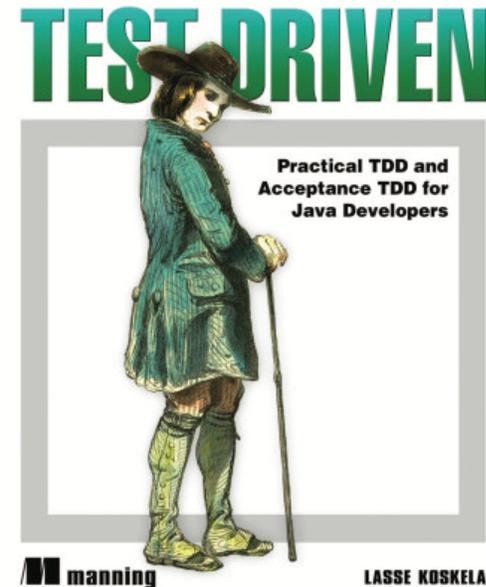


Introduction to Software Testing, 2nd edition

by Ammann and Offutt

(strongly recommended)

<https://cs.gmu.edu/~offutt/softwaretest/>



Test Driven: Practical TDD and Acceptance TDD for Java Developers

by Koskela

Date	Topic	Readings & Handouts	Assignments	In-Class
Meet 1 Thu 08/29	Overview and Intro to Testing	AO Chapter 1 Class Overview Why Test?		In-class
Meet 2 Thu 09/05	Model Driven Test Design	AO Chapter 2 (Slides)	Assign 1 due	In-class
Meet 3 Thu 09/12	Test Automation	AO Chapter 3 (Slides ; Lecture)		In-class
Meet 2 Thu 09/19	Test Driven Development (TDD)	AO-Chapter 4 & K-Chapter 1, 2, and 3 TDD & Agile Getting Started with TDD Spikes and Refactoring (have IDE, such as Eclipse , installed on laptop)		In-class
Meet 5 Thu 09/26	Agile & Criteria-based Testing	AO Chapter 4, 5, & 12 Agile Testing Criteria-Based Test Design Test Doubles	Assign 2 due	In-class
Meet 6 Thu 10/03	Input Space Coverage	AO Chapter 6 (Slides)		In-class
Meet 7 Thu 10/10	Input Space Coverage Extended Exercise	AO Chapter 6 (Slides + exercise)	Assign 3 due	
Meet 8 Thu 10/17	Graph Coverage	AO Chapter 7.1 & 7.2 (Slides)		In-class
Meet 9 Thu 10/24	Graph Coverage for Source Code	AO Chapter 7.3 (Slides ; Lecture)	Assign 4 due	In-class
Meet 10 Thu 10/31	Semantic Logic Coverage	AO Chapter 8.1 (Slides)		In-class
Meet 11 Thu 11/07	Syntactic Logic Coverage	AO Chapter 8.2 (Slides)		In-class
Meet 12 Thu 11/14	Applying Logic Criteria	AO Chapter 8.3 (Slides)	Assign 5 due	In-class
Meet 13 Thu 11/21	Syntax Coverage & Mutation Testing	AO Chapter 9 (Slides)		In-class
Thu 11/28	No class (Thanksgiving Recess)			
Meet 14 Thu 12/05	Class Wrap-Up and Review	Slides	Assign 6 due	In-class
Tuesday December 13 4:30 - 7:15 pm	FINAL EXAM Mason's final_exam_schedule			

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Subject to change, but generally final

Online Resources

All information, announcements, and discussions will be on **Piazza**.

- Key course information and links (e.g., syllabus and schedule) are in a pinned post

Assignments and grades will be posted on **Blackboard**.



Office Hours

Virtual and in-person options (all posted on Piazza)

Also available by appointment (contact TA or myself via Piazza)

TA office hours (also posted on Piazza)



Grading



All details on grading are in the syllabus.

Participation (Piazza & in-class) = 15%

Homework (11 assignments total) = 20%

Quizzes (13 total) = 30%

Final exam (theory and practice) = 35%

Class structure

Typically:

- 30-45 minutes of lecture
- remainder of class for in-class exercises

If there's a quiz, class will start with that.

Questions are always welcome!



Homework Assignments (20% of final grade)

Practice with concepts from class & reading (*precision*)

Keep in mind:

- Homework is due before the start of class on the due date
- Collaboration is encouraged (and rewarded!)
- Late homework gets a 30% deduction for each week it is late

If you work on a team, make sure to include **collaboration summary**.

All homework must be submitted before the last day of class
to be graded.



Quizzes (30% of final grade)

More practice with concepts from class & reading (*recall*)

Keep in mind:

- Quizzes are not collaborative
- You will only have 10-15 minutes to complete them (at the start of class, so be on time)
- Any content covered in class or the reading in lectures prior to each quiz are fair game.

I will drop the lowest quiz grade at the end of the semester.

There are no quiz make-ups or retakes.



Final Exam (35% of final grade)

Assessment of cumulative course knowledge

Keep in mind:

- The final is closed book and closed notes.
- It will be timed (per University policies).
- The final must be taken on exam day (with few exceptions).

As per GMU policy, an unexcused absence from the final will result in an automatic F – there are no final exam make-ups or retakes – talk to me first!



Class Participation (15% of final grade)

Earn points by:

- Attending class regularly
- Completing in-class exercises
- Engaging in in-class discussions
- Engaging meaningfully on Piazza



Extra Credit Opportunities

Collaboration extra credit (applied to homework)

Other potential extra credit examples:

- Themed t-shirt day
- Extra practice problems (most common)
- Various class interactions

Extra credit (not collab credit) will be applied at the end of the semester such that it provides the largest impact to final grade.



Attendance

Not required, but strongly encouraged

All due dates are final (with few exceptions)

Don't forget participation grade!



Use of ChatGPT

We are all aware of the widespread adoption of ChatGPT.

Please use these technologies with caution, especially on graded assignments.

Some **general advice** if using ChatGPT to support learning:

- **Understand the foundations first**; ChatGPT is much more effective when given detailed, accurate prompts.
- **Use in combination with the course material** so you can effectively double check any information it provides you.
- **Avoid asking for answers or solutions**; ChatGPT can be confidently wrong (which again emphasizes the importance of foundations when using it).



Responsibilities of Professor

Curate useful and interesting information for you

Come to class

Offer challenging but reasonable exercises and assignments

Grade fairly without bias

Return graded work promptly with helpful comments

Goals:

- Support discussion and knowledge sharing of important concepts
- Make the class fun and engaging for everyone



Responsibilities of Student

Come to class on time

If you miss class, catch up on your own (but don't hesitate to ask for help if needed)

Listen to all instructions

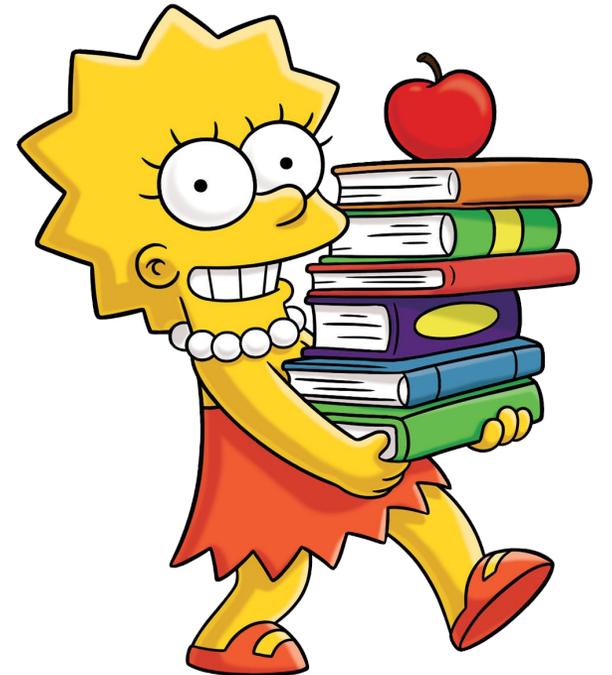
Turn in assignments on time

Read the material

If you disagree with me or another student, disagree politely

Goals:

- Read before class
- Actively participate in your academic growth



Fostering an inclusive, safe space

A classroom consists of a instructors and students.

We all play a role in creating a safe learning space.

Everyone should feel comfortable and supported

- by instructors
- by their fellow classmates

There is ZERO TOLERANCE for:

- racism or sexism
- bullying or harassment
- inappropriate comments of any kind

