CSE 4392 & CSE 5382: Secure Programming
Fall 2015

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  Please do not use Email, Use Blackboard

Office Hours: 3:00 to 4:00 PM, 8:30 to 10:00 PM on Monday and Wednesday or by appointment

Section Information: CSE 4392-3, 5382-2

Time and Place of Class Meetings: NH 111, Monday and Wednesday 7:00 PM - 8:20 PM

Description of Course Content: This course is an introduction to methods of secure software design and development for upper-level undergraduate students and graduate students. Students will learn about the major security problems found in software today. Using this knowledge, they will work in teams to find these bugs in software, fix the bugs, and design software so that it has fewer security problems. Static analysis tools will be a core part of the class, but students will also be exposed to black box testing tools. Topics will include input validation, buffer overflow prevention, error handling, web application issues, and XML.
Prerequisites: Operating Systems (CSE 3320 or equivalent) is required. You should be comfortable programming and reading code in both Java and C/C++, and reading code in Javascript, PHP, SQL, Perl and Python.

Student Learning Outcomes: By the end of the course, students should have: Knowledge of major software-based security problems, Hands-on experience with static analysis tools for finding security bugs, Knowledge of design techniques for limiting security bugs and enabling security checks, and Experience working in a team to design, develop, and test a program with security as an objective.

Requirements: You may be asked questions about assignments outside of class times.

Required Textbooks and Other Course Materials:
The text is Secure Programming with Static Analysis by Brian Chess and Jacob West.
ISBN-13: 978-0321424778   ISBN-10: 0321424778
Paperback: 624 pages, Publisher: Addison-Wesley Professional (2007)
as well as: selected publications and web sites.

Descriptions of major assignments and examinations with due dates:
  6 in-class Quizzes, Weekly assignments. Quiz dates and Assignment due dates are not major works.

Grading Policy: Course grades will be based on the following:
    Assignments: 35%
    Quizes: 65%

    Examinations: None.
    There will be 6-7 quizzes over material presented and reading assignments.
    There will be no final exam.
    There will be no make up quizzes.

Attendance Policy: Attendance is strongly encouraged but will not be a part of your grade. You must attend the exams and quizes.

  Make-ups for (non-exam) graded activities may be arranged if your absence is caused
  by illness, or personal emergency. A written explanation (including supporting
  documentation) must be submitted to your instructor; if the explanation is acceptable,
  an alternative to the graded activity will be arranged. Make-up arrangements must be
  arranged prior to the scheduled due date

A final course grade of "A" will be assigned to a course average between 90 and 100, a "B" will be assigned between 80 and 90, a "C" will be assigned between 70 and 80, a "D" will be assigned between 60 and 70, and a "F" will be assigned for an average below 60.

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels.

Expectations for Out-of-Class Study: Beyond the time required to attend each class meeting, students enrolled in this course should expect to spend at least an additional <u>8</u> hours per week of their own time in course-related activities, including reading required materials, completing assignments, preparing for exams, etc.

Grade Grievances: Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance**. Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (http://wweb.uta.edu/aao/fao/).

Americans with Disabilities Act: The University of Texas at Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including the *Americans with Disabilities Act (ADA)*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Any student requiring an accommodation for this course must provide the instructor with official documentation in the form of a letter certified by the staff in the Office for Students with Disabilities, University Hall 102. Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

Title IX: The University of Texas at Arlington is committed to upholding U.S. Federal Law "Title IX" such that no member of the UT Arlington community shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity. For more information, visit www.uta.edu/titleIX.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

> *I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

> *I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University.

Lab Safety Training: <u>Students registered for this course must complete all required lab safety training prior to entering the lab and undertaking any activities.</u> Once completed, Lab Safety Training is valid for the remainder of the same academic year (i.e., through the following August) and must be completed anew in subsequent years. There are <u>no</u> exceptions to this University policy. Failure to complete the required training will preclude participation in any lab activities, including those for which a grade is assigned.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the

inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at http://www.uta.edu/oit/cs/email/mavmail.php.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as "lecture," "seminar," or "laboratory" shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student's feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit http://www.uta.edu/sfs.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located to the right after leaving the classroom. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at www.uta.edu/resources.

Writing Center. : The Writing Center, 411 Central Library, offers individual 40 minute sessions to review assignments, *Quick Hits* (5-10 minute quick answers to questions), and workshops on grammar and specific writing projects. Visit https://uta.mywconline.com/ to register and make appointments. For hours, information about the writing workshops we offer, scheduling a classroom visit, and descriptions of the services we offer undergraduates, graduate students, and faculty members, please visit our website at www.uta.edu/owl/.

 "As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course. "

Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911.

Make-up Exam Policy: There are no make-up exams.

Web Site: http://crystal.uta.edu/~levine

Note: The instructor reserves the right to modify course policies, the course calendar, and assignment or project point values and due dates.

Course Schedule:

Week 1   Intro to software security, concepts, views
Week 2   static analysis, code
Week 3   code, code review
Week 4   how static analysis works
Week 5   input validation
Week 6   buffer overflow
Week 7   other overflow
Week 8   error, exception handling
Week 9   web applications
Week 10   XML
Week 11   privacy
Week 12   privileged execution
Week 13   design security
Week 14   projects
Week 15   review

Quiz Schedule on or about:
Sep. 23, Oct. 7, Oct. 26, Nov. 9, Nov. 23, Dec. 7