University of New Hampshire UNH-MANCHESTER

Securing Software	Spring 2025

COMP 865 Securing Software Principles
CRN 56090
1/21/2025 – 05/5/2025
Thursday 530pm-830pm at UNH-MHT Pandra P132
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Course Overview: Is a software system considered truly reliable if it isn't fundamentally secure? Or can it be considered secure if it's unreliable? Security is crucial to the design and operation of scalable software systems in production, as it plays an important part in product quality, performance, and availability. We will discuss best practices to help you design scalable and reliable software systems that are fundamentally secure.

Textbook (required):
Online Open-Source Electronic Textbooks/Whitepaper Documents that are on Canvas Learning Management System (LMS).

1. Building Secure and Reliable Systems
2. Secure Software Lifecycle
3. Software Security
4. Google Security
5. Lecture Notes from Software Engineering Institute of Carnegie-Mellon University.

Learning Objectives
Upon completion of this course students will:

1. Learn Software Design strategies.
2. Recommendations for coding, testing, and debugging best practices.
3. Learn Key Strategies to prepare for, respond to, and recover from incidents.
4. Learn Culturally best practices that help teams across your organization collaborate effectively.

Course Structure
The course is in person with the option of online synchronous format due to weather or other options. Digital Textbook, Lesson Plans, Presentations, and Software tools/web links on the Universities Learning Management System.

Module/Weekly Structure	
Lecture	The primary lecture(s) or media and key concepts.
Resources (or Review)	Assigned readings or media for review.

Securing Software **Spring 2025**

Participation	Every module will have a participation component. This could take the shape of a class participation, discussion forum, wiki, blog, collaborate event etc.
Assignments	Activities and assignments related to Module.

Course Schedule

Week	*Date*	*Topics Covered*	*Assignments and Due Dates*
1	Jan 23d	Introductions/Syllabus Security Overview Security Software	• Review Lecture • Participate in Class • Complete Weekly Review by Jan 30th
2	Jan 30th	Software Security Engineering Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by Feb 6th
3	Feb 6th	Security Requirements Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by Feb 13th
4	Feb 13th	System Assurance Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by Feb 20th
5	Feb 20th	Acquisition Process Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by Feb 27th
6	Feb 27th	Threat Analysis Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by Mar 6th
7	Mar 6th	Industry Cases for Threat Modeling Class Exercise Case Study One Requirements	• Review Lecture • Participate in Class • Complete Weekly Review by Mar 13th
8	Mar 13th	Risk Analysis for Software Class Exercise	• Review Lecture • Participate in Class

			• Case Study Due Mar 27th
9	Mar 20st	Spring Break – No Class Makeup Week	• Makeup Week
10	Mar 27th	Student Presentations	• Review Presentations
11	April 3d	Student Presentations	• Review Presentations
12	Apr 10th	Threat Modeling from Microsoft Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by Apr 17th
13	Apr 17th	Cryptography Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by Apr 24th
14	Apr 24th	Open-Source- Software (OSS) Class Exercise	• Review Lecture • Participate in Class • Complete Weekly Review by May 1st
15	May 1st	Network Defenses Google Cloud Overview Requirements for Case Study 2 Class Review	• Review Lecture • Participate in Class • Case Study 2 Due May 9th
16	May 9th	Submit Case Study 2 Due May 9th	• Case Study 2 Due May 9th

Grades

Item	% or points	Requirements
Weekly Review	25%	Weekly Review will be in the form of a Discussion Board with a Topic Related to that week's class. • Requirement 1: Initial Response to questions with a minimum of 100 words, written in complete sentences and checked for grammar and spelling errors. – 8 Points • Requirement 2: Response to two other students with a minimum of 50 words, written in complete sentences and checked for grammar and spelling errors. – 2 Points

Class Participation	25 %	Participation in class
Case Study One (Due Mar 23d)	25 %	10-15 Page PowerPoint Presentation with Instructor Notes of a Major Software Error that includes: • Title Page/Slide • Introduction • A full response to each of the questions listed below • Ties together main ideas • Provides a conclusion • Includes citations within the text / on the slide • Has a list of references at the end using APA or another approved citing format • Additional technical material in form of instructor notes on each slide.
Case Study Two (Due May 17th)	25%	Software issues and the 737 MAX Aircraft. Write a 4-5 page paper (not including title page) **<OR>** Create a PowerPoint presentation with 8-10 slides that includes: • Title Page/Slide • Introduction • A full response to each of the questions listed below • Ties together main ideas • Provides a conclusion • Includes citations within the text / on the slide • Has a list of references at the end using APA or another approved citing format

Assignment Details

Will be discussed in class with requirement for both case studies.

Policy on Late Submissions and Quizzes

Any late assignments must have pre-approval from the instructor.

Class Participation

Weekly participation is required. For the weekly review, a discussion aboard will be used and participation will be graded based on the following criteria and values. Review this carefully.

Quality of postings

Below are desired attributes for a posting.

- Ability to synthesize the main concepts from instructor, course content, external resources and class community.
- Use of proper grammar.
- Ideas are organized, persuasive and elevate the overall dialogue.
- Opinions are substantiated.
- Demonstration of critical or creative thinking.
- Evidence of preparation.

Etiquette

- Divergent opinions. Academic debate and differences are embraced in higher education and the forums in this course. Be mindful and respectful of *how* you articulate a difference or divergent opinion.
- 'I agree' statements. Unsubstantiated 'I agree' posts will not count to final participation grade without articulated rationale to support opinion.
- Off-topic postings. Discussions occasional veer off-topic. This is normal. These posts will not count and students are asked to stay on-topic.
    - Long responses. Grades will be influenced by an ability to demonstrate an understanding of the topic or question and on one's ability to be concise.

Student to Instructor Communication Expectations

How to Reach Me

My contact information is as follows:

Email David.yasenchock@unh.edu
Other David.yasenchock@gmail.com
Phone (603) 403-2558

Technical Requirements and Technical Support

See website listings for current recommendations and requirements related to this course - http://unh.edu/eunh/technical-requirements Technical assistance related to Blackboard is available at http://unh.edu/eunh/student-resources

University Disability Accommodations

The University is committed to providing students with documented disabilities equal access to all university programs and facilities. If you think you have a disability requiring accommodations, you must register with Disability Services for Students (DSS). Contact DSS at (603) 862-2607 or disability.office@unh.edu. If you have received Accommodation Letters for this course from DSS, please provide me with that information privately in my office so that we can review those accommodations.

Academic Honesty and Plagiarism

Students are required to abide by the UNH Academic Honesty policy located in the Student Rights, Rules, and Responsibilities Handbook.

As your instructor, I proactively monitor academic integrity through regular use of tools like SafeAssign and a diversified assessment approach. All work submitted to SafeAssign become a part of a UNH proprietary database. This is actively used to identify future intellectual property theft. Plagiarism of any type may be grounds for receiving an "F" in an assignment or an "F" in the overall course. Plagiarism is defined as "the unattributed use of the ideas, evidence, or words of another person, or the conveying the false impression that the arguments and writing in a paper are your own." (UNH Academic Honesty Policy, 09.3) Incidents are reported to the school dean and may be grounds for further action. If you have questions about proper citation refer to your department's writing guidelines. You can contact me at any time on this issue. Additional resources are located below:
http://libraryguides.unh.edu/unhmcitingsources
http://www.library.unh.edu/reference/citation.shtml

Note: This syllabus is subject to change. Students will be promptly notified of any changes.

