Undergraduate Course Syllabus

CYB 240: Application Security
Center: Online

Course Prerequisites
IT 145, CYB 200, and CYB 210

Course Description
Explore the fundamental principles and practices of application security. Identify common software vulnerabilities and develop strategies to reduce their potential impact. Analyze and assess the security posture of multi-tiered web applications.

Course Competencies
- Identify and troubleshoot deficiencies related to web application security
- Describe the fundamental principles and practices of application security
- Identify and troubleshoot deficiencies related to tiered web application security

Required Materials
InfoSec
Your course uses virtual labs from InfoSec Learning. We encourage you to register before your course begins, as students are most successful when they obtain their digital resources prior to the first week of class. See the course announcements for details.

Textbooks
The following textbooks are available for free through the Shapiro Library. Click each link to get access.

[The Manager's Guide to Web Application Security](#)
Ron Lepofsky
Apress
2014

[The Basics of Information Security](#)
Jason Andress
Syngress
Second Edition
2014

[Internet Security: How to Defend Against Attackers on the Web](#)

Harwood

Jones & Bartlett Learning

Second Edition

2015

Practical Web Penetration Testing

Gus Khawaja

Packt Publishing

2018

Hacker Techniques, Tools, and Incident Handling

Michael G. Solomon and Sean-Philip Oriyano

Jones & Bartlett Learning

Third Edition

2018

Secure Coding: Principles and Practices

Kenneth R. van Wyk and Mark G. Graff

O'Reilly Media, Inc.

2003

CompTIA PenTest+ Certification All-in-One Exam Guide

Raymond Nutting

McGraw Hill Education

2018

Building Web Applications With UML

Jim Conallen

Addison-Wesley Professional

Second Edition

2002

Diversity, Equity, and Inclusion

As indicated in our core values, SNHU is committed to "embrace diversity where we encourage and respect diverse identities, ideas, and perspectives by honoring difference, amplifying belonging, engaging civilly, and breaking down barriers to bring our mission to life."

This may or will be reflected in SNHU's curriculum as we embrace and practice diversity, equity, and inclusion (DEI) to provide the most transformative experience for our students, faculty, and staff. Because topics pertaining to DEI can be sensitive, please remember that embodying and practicing diversity, equity, and inclusion is one of our core values that you will encounter throughout the academic experience. In higher education, we are expected to think and engage critically. Use a growth mindset to embrace the diverse readings, course assignments, and experiences of your peers and faculty.

For more information about DEI at SNHU, please visit our website at the [Office of Diversity and Inclusion](#).

Instructor Availability and Response Time

Your class interaction with the instructor and your classmates will take place on a regular, ongoing basis. Your instructor will be actively engaged within the course throughout the week. You will normally communicate with your instructor in the weekly discussions or the General Questions discussion topic so that your questions and the instructor's answers benefit the entire class. You should feel free, however, to communicate with your instructor via SNHU email at any time, particularly when you want to discuss something of a personal or sensitive nature. Your instructor will generally provide a response within 24 hours. Instructors will post grades and feedback (as applicable) within seven days of an assignment's due date, or within seven days of a late submission.

Grade Distribution

Assignment Category	Number of Graded Items	Point Value per Item	Total Points
Reading Quizzes	6	25	150
Discussions	5	30	150
Activities	1	25	25
Lab Worksheet Warm-Up	1	20	20
Lab Worksheets	4	45	180
Project One Milestone	1	100	100
Project Two Stepping Stone	1	50	50
Cyber Playbook Submission	1	25	25
Competency Projects			
Project One	1	200	200
Project Two	1	100	100
			Total Course Points: 1,000

This course may also contain practice activities. The purpose of these non-graded activities is to assist you in mastering the learning outcomes in the graded activity items listed above.

University Grading System: Undergraduate

Grade	Numerical Equivalent	Points
A	93–100	4
A-	90–92	3.67
B+	87–89	3.33
B	83–86	3
B-	80–82	2.67
C+	77–79	2.33
C	73–76	2
C-	70–72	1.67
D+	67–69	1.33

Grade	Numerical Equivalent	Points
D	60–66	1
F	0–59	0
I	Incomplete	
IF	Incomplete/Failure *	
IP	In Progress (past end of term)	
W	Withdrawn	

* Please refer to the policy page for information on the incomplete grade process.

Grading Guides

Specific activity directions, grading guides, posting requirements, and additional deadlines can be found in the Assignment Guidelines and Rubrics section of the course.

Weekly Assignment Schedule

All reading and assignment information can be found within each module of the course. Assignments and discussion posts during the first week of each term are due by 11:59 p.m. Eastern Time. Assignments and discussion posts for the remainder of the term are due by 11:59 p.m. of the student's local time zone.

In addition to the textbook readings that are listed, there may be additional required resources within each module.

Module	Topics and Assignments
1	Introduction to Application Security
	The Manager's Guide to Web Application Security, Chapters 2 and 3
	1-0 Knowledge Check (Non-graded)
	1-1 Discussion: Introduction and Application Security
	1-2 Reading Quiz
	1-3 Lab Worksheet Warm-Up
	1-4 Review: Projects
2	Security Frameworks and the Software Development Life Cycle
	The Manager's Guide to Web Application Security, Chapters 4 and 5
	The Basics of Information Security, Chapter 5 (up to and including the "Protecting Data in Use" section)
	Internet Security: How to Defend Against Attackers on the Web, Chapter 7 ("Your Development Process and the Software Development Life Cycle" section up to and including the "Using Secure and Unsecure Protocols" section)
	2-0 Knowledge Check (Non-graded)
	2-1 Discussion: Security Considerations During the SDLC
	2-2 Reading Quiz
	2-3 Lab Worksheet

Module	Topics and Assignments
3	Security Frameworks and Attacks *Practical Web Penetration Testing*, "Understanding Web Application Vulnerabilities" chapter and "Application Threat Modeling" chapter (up to and including the "Security Risks" section) *Hacker Techniques, Tools, and Incident Handling*, Chapter 2 and Chapter 9 (up to and including the "Vandalizing Web Servers" section) 3-0 Knowledge Check (Non-graded) 3-1 Reading Quiz 3-2 Lab Worksheet 3-3 Project Two Stepping Stone: Preliminary Report
4	Vulnerability Identification and Reporting *Internet Security: How to Defend Against Attackers on the Web*, Chapter 8 4-0 Knowledge Check (Non-graded) 4-1 Reading Quiz 4-2 Lab Worksheet 4-3 Project One Milestone: Vulnerability Identification Report
5	Securing Web Applications *The Manager's Guide to Web Application Security*, Chapter 7 *The Basics of Information Security*, Chapter 12 5-0 Knowledge Check (Non-graded) 5-1 Discussion: Incorporating Continuous Security 5-2 Reading Quiz 5-3 Lab Worksheet
6	Application Vulnerabilities and Remediation *Secure Coding: Principles and Practices*, Chapter 1 and Chapter 2 ("What Is Security Architecture?" and "Principles of Security Architecture" sections) *CompTIA PenTest+ Cert Guide*, Chapter 6 6-0 Knowledge Check (Non-graded) 6-1 Reading Quiz 6-2 Activity: Code Analysis 6-3 Project One Submission: Vulnerability Summary Report
7	Client and Server Web Application Security *Building Web Applications With UML*, "Security" chapter 7-1 Discussion: Client- and Server-Side Scripting 7-2 Project Two Submission: Recommendations Report
8	Cookies and Course Reflection 8-1 Discussion: Cookies 8-2 Playbook Submission

Course Participation

Course participation is required within the first week of the term for all online courses. *Participation* in this context is defined as completing one graded assignment during the first week of the course. Otherwise, students will be administratively removed for nonparticipation. Students who do not participate during the first week may forfeit their rights to be reinstated into the course. Students who stop attending a course after the first week and who do

not officially withdraw will receive a grade calculated based on all submitted and missed graded assignments for the course. Missed assignments will earn a grade of zero. See the [course withdrawal policy](#) and the [full attendance policy](#) for further information.

Late Assignments

Students who need extra time may submit assignments (excluding discussion board postings) up to one week after the assignment due date. Discussion board submissions will not be accepted for credit after the deadline except in extenuating circumstances.

- A penalty of 10 percent of the total value of the assignment will be applied to the grade achieved on the late assignment regardless of the day of the week on which the work is submitted.
- Students who submit assignments more than one week late will receive a grade of zero on the assignment unless they have made prior arrangements with the instructor.

Students must submit all assignments no later than 11:59 p.m. (in their own time zone) on the last day of the term. No assignments are accepted after the last day of the term unless an incomplete has been submitted. See the [incomplete grades policy](#).

There may be times an instructor makes an exception to the late assignment policy. Instructors may accept late work, including discussion board posts, with or without prior arrangement.

- Exceptions to the late policy on these grounds are left to the instructor's discretion, including whether the late penalty is applied or waived. Students should not assume that they will be allowed to submit assignments after the due dates.
- If an instructor finds that they are unable to determine whether an exception to the late policy would be appropriate without documentation, the collection and review of student documentation should be handled through the Dispute Resolution team in order to protect the student's privacy. In these cases, students should file a [Student Concern Dispute form](#) to have the circumstances reviewed.

If a student is experiencing (or knows they will experience) a circumstance, including pregnancy, that is protected under the Americans with Disabilities Act or Title IX, they are encouraged to contact the [Online Accessibility Center (OAC)](#) as soon as possible to explore what academic accommodations might be offered. Instructors must honor all deadlines established through the OAC.

Student Handbook

Review the [student handbook](#).

ADA/504 Compliance Statement

Southern New Hampshire University (SNHU) is dedicated to providing equal access to individuals with disabilities in accordance with Section 504 of the Rehabilitation Act of 1973 and with Title III of the Americans with Disabilities Act (ADA) of 1990, as amended by the Americans with Disabilities Act Amendments Act (ADAAA) of 2008.

SNHU prohibits unlawful discrimination on the basis of disability and takes action to prevent such discrimination by providing reasonable accommodations to eligible individuals with disabilities. The university has adopted the

ADA/504 Grievances Policy (version 1.2 effective October 16, 2017), providing for prompt and equitable resolution of complaints regarding any action prohibited by Section 504 or the ADA.

For further information on accessibility support and services, visit the Disability and Accessibility Services webpage.

Academic Integrity Policy
Southern New Hampshire University requires all students to adhere to high standards of integrity in their academic work. Activities such as plagiarism and cheating are not condoned by the university. Review the full academic integrity policy.

Copyright Policy
Southern New Hampshire University abides by the provisions of United States Copyright Act (Title 17 of the United States Code). Any person who infringes the copyright law is liable. Review the full copyright policy.

Withdrawal Policy
Review the full withdrawal policy.

Southern New Hampshire University Policies
More information about SNHU policies can be found on the policy page.