Advanced Software Engineering Fall 2012

Name of Instructor Mario A. Garcia
Office: CI331
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Course Number and Section: COSC 5379 001
Class meeting time and location MWF 11.00 – 11.50 S&T 108
Office Hours: T TH 9.30 – 10.45 Office Telephone: 825 3478

Course Description
In this course the student will learn about some of the most advanced topics on Software Engineering. The objective of this course is to teach students the methodology to design and write secure code applying the Secure Software Engineering life Cycle.

Students Learning Outcomes:
After completing this course, the student should be able to:
Have a higher-level understanding of how to write secure code by using the Secure Software Engineering Life Cycle.
1. Comprehend, apply, and implement Secure Software Requirements
2. Comprehend, apply, and implement Secure Software Design
3. Comprehend and apply Secure Software Implementation
4. Comprehend, apply, and implement Secure Software Testing
5. Comprehend Network Vulnerabilities
6. Comprehend Database Vulnerabilities
7. Comprehend Operating System Vulnerabilities

Course format:
Lecture will be once a week. The instructor will meet with teams during the other class meeting times. This meeting is mandatory. Blackboard will be used intensively for class discussion and class assignments.

Graded Activity

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\begin{array}{ll}
\text{Assessment Mechanism} & \text{Percentage} \\
\text{Team Programming Assignment:} & 15\% \\
\text{Team paper on Secure Software Engineering} & 10\% \\
\text{Exam 1} & 25\% \\
\text{Midterm Exam} & 25\% \\
\text{Final Exam} & 25\% \\
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Grading Scale

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\begin{array}{ll}
\text{Grade} & \text{Scale} \\
A & 90-100\% \\
B & 80-89\% \\
C & 70-79\% \\
D & 60-69\% \\
F & 0-59\% \\
\end{array}
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Grading Notes and Comments

**Incomplete:** An incomplete will only be granted in the case of serious illness. Written proof of the illness and a recommendation for an incomplete will be required from both the Dean of Students office as well as from a doctor. A grade of incomplete is never issued to give a student more time to complete assignments or improve a grade. The final determination as to whether or not an incomplete should be issued rests solely with the professor. Note: An 89 is a B

*Notice to Students with Disabilities:* Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you suspect that you may have a disability (physical impairment, learning disability, psychiatric disability, etc.), please contact the Services for Students with Disabilities Office, located in Driftwood 101, at 825-5816. If you need disability accommodations in this class, please see me as soon as possible.

**ACADEMIC ADVISING:** The College of Science and Technology requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. The College's Academic Advising Center is located in Driftwood 203E, and can be reached at 825-3466.

***Grade Appeal Process.*** As stated in University Rule 13.02.99.C2, Student Grade Appeals, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Rule 13.02.99.C2, Student Grade Appeals, and University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules Web site at http://www.tamucc.edu/provost/university_rules/index.html. For assistance and/or guidance in the grade appeal process, students may contact the Office of Student Affairs.

**Texts**


**COURSE OUTLINE**
Week 1
First part: Secure Software Engineering Book Why Is Security a Software Issue?
Chapter 1: Why you need to learn secure programming?
Week 2
What Makes Software Secure? – Chapter 2: Coding in the SDLC: Not a solitary Practice
Week 3
Requirements Engineering for Secure Software Chapter 3: Principles of Security and Quality
Week 4
Secure Software Architecture and Design – Chapter 4 Getting Organized: What to do on day one.
Week 5
Exam 1
Week 6
Considerations for Secure Coding and Testing Chapter 5 Software requirements: Hear what they say, Know what they mean, Protect what they own
Week 7
Security and Complexity: System Assembly Challenges Chapter 6: Design for Quality: The big picture
Week 8 –
Governance, and Managing for More Secure Software Chapter 7 – Design for Security
Week 9
Midterm Exam
Week 10
Secure Software Development - Chapter 8: Development tools: Choose Wisely
Week 11
Recommended Practices. Chapter 9 – Coding in the Cube: Developing good habits
Week 12
Chapter 10: Testing for Quality
Week 13
Chapter 11: Maintain your software
Week 14
The Network Environment, The Database Environment. The Operating System Environment (Secure Software Design Book)
Week 15 –
Project Work
Week 16 –
Final Exam
Research Paper. The research paper must follow the IEEE conference template (2 columns, single space, times new roman 10, etc). It must contain: Title, Abstract, Introduction, Conclusion, and Bibliography. Turnitin will be used to check percentage of direct copy. 20% is allowed.