CS 6266 InfoSec Practicum

Course Syllabus

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Course description and objectives

CS 6727 is the capstone course for the Master of Science in Cybersecurity (it is the old CS 6266 course which was required by MS Information Security). Its primary objective is in-context learning by allowing students to explore and apply cyber security principles and techniques to a real-world problem. The course requires students to explore a substantial scope/size cyber security problem and design, implement, and present a solution for it that has practical applicability.

Although each student (or a small group) explores a cyber security problem individually, the course will meet each week where students will present their progress on the project and receive feedback from the instructor and other students. The instructor will also outline weekly goals to ensure that students male consistent progress. The main learning objectives of the course include: (1) definition of key cyber security requirements for a system or environment that relies on or is impacted by information technology, (2) explore the threat model and choose threats against which security requirements must be met, (3) understand and evaluate existing techniques/solution relevant to the problem, (4) design, develop and implement a solution (software system or policy requirements) that can help address the security problem more effectively, and (5) carefully evaluate the effectiveness of the solution and any tradeoffs that must be considered in its application.

Since this course is a capstone, it is expected that students have completed two semesters of coursework prior to registering for it. However, exceptions may be granted by the instructor based on a student's past experience and the nature of the practicum project. In case students want to pursue a more research focused practicum project, it is highly advised that they gain research experience by working with a faculty member who has active research projects in the area most relevant to the practicum project. Such experience is typically gained by completing a directed research course such as 8903.

Course schedule

All students will be expected the follow the weekly schedule outlined below. Each week's progress will be graded toward the final letter grade in the course.

Week #	Key Tasks/Goals
1	Identify and present a cyber security problem and the real-world context in which it is important. A writeup that provides a clear description of the problem and motivates it must be submitted as well.
2	Develop a threat model for the problem and justify the threats that you plan to counter with your solution.
3	Conduct background research of techniques, tools, laws, regulations or policies that are available to address the security problem defined by you.
4	Writeup and present the shortcomings of existing solutions to the problem that you plan to address. In case you want to augment an existing system, describe what new functionality will be added and why it is necessary to address your problem.
5	Present a detailed design of the proposed solution or policy. If technical, it should outline key components and platform/tools that will be needed to develop and implement it; if policy it should describe what institutional venues and methods will be used.
6	Implementation/development of solution or policy.
7	Implementation/development of solution or policy continued.
8	Implementation/development continued. Mid-semester checkpoint with a writeup and detailed feedback session with instructor.
9	Detailed security analysis of implemented solution or policy.
10	Evaluation of the developed solution/policy by carefully documenting its strengths and limitations.
11	Evaluation of the practical applicability, possible deployment or adoption challenges

	and potential solutions/policies for overcoming them. You must make a clear argument for the benefits and return on investment for someone who would deploy the developed solution or implement the policies
12	Refinement of solution/policy based on evaluation results. Also, explore what could be done in the future to either improve the solution/policy or remove some of its limitations.
13	Demonstration of solution/policy.
14	Write a report that fully documents the solution/policy. Also develop a 15 minute presentation that can be used to present key highlights and articulates its practical applicability
15	Final presentations. All students are expected to comment on and provide feedback for each project.

Course readings

Because of individual projects, readings will differ for each student. Based on project topic, the instructor will suggest and assign readings to each student/group.

Course grading

Your final course grade will be based upon timely completion of the course requirements listed above and the quality of your products. Students will also be fully engaged in the class by reviewing the work of one another and providing constructive feedback. The following lists the components of the final grade.

Component	Percent of final grade
Workplan & meeting weekly goals	45% (3% for each week, weeks 1-15)
Class participation and feedback on other projects	10%
Project demo	15%
Class presentation	10%
Final report	20%

Academic Integrity

Academic dishonesty will not be tolerated. This includes cheating, lying about course matters, plagiarism, or helping others commit a violation of the Honor Code. Some exams (when specifically announced in class) allow the use of self-prepared supporting information (one sheet of paper, either typed or handwritten, could be double-sided); no other support materials are allowed at tests. Plagiarism includes reproducing the words of others without both the use of quotation marks and citation. Students are reminded of the obligations and expectations associated with the Georgia Tech Academic Honor Code and Student Code of Conduct, available online at www.honor.gatech.edu.

Learning Accommodations

If needed, we will make classroom accommodations for students with documented disabilities. These accommodations must be arranged in advance and in accordance with the Office of Disability Services (http://disabilityservices.gatech.edu).