Course Syllabus

Course Prefix, Number, and Title:
CSC 234 - DT1/DT2/DT3 - Software Security

Credits:
3

University Name:
Dakota State University

Academic Term/Year:
Fall 2020

Last date to Drop and receive 100% refund:
August 28, 2020

Last date to Withdraw and earn a grade of 'W':
October 30, 2020

Course Meeting Time and Location:
Online

Instructor Information:

Name:
Shawn Zwach

Office:
East Hall 6 (Social distancing not possible)

Phone Number(s):
605-256-5209

Email Address:
shawn.zwach@dsu.edu

Office Hours:
Online Only for Fall 2020 Semester

Appointments can be made via EAB. Generally, if I'm available when I see your email I can respond with a Zoom meeting if requested.

Monday - Thursday:	8:30 am - 9:00 am CT
	2:00 pm - 4:00 pm CT
Friday:	8:30 am - 9:00 am CT

Approved Course Description:

Catalog Description:

This course will make use of hands-on exercises in compiled and web-based software to illustrate attack methodologies and techniques that lead to software vulnerabilities that violate fundamental security principles. Attacks and mitigation strategies related to filter evasion, session management, input validation, buffer overflows, and related areas will be emphasized.

Additional Course Information:

Modifications to the Course: The instructor reserves the right to adjust this syllabus during the semester to better meet the needs of the students.

Prerequisites:

Course Prerequisite(s):

CSC 250

Technology Skills:

Basic computer skills and familiarity with navigating a Windows based environment are required. Linux skills are helpful for completing the labs.

Course Materials:

Required Textbook(s):

None

Required Supplementary Materials:

None

Optional Materials:

24 Deadly Sins of Software Security – ISBN: 9780071626767 (Available for free via O'Reilly Higher Education)

Student Support:

DSU Knowledge Base:

The DSU Knowledge Base contains links and resources to help students by providing information about the following topics: User Accounts & Passwords, Academic Tools & Resources, Software & Apps Support, WiFi & Network Access, Campus Emergency Alert System, Campus Printing, IT Security & Safe Computing, and the Support Desk (which is there to help both on and off-campus students). The Knowledge Base can be accessed through the link below:

- DSU Knowledge Base

D2L Support for Students:

The D2L Support for Students site is designed to provide DSU students a D2L support resource center that contains user guides, tutorials, and tips for using the D2L learning environment. The D2L Support for Students site can be accessed through the link below:

- DSU D2L Support Resources for Students

Course Delivery and Instructional Methods:

Recorded lectures and labs. A large portion of the course material is delivered in lab format.

Classroom Policies:

Attendance and Make-up Policy:

Attendance will not be taken during this online course. Assignments, quizzes, and exams must be taken within the given timeframe or previously arranged with the instructor. Online students are required to watch all course videos within 4 days of being posted.

All students are expected to check their DSU email daily. The D2L course site should be checked at least every other day for updates.

Note: it is the unfortunate truth that major life events (e.g. demise of a loved one) may pull us away from learning objectives and schedules. Please let me know as soon as possible if you are experiencing or expect to experience such an event and I will work with you. Communication needs to happen before deadlines of assignments, quizzes, tests, etc.

Accessibility Statement:

Dakota State University strives to ensure that physical resources, as well as information and communication technologies, are reasonably accessible to users in order to provide equal access to all. If you encounter any accessibility issues, you are encouraged to immediately contact the instructor of the course and Dakota State University's ADA Office, which will work to resolve the issue as quickly as possible.

DSU's ADA Office is located in the Learning Engagement Center and can be contacted by calling 605-256-5121 or emailing dsu-ada@dsu.edu. Students seeking ADA accommodations (such as non-standard note taking or extended time and/or a quiet space taking exams and quizzes) can log into the DSU portal to access https://portal.sdbor.edu/dsu-student/student-resources/disability-services/Pages/default.aspx/ for additional information and the link to the Disability Services Request Form. You will need to provide documentation of your disability and the ADA Coordinator must confirm the need before officially authorizing accommodations.

Academic Honesty Statement:

Cheating and other forms of academic dishonesty run contrary to the purpose of higher education and will not be tolerated in this course. Please be advised that, when the instructor suspects plagiarism, the Internet and other standard means of plagiarism detection will be used to resolve the instructor's concerns. The South Dakota Board of Regents Student Academic Misconduct Policy can be found here: SDBOR Policy 2.33.

Posting of assignment, lab, or exam components to any forum or website (either seeking solutions or providing solutions), will result in failure of the course. All other forms of academic dishonesty will result in a score of zero on the current grade item. Both incident types will be referred to student conduct officials and/or the academic integrity board for review. Note that both entities have the power to suspend students from the university for academic dishonesty.

Statement on Dissemination of Course Materials

Recording and disseminating lectures, presentations or course materials is prohibited without the express permission of the faculty member. Failure to comply with this restriction may result in disciplinary action. Recording and disseminating lectures, presentations or course materials is prohibited without the express permission of the faculty member. Failure to comply with this restriction may result in disciplinary action.

Communication and Feedback:

Preferred Email Contact Method:

Communication via email must only take place with DSU email using the email address at the beginning of the document. Only use your DSU email to make contact. Personal email addresses may not be used for official instructor/student communication due to federal student privacy laws.

It is recommended to configure D2L notifications for email or mobile.

Email Response Time:

Students should expect a response within 24-48 hours depending on weekends, holidays, and other engagements. Students will be informed if I am unavailable due to commitments to the university.

Feedback on Assignments:

Feedback for assignments will be provided within 1 week of the assignment due date unless otherwise noted.

Requirements for Course Interaction:

When communicating with other students, or anybody for that matter, be respectful and polite. DSU's online handbook has some handy notes on communication here: https://dsu.edu/assets/uploads/resources/DSU_OnlineHandbook-2018.pdf

Student Learning Outcomes:

By completing this course, students shall:

- Possess a thorough understanding of the various types of vulnerabilities, their underlying causes, identifying characteristics, the ways they are exploited, and potential mitigation strategies
- Apply fundamental security design principles during system design, development, and implementation to minimize vulnerabilities
- Be able to perform analysis of existing source code for functional correctness
- Be able to demonstrate that they understand the techniques specifying program behavior, classes of well-known defects, and how they manifest themselves in various programming languages.
- Be able to identify which fundamental security design principles are in play, how they interrelate and methods in which they should be applied to develop systems worthy of trust

Evaluation Procedures:

Assessments:

Labs / Assignments .....50% of Final Grade
Quizzes .....15% of Final Grade
Exams .....35% of Final Grade

Final Examination:

December 2-8, 2020

Performance Standards and Grading Policy:

90 – 100%..... "A"
80 – 89.9%..... "B"
70 – 79.9%..... "C"
60 – 69.9%..... "D"
Less than 60% ..... "F"

Student Verification Statement and Proctoring Policy:

Federal law requires that universities verify the identity of students when course materials and/or course assessment activities are conducted either partially or entirely online. A student's Desire2Learn (D2L) login and password are intended to provide the student with secure access to course materials and are also intended to help the university meet this federal mandate. Some DSU Faculty also require the use of a proctor for exams in distance-delivered (Internet) courses and this requirement provides a second level of student identity verification. Students are responsible for any proctoring fees, if applicable. Finally, an instructor who uses web conferencing technology may require students to use a webcam during exams, as another means of student identity verification through voice and visual recognition.

For online sections of this course Respondus Lockdown Browser and Respondus Monitor will be used for identity verification when feasible.

Tentative Course Outline and Schedule:

Week	Date	Topics, Assignments, Quizzes, Tests, Deadlines
1	17-Aug	Course Intro
2	24-Aug	Security Principles / Vulnerability Taxonomies
3	31-Aug	Integer Overflows
4	7-Sep	Buffer Overflows
5	14-Sep	Format String Problems
6	21-Sep	Crypto Problems
7	28-Sep	Improper Returns / Race Conditions
8	5-Oct	Midterm Exam
9	12-Oct	SQL Injection
10	19-Oct	Cross Site Scripting
11	26-Oct	Cross Site Request Forgery / Server-Side Request Forgery
12	2-Nov	Password Problems / Information Leakage
13	9-Nov	Command Injection
14	16-Nov	Trust Relationships / Attack Types
15	23-Nov	Review / Thanksgiving Holiday
16	30-Nov	Final Exam Period Starting December 2
17	7-Dec	Final Exam Period Ending December 8

Freedom in Learning Statement:

Students are responsible for learning the content of any course of study in which they are enrolled. Under Board of Regents and University policy, student academic performance shall be evaluated solely on an academic basis and students should be free to take reasoned exception to the data or views offered in any course of study. It has always been the policy of Dakota State University to allow

students to appeal the decisions of faculty, administrative, and staff members and the decisions of institutional committees. Students who believe that an academic evaluation is unrelated to academic standards but is related instead to judgment of their personal opinion or conduct should contact the dean of the college which offers the class to initiate a review of the evaluation.

Change Log

Date	Notes
1 August 2020	Initial release - Fall 2020
12 August 2020	Updated material policy. Added DT3