

CSCI 5312 – WEB SECURITY

CREDIT HOURS: 3

PREREQUISITES: Admittance into graduation program in Cyber Security

RECOMMENDED PREREQUISITE COURSES:

CSIT 4355 Enterprise Security and CSCI 4347 Cyber Security Concepts and Practices

CATALOG DESCRIPTION

Fundamental coverage of issues and techniques in developing secure web-based applications; related topics such as network security, web server security, application-level security, and web database security.

PURPOSE OF COURSE

Study and practice of fundamental techniques in developing secure web based applications, including vulnerability of web based applications. Learn and apply principles of cyber security to protect applications from attacks. Address advanced cyber security topics such as web attacks and defense, e-commerce security, and collaborative web-based applications. Complete a research paper on an instructor-approved topic.

EDUCATIONAL OBJECTIVES

Upon successful completion of the course, students should be able to:

1. Demonstrate an understanding of security-related issues in Web-based systems and applications.
2. Demonstrate an understanding of the fundamental security components of a computer system.
3. Be able to evaluate a Web-based system with respect to its security requirements.
4. Demonstrate an understanding of the process of developing secure networked systems.
5. Demonstrate an understanding of the fundamental mechanisms of securing a Web-based system.
6. Be able to implement security mechanisms to secure a Web-based application.
7. Be able to evaluate security issues and common controls in electronic commerce systems

COURSE CALENDAR

This course meets for a minimum of 37.5 lecture contact hours during the semester. Students have significant assignments based on readings from the primary literature, participate in classroom discussions regarding current research topics, complete periodic homework and laboratory/programming assignments, and periodic exams in addition to the final exam. Students are expected to prepare for any class assignments or quizzes over the material covered in class or in the reading material. Successful completion of these activities requires at a minimum six additional hours of outside of classroom work each week.

CONTENT

Hours

Introduction to Web-based security	6
Overview of ISO and N-tier web models	
Typical components and mechanisms	
HTTP vs. HTTPS security	
Proxy Servers, Firewalls, NAT	9

Use of proxy servers for security
Effectively using Firewalls
Address translations

Internet Security Protocols.....12
 ISO security vs. TCP/IP
 SSL
 Man in the middle attacks

Database Security.....6
 Oracle and SQL
 Coding security into applications

Electronic Payment Systems and coding6
 Signing and certificates
 Client and server side security
 Risk Management

Exams (plus final).....6

TOTAL 45

REFERENCES

Oppliger, Security Technologies for the World Wide Web, 2nd Ed. Artech, 2002

Leblanc and Messerschmid, Identity and Data Security for Web Development: Best Practices O'Reilly, 2016

Stuttard and Pinto , The Web Application Hacker's Handbook: Finding and Exploiting Security Flaws Wiley, 2011

RELATED DOCUMENTS

- [Man in the middle attack](#)
- VeriSign Technical Brief. "[Building an E-Commerce Trust Infrastructure: SSL Server Certificates and Online Payment Services](#)"
- www.cybercrime.gov: Computer Crime and Intellectual Property Section (CCIPS) of the Criminal Division of the US Dept. of Justice
- <https://www.justice.gov/criminal-ccipsc.html>
- The archived World Wide Web Security FAQ: <http://www.w3.org/Security/faq/>
- Cryptography FAQ Index: <http://www.faqs.org/faqs/cryptography-faq/>
- Cryptography.org: <http://www.cryptography.org/>
- The Open SSL Project (SDKs for free download): <http://www.openssl.org/>
- Discussion about Windows Security: <http://www.windowsitpro.com/categories/category/security>

Attendance Policy:

Attendance will be taken at the beginning of each class. If you have 3 unexcused absences, then your final grade will be reduced by one letter grade. If you have 4 unexcused absences, you will receive an "F" in the course. To receive an excused absence a written and signed notice is required within three class days of the absence. If you miss class without approval of your instructor, you will receive a grade of zero on the missed assignment. Authorized absences must be approved by your instructor in advance of the absence unless you have an emergency or illness. Make-up work must be completed outside of normal class hours and within one week following an excused absence. It is your responsibility to see your instructor and make arrangements for make-up work.

Academic Integrity (A-9.1)

Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty

Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Plagiarism is presenting the words or ideas of another person as if they were your own. Examples of plagiarism are (1) submitting an assignment as if it were one's own work when, in fact, it is at least partly the work of another; (2) submitting a work that has been purchased or otherwise obtained from an Internet source or another source; and (3) incorporating the words or ideas of an author into one's paper without giving the author due credit.

Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp

Withheld Grades - Semester Grades Policy (A-54)

Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Students with Disabilities

To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to <http://www.sfasu.edu/disabilityservices/>.

Mental Health Statement

SFASU values students' mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support students' mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:

SFASU Counseling Services
www.sfasu.edu/counselingservices
3rd Floor Rusk Building
936-468-2401

SFASU Human Services Counseling Clinic
www.sfasu.edu/humanservices/139.asp
Human Services Room 202
936-468-1041

Crisis Resources:

Burke 24-hour crisis line 1(800) 392-8343
Suicide Prevention Lifeline 1(800) 273-TALK (8255)
Crisis Text Line: Text HELLO to 741-741