Overview & Responsibilities

Software Testing
SWE 637

https://go.gmu.edu/SWE637

Dr. Brittany Johnson-Matthews

(Dr. B for short)

Adapted from slides by Jeff Offutt and Bob Kurtz
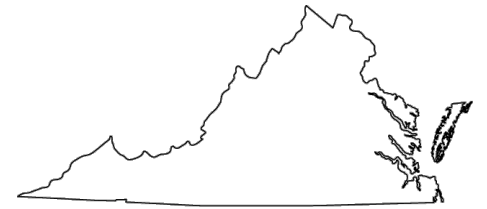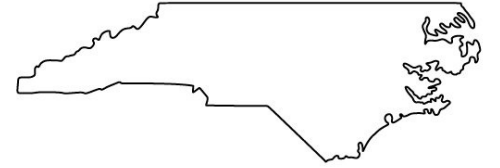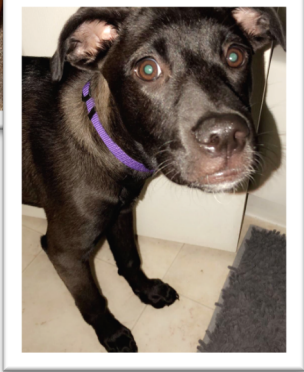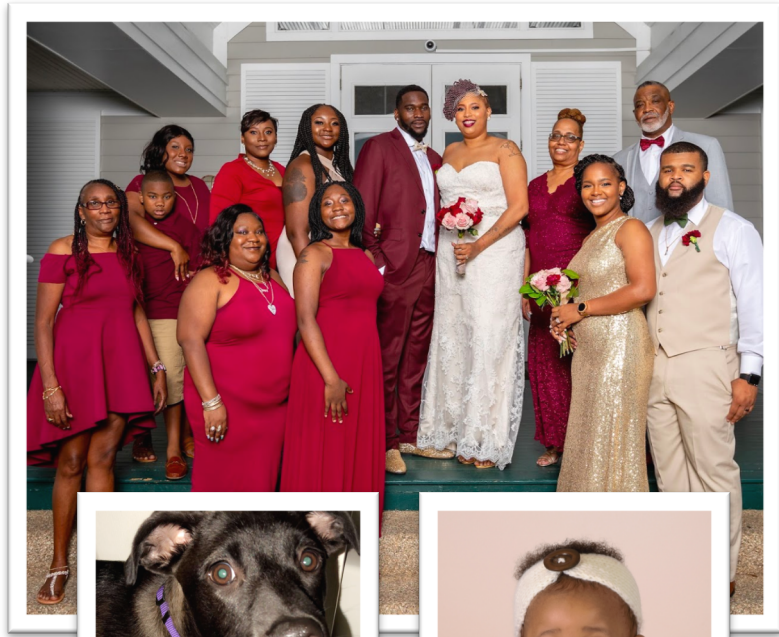
Welcome!

SWE 637 – Software Testing

Roughly 75 % testing theory, 25% testing practice

(Re-)Familiarize yourself with:
- Java
- Data structures
- Control flow graphs
- Formal logic
- Discrete math

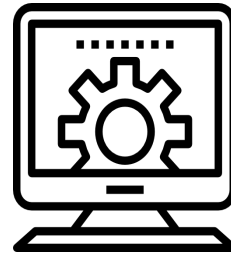# About Me

About Me

Understanding Software Practice

- Developer tool use
- Work environments

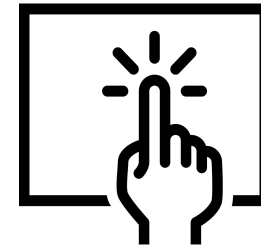## Improving Software Practice

- Testing & debugging
- Tool adoption
- Tool communication

Developing Equitable Software

- Software and model fairness
- Designing and Developing for the Black Experience

Software Engineering

Human-Computer Interaction
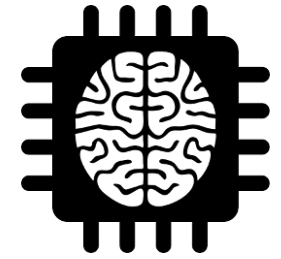
Machine Learning

INSPIRED Lab

(INterdisciplinary Software Practice Improvement REsearch and Development)

Online Resources

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

- includes lecture slides, which are also available on the class website

Quizzes will be administered using **Socrative.**

Homework assignments and grades will be posted on **Blackboard.**

Course Materials

Introduction to Software Testing, 2nd edition, by Ammann and Offutt

(strongly recommended)

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

Schedule

AO-Chapter *x* means chapter *x* in the Ammann and Offutt textbook.

Date	Topic	Readings & Handouts	Quizzes & Assignments	In-Class
Meet 1 Thu 1/27	**Overview and Intro to Testing**	AO Chapter 1 Class Overview Why Test?		In-class
Meet 2 Thu 2/3	**Model Driven Test Design**	AO Chapter 2 (Slides)	Assign 1 due	In-class
Meet 3 Thu 2/10	**Test Automation**	AO Chapter 3 (Slides)		In-class
Meet 4 Thu 2/17	**Agile & Criteria-based Testing**	AO Chapter 4, 5, & 12 Agile Testing Criteria-Based Test Design Test Doubles	Assign 2 due	In-class
Meet 5 Thu 2/24	**Input Space Coverage**	AO Chapter 6 (Slides)		In-class
Meet 6 Thu 3/3	**Input Space Coverage Extended Exercise**	AO Chapter 6 (Slides)	Assign 3 due	In-class
Meet 7 Thu 3/10	**Graph Coverage**	AO Chapter 7.1 & 7.2 (Slides)	In-class	
Thu 3/17	***No class -- Spring Break!*** 😎			
Meet 8 Thu 3/24	**Graph Coverage for Source Code**	AO Chapter 7.3 (Slides; Lecture)	Assign 4 due	In-class
Meet 9 Thu 3/31	**Semantic Logic Coverage**	AO Chapter 8.1 (Slides)		In-class
Meet 10 Thu 4/7	**Syntactic Logic Coverage**	AO Chapter 8.2 (Slides)		In-class
Meet 11 Thu 4/14	**Applying Logic Criteria**	AO Chapter 8.3 (Slides)	Assign 5 due	In-class
Meet 12 Thu 4/21	**Syntax Coverage & Mutation Testing**	AO Chapter 9 (Slides)		In-class
Meet 13 Thu 4/28	**Mutation Testing (cont'd)**	An Industrial Application Dominator Mutants		In-class
Meet 14 Thu 5/5	**Class Wrap-Up and Review**	Slides	Assign 6 due	In-class
Thu May 12 4:30 - 7:15 pm	FINAL EXAM Mason's final_exam_schedule			

Office Hours

Currently virtual (info on Piazza)

Also available by appointment

TA office hours in-person or virtual

Class Structure

Typically:

- 10 minutes for quizzes or assignment review
- Lecture until about 5:30
- 10-15 minute break
- In-class exercise

I will try to finish by 7:00 pm.

GRADING

All information in syllabus

Weekly quizzes = 40% (no mid-term)

Homework = 20%

Participation = 15% (important!)

Final exam = 25%

QUIZZES (40% OF FINAL GRADE)

Total of 13 quizzes, 10 points each
- will drop 3 lowest

Based on previous lecture and in-class exercises

Open book + open notes

No make-ups (with rare exceptions)

Homework (20% of final grade)

6 homework assignments, 10 points each

Collaboration encouraged

Marked down 30% each week late

All homework must be submitted before finals

Class Participation (15% of final grade)

Earn points by:

- Completing in-class exercises
- Leading or participating in class discussions
- Engaging meaningfully on Piazza (e.g., asking or answering questions)

Groups assigned for exercises

Final Exam (25% of final grade)

Online (probably Blackboard), 100 points

Cumulative, covers topics from entire semester

Open book and open notes (but timed)

<u>As per GMU policy, an unexcused absence from the final will result in an automatic F – talk to me first!</u>

Extra Credit Opportunities

Collaboration extra credit (homework)

Other extra credit examples:
- Themed t-shirt day
- Extra practiced problems
- Various class interactions

You can use extra credit points (not collab credit) on:
- Homework
- Quizzes
- Final Exam

Attendance

Not required, but encouraged

Slides available online

Missed quizzes cannot be made up

Don't forget participation grade!

Responsibilities of the Professor

Prepare **useful and interesting information** for you

Post materials on class website **before class**

Come to class Offer **challenging but reasonable** homework and tests

Grade fairly **without bias**

Return graded work **promptly with helpful comments**

Goals:

- Have interesting lectures

- Make the class fun

- Use technology appropriately

Responsibilities of the Student

Come to class <u>on time</u>

If you miss class, <u>learn material on your own</u>

      - but don't hesitate to ask for help if needed

<u>Listen</u> to all instructions

Turn in <u>assignments on time</u>

<u>Ask for help</u> when you're confused

<u>Read</u> the material

If you disagree with me, <u>disagree politely</u>

<u>Goals</u>:

      - Read before class

      - Learn enough to earn a good grade

Reading is <u>FUN</u>damental

Books have knowledge.

Professors are simply guides.

<u>Information</u> comes from lectures.

<u>Knowledge</u> comes from books and homework.

<u>Wisdom</u> comes from experience.

So <u>read, read, read</u>!

Fostering an inclusive, safe space

A classroom consists of a <u>instructors</u> and <u>students</u>.
We all play a role in creating a <u>safe learning space</u>.

Everyone should feel comfortable and supported
- by instructors
- by their fellow classmates

There is <u>ZERO TOLERANCE</u> for:
- *racism or sexism*
- *bullying or harassment*
- *inappropriate comments of any kind*

Now...
Let's get learning!!

I'M LEARNDING