

CSE 6323: Formal Methods in Software Engineering Spring 2004

General

Lecture: 105 GACB, 12:30pm – 1:50pm, Tue. and Thu.

Instructor: [Dr. Jeff Lei](mailto:ylei@cse.uta.edu), ylei@cse.uta.edu, 324 NH, x2341

Office Hours: 2:00pm – 3:00pm, Tue. and Thu.

Communication: fmse@listserv.uta.edu

Prerequisite

Basic understanding about software engineering. Background in first-order logic and automata. A moderate proficiency of the Java language.

Course Description

The formal methods approach is to apply mathematical and logical techniques to specify and analyze the properties and behavior of software systems. This approach, if used properly, can significantly increase software reliability and correctness. In this course, we will study formal methods that can be used to support major software development stages, including requirement specification, software design, and software verification and validation. Examples of the topics covered in this course are model driven architecture (MDA), design by contract, extended static checking, temporal logic, Büchi automata, and model checking.

Textbook (Required)

Gerard J. Holzmann, *The SPIN Model Checker*. Addison-Wesley, 2003, ISBN: 0-321-22862-6

References (Optional)

1. Doron A. Peled. *Software Reliability Methods*. Springer Verlag, 2001, ISBN: 0387951067.
2. Jos Warmer and Anneke Kelppe. *The Object Constraint Language*. Addison-Wesley, 2003, ISBN: 0321179366
3. Michael Huth, Mark Ryan. *Logic in Computer Science: Modeling and Reasoning about Systems*. Cambridge University Press, 1999, ISBN 0521656028.

Grading

There will be several (about four) homework assignments, including both written and programming assignments. There will be a team project. Each team will consist of three members. The instructor will provide several project topics, but you are also encouraged

to propose other appropriate topics. About five teams will be chosen to present their work in the class, and these teams will be awarded with bonus points.

The final grade will be determined according to the following percentages:

Assignments – 50%

Projects – 50%

Assignment Policy

You are encouraged to discuss assignments with your classmates but are not allowed to copy solutions from or share with others. Late assignments are acceptable before solutions are posted or explained in class, with 10% deduction for every 24 hours. Less than 24 will be rounded to 24.

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and dismissal from the University. Since dishonesty harms the individual, all students, and the integrity of the University, policies on scholastic dishonesty will be strictly enforced.

Student Equality

Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of these accommodations, students must register with Office for Students with Disabilities, Box 19355, Lower Level, University Center, 817.272.3364. More information on University policy on student equality can be found at <http://www.uta.edu/disability/>.