Course Syllabus

Course Information

Course Number/Section	SE 6367, CS 6367, SYSM 6310, Section 0u1
Course Title	Software Testing, Validation and Verification
Term	2022 Summer

Professor Contact Information

Professor	W. Eric Wong
Office Phone	(972) 883-6619
Email Address	ewong@utdallas.edu
Office Location	ECSS 3.224
Office Hours	5:30 pm - 6:30 pm, Tuesday or by appointment
Other Information	Class Website https://paris.utdallas.edu/ewong/se6367/

Course Modality and Expectations

Instructional Mode	In-person. Please refer to Registration Procedures for more details.
Course Platform	All classes will be organized face-to-face in ECSS 2.311.
Expectations	● Ability to understand different types of software testing ● Ability to understand and perform functional testing ● Ability to understand how to generate tests from requirements ● Ability to understand and perform controlflow-based testing ● Ability to understand and perform dataflow-based testing ● Ability to understand and apply test adequacy measurement and enhancement ● Ability to understand and perform regression testing ● Ability to understand and perform combinatorial testing ● Ability to understand and perform mutation-based testing ● Ability to understand and apply software testing tools ● Ability to understand the perform effective program debugging

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Class Materials

The Instructor may provide class materials that will be made available to all students registered for this class as they are intended to supplement the classroom experience. These materials may be downloaded during the course, however, these materials are for registered students' use only. Classroom materials may not be reproduced or shared with those not in class, or uploaded to other online environments except to implement an approved Office of Student AccessAbility accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

SE 5354

Course Description

Fundamental concepts of software testing; Functional testing; Black box-based testing; White box-based testing; Requirement-based test generation; Controlflow and dataflow-based coverage criteria; Test adequacy measurement and enhancement; Regression Testing; Combinatorial testing; Mutation testing; Program debugging

Student Learning Objectives/Outcomes

- Ability to understand different types of software testing
- Ability to understand and perform functional testing
- Ability to understand how to generate tests from requirements
- Ability to understand and perform controlflow-based testing
- Ability to understand and perform dataflow-based testing
- Ability to understand and apply test adequacy measurement and enhancement
- Ability to understand and perform regression testing
- Ability to understand and perform combinatorial testing
- Ability to understand and perform mutation-based testing
- Ability to understand and apply software testing tools
- Ability to understand the perform effective program debugging

Required Textbooks and Materials

Required Texts & Materials

None

Suggested Course Materials

Suggested Readings/Texts & Materials

- Foundations of Software Engineering by Aditya Mathur (Reference)
- Software Testing: A Craftsman's Approach by Paul Jorgensen (Reference)

Technical Requirements

In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

Course Access and Navigation

This course can be accessed using your UT Dallas NetID account on the eLearning website.

Please see the course access and navigation section of the Getting Started with eLearning webpage for more information.

To become familiar with the eLearning tool, please see the Student eLearning Tutorials webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The eLearning Support Center includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication

This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during

the semester. For more details, please visit the Student eLearning Tutorials webpage for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Server Unavailability or Other Technical Difficulties
The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Academic Calendar

Weeks 1-2	Foundations, Adaptive Random Testing, and Mind Mapping
Weeks 3-4	Requirement-based Test Generation
Weeks 5-6	Controlflow-based Coverage Testing and Test Adequacy Measurement
Weeks 7-8	Dataflow-based and Model-based Testing
Weeks 9-11	Combinatorial Testing and Regression Testing
Weeks 12-14	Mutation Testing and Software Fault Localization
Weeks 15-16	Lectures on Special Topics

Proctored Final Exam Procedures
None

Grading Policy

Exam I:	25%
Exam II:	25%
Projects (Individual):	30%
Homework & Exercises:	10%
Term Paper (Group):	10%

Course Policies
Make-up exams
None

Extra Credit
None

Late Work
Not accepted

Special Assignments
None

Class Participation
Refer to the Class Participation section for more details.

Classroom Citizenship
The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, A to Z Guide, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the Rules and Regulations, Board of Regents, The University of Texas System, Part 1, Chapter VI, Section 3, and in Title V, Rules on Student Services and Activities of the university's Handbook of Operating Procedures. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Comet Creed
This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Academic Support Resources
The information contained in the following link lists the University's academic support resources for all students.

Please go to Academic Support Resources webpage for these policies.

UT Dallas Syllabus Policies and Procedures
The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to UT Dallas Syllabus Policies webpage for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.