Syllabus for CYB 780 Software Security

NOTE: This syllabus document contains the basic information of this course. The most current syllabus is available in the full course.

Course Description

Covers the foundations of engineering secure applications, including techniques used to engineer secure software and assess the security of applications. Topics include exploiting web vulnerabilities, secure development processes, implementing security features such as secure data storage and transmission, threat modeling, security requirements, code analysis, and penetration testing.

Prerequisite(s)

None

Program Outcomes

This course addresses the following competencies and program outcomes of the Master of Science in Cybersecurity:

- Program Outcome 4: Implement best practices in secure software development
- Program Outcome 6: Assess security implications for emerging software technologies

Course Outcomes

Upon completing this course, you will be able to do the following:
1. Practice threat modeling
2. Explain risk management and how to apply it to the secure development of software
3. Understand secure software design
4. Describe different types of software flaws
5. Simulate different types of software vulnerabilities and mitigation strategies
6. Describe web security basics and simulate different types of web vulnerabilities
7. Simulate penetration testing and practice ethical hacking

Course Components

Quizzes & Exams

The three quizzes and one exam cover backgrounds and terminology related to software security, classification of vulnerabilities, software design security, and web application security (OWASP).

Vulnerabilities Labs

The labs are a significant component of this course. The labs are penetration testing simulating different types of attacks and vulnerabilities related to software and the countermeasures to mitigate the attack.

Assignments

Three assignments cover conceptual and/or practical elements of shell programming, risk management, and threat modeling.

Grading

The following grading scale will be used to evaluate all course requirements and to determine your final grade:

Grade	Percentage Range
A	90% or greater
A-	87% - < 90%
B+	83% - < 87%
B	80% - < 83%
B-	77% - < 80%
C+	73% - < 77%
C	70% - < 73%
C-	65% - < 70%
F	0 - < 65%

Assignments	Percent
Quizzes (3)	20%
Assignments (3)	10%
Web Basic Exam (1)	10%
Labs (10)	60%
Total	**100%**