



# University of Wisconsin – La Crosse

## **C-S 743 Software Verification & Validation Fall 2019**

**Class Time:** MWF 2:15pm – 3:10pm Centennial 3201

**Instructor:** Dr. Mao Zheng  
Wing 217, Tel: 785-6808, Email: mzheng@uwlax.edu

**Office Hour:** 1:30pm- 2:00pm on Mondays, Wednesdays  
10:00am – 12:00noon on Tuesdays  
Or set an appointment by email

**Course Website:** <http://www.cs.uwlax.edu/~mzheng/CS743Fall19/>

### **References:**

- P.C. Jorgensen, Software Testing: A Craftsman's Approach (Fourth Edition), Auerbach Publications, 2013, ISBN: 978-1466560680.
- G.J. Myers, The ART of Software Testing (Third Edition), John Wiley & Sons, 2012, ISBN: 978-1-118-03196-4.
- P. Ammann and J. Offutt, Introduction to Software Testing, Cambridge University Press, 2008, ISBN: 978-0-521-88038-1.
- Jose Bacelar Almeida et al., Rigorous Software Development: An Introduction to Program Verification, Springer-Verlag London, 2011, ISBN: 978-0-85729-017-5.
- B. Berard et al., Systems and Software Verification: Model Checking Techniques and Tools, Springer-Verlag, 2001, ISBN: 3-540-41523-8.
- Russ Miles and Kim Hamilton, Learning UML 2.0, O'Reilly Publications, 2006, ISBN: 0-596-00982-8.

### **Grading Policies:**

Mid-Term Exam	20%	-- Friday October 18, 2019
Final Exam	30%	-- Wednesday Dec. 18, 2019 12:15pm – 2:15pm
Assignments	50%	

### **Course Description:**

This course explains the need for verification and validation, discusses the methods (formal, informal and diagrammatic) and techniques (prototyping and theoretical proof techniques) that implement verification and validation, and provides hands-on experience to apply these methods and techniques to some simple case studies. Automation of verification and validation methods will also be briefly discussed. Prerequisite: CS 741 or concurrent enrollment.



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## Learning Outcomes:

By the end of this course, you will be able to:

- Understand informal, diagrammatic and formal verification techniques;
- Understand various types and levels of software testing
- Apply appropriate verification techniques during software development
- Apply appropriate testing techniques for a software system under test

## Course Contents (may not following exact order)

Functional Testing	UML Model Testing/Verification
Structural Testing	Program Verification
GUI Testing	

## Late Projects, Missed Quizzes / Exams

Assignments will not accepted after the due date, no make-up test or exam will be given except for University-excused absences.

For extenuating circumstances that impact your ability to meet deadlines or participate in class activities, you are responsible for alerting me as soon as possible.

## Grading Scale

Letter Grade	Percentage Equivalent
A	93-100%
AB	89-92%
B	83-88%
BC	79-82%
C	70-78%
D	60-69%
F	59% - below

## Our Legal Obligations to You

### Sexual Misconduct

As an employee of the University of Wisconsin-La Crosse, I am a mandated reporter of sexual harassment and sexual violence that takes place on campus or otherwise affects the campus community. This means that if I receive detailed or specific information about an incident such as the date, time, location, or identity of the people involved, I am obligated to share this with UWL's Title IX Coordinator



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<http://www.uwlax.edu/affirmative-action/> in order to enable the university to take appropriate action to ensure the safety and rights of all involved. For students not wishing to make an official report, there are confidential resources available to provide support and discuss the available options. The contact in Student Life is Ingrid Peterson, Violence Prevention Specialist, (608) 785-8062, [ipeterson@uwlax.edu](mailto:ipeterson@uwlax.edu). Please see <http://www.uwlax.edu/sexual-misconduct> for more resources or to file a report.

## Religious Accommodations

Per the UWL Undergraduate and Graduate Catalogs

<http://catalog.uwlax.edu/undergraduate/aboutuwlax/#accommodation-religious-beliefs> “any student with a conflict between an academic requirement and any religious observance must be given an alternative means of meeting the academic requirement. The student must notify the instructor within the first three weeks of class (within the first week of summer session and short courses) of specific days/dates for which the student will request an accommodation. Instructors may schedule a make-up examination or other academic requirement before or after the regularly scheduled examination or other academic requirement.”

**Students with Disabilities** Any student with a documented disability (e.g. ADHD, Autism Spectrum Disorder, Acquired Brain Injury, PTSD, Physical, Sensory, Psychological, or Learning Disability) who needs to arrange academic accommodations must contact The ACCESS Center (165 Murphy Library, 608-785-6900, [ACCESSCenter@uwlax.edu](mailto:ACCESSCenter@uwlax.edu)) and meet with an advisor to register and develop an accommodation plan. In addition to registering with The ACCESS Center, it is the student's responsibility to discuss their academic needs with their instructors.

You can find out more about services available to students with disabilities at The ACCESS Center website: <http://www.uwlax.edu/access-center>

## Veterans and Active Military Personnel

Veterans and active military personnel with special circumstances (e.g., upcoming deployments, drill requirements, disabilities) are welcome and encouraged to communicate these, in advance if possible, to me. For additional information and assistance, contact the Veterans Services Office. <http://www.uwlax.edu/veteran-services/>. Students who need to withdraw from class or from the university due to military orders should be aware of the military duty withdrawal policy <http://catalog.uwlax.edu/undergraduate/academicpolicies/withdrawal/#military-duty-withdrawal-university>.