Overview & Responsibilities

Software Testing
SWE 637

https://go.gmu.edu/SWE637

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(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**

**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

**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/
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings &amp; Handouts</th>
<th>Quizzes &amp; Assignments</th>
<th>In-Class</th>
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</thead>
<tbody>
<tr>
<td>Meet 1 Thu 1/27</td>
<td>Overview and Intro to Testing</td>
<td>AO Chapter 1 Class Overview</td>
<td>Assign 1 due</td>
<td>In-class</td>
</tr>
<tr>
<td>Meet 2 Thu 2/3</td>
<td>Model Driven Test Design</td>
<td>AO Chapter 2 (Slides)</td>
<td>Assign 1 due</td>
<td>In-class</td>
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<tr>
<td>Meet 3 Thu 2/10</td>
<td>Test Automation</td>
<td>AO Chapter 3 (Slides)</td>
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<td>In-class</td>
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<tr>
<td>Meet 4 Thu 2/17</td>
<td>Agile &amp; Criteria-based Testing</td>
<td>AO Chapter 4, 5, 6, 12 Agile Testing Criteria-Based Test Design Test Doubles</td>
<td>Assign 2 due</td>
<td>In-class</td>
</tr>
<tr>
<td>Meet 5 Thu 2/24</td>
<td>Input Space Coverage</td>
<td>AO Chapter 6 (Slides)</td>
<td></td>
<td>In-class</td>
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<tr>
<td>Meet 6 Thu 3/3</td>
<td>Input Space Coverage Extended Exercise</td>
<td>AO Chapter 6 (Slides)</td>
<td>Assign 3 due</td>
<td>In-class</td>
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<tr>
<td>Meet 7 Thu 3/10</td>
<td>Graph Coverage</td>
<td>AO Chapter 7.1 &amp; 7.2 (Slides)</td>
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<td>In-class</td>
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<tr>
<td>Thu 3/17</td>
<td>No class -- Spring Break! 😔</td>
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<tr>
<td>Meet 8 Thu 3/24</td>
<td>Graph Coverage for Source Code</td>
<td>AO Chapter 7.3 (Slides; Lecture)</td>
<td>Assign 4 due</td>
<td>In-class</td>
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<tr>
<td>Meet 9 Thu 3/31</td>
<td>Semantic Logic Coverage</td>
<td>AO Chapter 8.1 (Slides)</td>
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<td>In-class</td>
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<tr>
<td>Meet 10 Thu 4/7</td>
<td>Syntactic Logic Coverage</td>
<td>AO Chapter 8.2 (Slides)</td>
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<tr>
<td>Meet 11 Thu 4/14</td>
<td>Applying Logic Criteria</td>
<td>AO Chapter 8.3 (Slides)</td>
<td>Assign 5 due</td>
<td>In-class</td>
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<tr>
<td>Meet 12 Thu 4/21</td>
<td>Syntax Coverage &amp; Mutation Testing</td>
<td>AO Chapter 9 (Slides)</td>
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<td>In-class</td>
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<tr>
<td>Meet 13 Thu 4/28</td>
<td>Mutation Testing (cont’d)</td>
<td>An Industrial Application Dominator Mutants</td>
<td></td>
<td>In-class</td>
</tr>
<tr>
<td>Meet 14 Thu 5/5</td>
<td>Class Wrap-Up and Review</td>
<td>Slides</td>
<td>Assign 6 due</td>
<td>In-class</td>
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</tbody>
</table>

**Final Exam:**

Mon 5/10, same time as usual, meet 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)

As per GMU policy, an unexcused absence from the final will result in an automatic F – talk to me first!
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 **on time**
If you miss class, **learn material on your own**
   - but don't hesitate to ask for help if needed

**Listen** to all instructions

Turn in **assignments on time**

**Ask for help** when you’re confused

**Read** the material
If you disagree with me, **disagree politely**

**Goals:**
   - Read before class
   - Learn enough to earn a good grade
Books have knowledge.
Professors are simply guides.

**Information** comes from lectures.
**Knowledge** comes from books and homework.
**Wisdom** comes from experience.

So **read, read, read**!
Fostering an inclusive, safe space

A classroom consists of 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
Now...
Let's get learning!!

I'm learnerd