North Carolina Agricultural and Technical State University

Summer 2024 Course Syllabus

College of Engineering Department of Computer Science

NOTE: Students are responsible for reading, understanding and following the syllabus.

Graduate Course Information

Course Name: Web Security

Course Number/Section: Comp 621 /423 Credit Hours: 3

Days and Times: Online Class Location: NA

Instructor Contact Information

Instructor: Dr. Karen Schnell

Office Location: NA Email Address: klschnell@ncat.edu Office Phone: NA

TA: NA

TA's Email Address: TBD

Communication and Feedback

Assignments and course material will appear on the University's online Blackboard system, https://blackboard.ncat.edu. Assignments will only be submitted through Blackboard. DO NOT EMAIL or SEND SHARED DRIVE LINKS!! Email is the best way to contact the course Instructor. Excluding holidays and weekends, the response to all clear and well-written communications will be provided within 48 hours. Attempts will be made for assignments, quizzes, and exams are to be graded within a week. Projects/case studies/exams may take longer to review depending on class size and size of the assignment since there will not be a TA available.

Student Hours

These are times students may visit the professor without an appointment to request the assistance they need**. Since I do not have an office, you will need to email me to join a Zoom call. I highly recommend making an appointment. Students can also email the instructor to arrange other times. Meetings will be through Zoom. Private meetings can be arranged through email. Please be ready with the title of the class in the email heading. Without this information, your email may be lost, missed, or deleted. Remember, instructors teach more than one class. Provide an agenda of what you want to discuss. Often questions can be answered via email.**

Error! Bookmark not defined.5:30 AM ☐ / PM ☒ – 6:30 AM ☐ / PM ☒

Monday ☐ Tuesday ☒ Wednesday ☐ Thursday ☒ Friday ☐

Instructor's Zoom Link: TBD

TA's office hours: TBD

TA's Zoom link: TBD

Course Prerequisites

Graduate senior status.

Costs & Finances –

The student is expected to ensure that financial obligations for the class and materials are planned for. This is a key consideration for signing up for classes. Assignments and course work cannot be delayed because of not budgeting for course costs. Work with your advisor and financial aid ahead of time. Plan carefully!!

Course Description

This course focuses on the technologies that provide security services for the World Wide Web. It introduces a set of procedures, practices, and technologies for protecting web servers, web users, and their surrounding organizations. We discuss, understand, and use various security technologies for the World Wide Web (WWW). How to use these technologies to secure WWW applications will be addressed.

Student Learning Objectives/Outcomes (SLO)

Upon completion of this course, the student should be able to:

- Define web security, security goals and history of hacking
- Secure a web application against attack from known vulnerabilities
- Perform penetration testing to detect common vulnerabilities
- Use existing tools to evaluate the network traffic created by a web application
- Analyze the effectiveness and security of HTTP security, proxy servers, electronic payment systems, and cryptographic techniques on the WWW

Required Textbooks and Materials

Required Texts: Web Application Security: Exploitation and Countermeasures for Modern Web Applications, by Andrew Hoffman, 2020 ISBN: 9781492053118

Required Materials: You must have a reliable computer, computer battery, computer charger, and internet connection. Late assignments and complications while taking tests/exams due to computer or internet failures must be backed up with a computer repair note or internet provider proof of outage. Do not do assignments on iPads, tablets, or cell phones. It is the student's responsibility to contact support services to ensure functionality of their computers and access. Please refer to your computer and software vendors, internet providers, and NC A & T support services.

Suggested Course Materials

Suggested Readings/Texts:

Suggested Materials:

Grading Policy

Course Grade Scale

94 - 100	A	74 - 78	B-
89 - 93	A-	69 - 73	C+
84 - 88	B+	64 - 68	C
79 - 83	B	0 - 63	F

Grading Allocation
Course grades are based on a weighted grading scale of 100% as follows:

- 7 Assignments (5% each): 35%
- 6 Quizzes (2.5% each): 15%
- Midterm Exam 1: 15%
- Midterm Exam 2: 15%
- Final: 20%

Course Policies

Use Of Blackboard as The Learning Management System
Blackboard is the primary online instructional and course communications platform. Students can access the course syllabus, assignments, grades, and learner support resources. Students are encouraged to protect their login credentials, complete a Blackboard orientation and log in daily to course.

For GRADUATE and UNDERGRADUATE STUDENTS: STUDENT RELIGIOUS OBSERVANCE (see Graduate/Undergraduate Catalog)

[Other Course Polices]

Attendance/Participation – For the Summer 2024 semester, this course is online. Thus, there will not be any lectures. It is important to read and review all course materials. The book and blackboard material introduce the class material. Some material provided will not be covered in the text. Students are responsible for all class material covered or assigned. Class attendance and participation is expected. This collected via completion of weekly assignments. Note that the instructor might assign bonus credit for attendance at the very end of the class. **Attendance during any exam or quiz is required**. Summer sessions are shorter than fall and spring semesters. Scheduled tests and due dates are set. They will not be moved due to vacations, work schedules, etc. It is the student's responsibility to make sure that personal obligations do not impact due dates. Please decide ahead of time if you can complete a summer course or not. This is a student responsibility and personal obligation to ensure life, school, and commitment balances.

Turning in Assignments – Do not wait until the DUE date to complete assignments. You will have a week or more to complete assignments. I do not accept assignments via email or posted to shared drives. You MUST upload it to Blackboard. You are responsible for ensuring that it is uploaded correctly. Check once or more. Don't assume. Don't wait until the last minute, hour or even day to get started and to complete your assignments and turn in. DUE date is not the day to only DO it!

Use of AI Tools like ChatGPT and other similar tools is considered plagiarism! These are tools and are not for creating your work that you are to turn in. Remember this is a computer science class, we understand and know how to check for the use of these tools to do assignments with. Do not cut/paste from journals/the internet/etc. You are expected to write at a University level whether Undergraduate or Graduate. Please use NC A & T wring sources. Use APA format and style!

Make-Up Exams – There will be no make-up exams.

Extra Credit – No applicable.

Late Work – Assignments must be turned in at the specified time and date to receive full credit, unless accompanied by a valid written excuse. Assignments turned in within one day of the assigned time will be penalized 20%. **No Assignments will be accepted after one day. If you are failing this class, I can not tell you if you can pass or not. Instructors don't know student's abilities or personal life. Do not ask towards the middle to the end of the course if you can make up the course or several assignments. It just is not possible. There is a reason material is due when it is due. Please stay on top of your course commitments. Make timely personal judgements. Be familiar with NC A & T support services for personal help.**

Special Assignments – None

Changes to this syllabus can be made at any time by the course instructor.

University, department, etc. rules, policies, procedures, etc. are the student's responsibility to review and follow.

Class Schedule [or Course Plan]

Date	Module	Reading, Activity, Homework, Exam
Part 1 - Basics and Web Stack Background		
Week 1	Module 1 – Introduction **5/20 -5/26**	**Reading - Chapter 1** **Syllabus Quiz** **Quiz 1**
Week 2	Module 2 - Web App Structure & Recon **5/27 -6/2**	**Reading - Chapters 2, 3, 4** **Assignments 1, 2**
Week 2		
Week 3	Module 3 – HTTP **6/3 -6/9**	**Assignment 3** **Quiz 2**
Part 2 - Client-side attacks and defenses		
Week 4	Module 4 - Cookies and Sessions **6/10 -6/16**	**Quiz 3**
Week 4	Module 5 - Cross Site Request Forgery & Defense **6/10 -6/16**	**Reading - Chapters 11, 23** **Assignment 4**
Week 5	Module 6 - Cross Site Scripting & Defense **6/17 -6/23**	**Reading - Chapters 10, 22** **Assignment 5**
Week 5	**MIDTERM EXAM 1 (Modules 1 to 6)** **6/23 open from 8 am to 11:59 pm**	
Week 6	Module 7 - DoS, Phishing, Ransomware and OpenSource Software **6/24 -6/30**	**Reading - Chapters 14, 15, 26, 27** **Quiz 4**
Part 3 - Server-side attacks and defenses		
Week 6	Module 8 – Code Injection & defense **6/24 -6/30**	**Reading - Chapters 13, 25** **Assignment 6**
Week 7	Module 9 - XML External Entity attack & defense **7/1 -7/7**	**Reading - Chapters 12, 24** **Assignment 7** **Quiz 5**
Week 7	Module 10 - HTTPS & TLS **7/1 -7/7**	
Week 8	**MIDTERM EXAM 2 (Modules 7 to 10)** **7/14 open from 8 am to 11:59 pm**	
Week 8	Module 11 - Digital Certificates **7/8 -7/14**	**Quiz 6**
Week 9	Module 12 – Authentication **7/15 -7/21**	
Week 10	**FINAL EXAM** **7/28 open from 8 am to 11:59 pm**	

** These descriptions and timelines are subject to change at the discretion of the instructor.*

Please refer to the Common Policies file for all other University policies.