

**CSI 5720, Software Security, Winter 2018**  
**Department of Computer Science and Engineering**  
**School of Engineering and Computer Science**  
**Oakland University**

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**Time & place** Monday, Wednesday @ 5:30 - 7:17pm, Engineering Center 555  
**Instructor** Mehdi Bagherzadeh  
**Email & phone** mbagherzadeh@oakland.edu 248 370 2208  
**Office** 542 EC  
**Office hours** Monday 4:30 - 5:30pm or *by appointment only*

***It is assumed that each student has read and understood the syllabus in its entirety.***

**Course description** Introduction to research in foundations of software security. This course surveys common software vulnerabilities, including buffer overflows, format string attacks, cross-site scripting and botnets. The course also discusses common defense mechanisms, including static code analysis, reference monitors, language-based security, secure information flow among others.

**Course objectives** Students are exposed to principles and techniques of secure software development. The student shall be able to

- Acquire knowledge of common software security threats and mitigation techniques;
- Assess security risk of a software system under development using threat models and security metrics and write security requirements by developing misuse use cases;
- Apply secure coding techniques;
- Perform security testing including white box, grey box, black box and penetration testing techniques;
- Verify security requirements using static analysis and code inspection techniques;

**Required text book**

- John Viega and Gary McGraw. *Building Secure Software: How to Avoid Security Problems the Right Way*. Addison-Wesley Professional, 2002. ISBN-13: 978-0321774958.
- Selected list of reading material assigned in the class, if needed.

**Recommended text books**

- Michael Howard, David LeBlanc, and John Viega. *24 Deadly Sins of Software Security: Programming Flaws and How to Fix Them*. McGraw-Hill, 2010. ISBN-13: 978-0071626750.
- Matt Bishop. *Computer Security: Art and Science*. Addison-Wesley Professional, 2002. ISBN-13: 978-0201440997

**Course/grade components** attendance, participation: 10%      labs: 20%      group project: 15%  
exam 1: 15%      exam 2: 20%      exam 3: 20%

The simple sum of course components show in Moodle, does not take into account the above percentages for course components and therefore are not proper reflection of your grade.

**Necessity of all components** All components are necessary to pass the course. Not submitting more than half of labs will result in a failing grade, independent of grades for other components. The same is true for not taking more than one exam. Not submitting the group project will result in a failing grade for all group members.

**Attendance** Attendance is required and will be taken. Three late arrivals and/or early departures equal one unexcused absence. Seven or more unexcused absences will result in a failing grade, independent of grades for other components. Attendance is 5% of the final grade.

**Cutoff grade** A final grade of 60% or less will be considered as a failing grade.

**Extra credits** No extra credits will be offered, no exceptions.

**Exams** An exam is administered only once and can be taken in person only. No makeup exams will be offered.

**Participation** The participation is divided between in person class and online Piazza participation each of which 2.5% of the final grade.

**Labs** All labs are take-home labs.

**Group project** Groups of 2 or 3 students propose a project topic and carry out the project during the semester. The project topic should be in the domain of Software Security and related to subdomains of, including but not limited to, secure software engineering of sequential, concurrent, big data or mobile software. The topic should be approved by the instructor. The project could be an implementation or a survey. A survey should cover and summarize at least  $x * 3$  published papers in well-known software engineering conference where  $x$  is the number of students in the group. Groups must be formed and project topics should be submitted for instructor's approval by the deadline of January 31, 2018 at 11:55pm. A group presents their progress twice during the semester.

**Late delivery** Deliverables are expected to be submitted on time. A penalty of 25% is applied for each day a deliverable is submitted late. A deliverable submitted 4 days or after the deadline will receive zero points. Deliverables constitute labs and project related proposal/presentations/reports.

The submission time for each take-home lab is 11:55pm on the day the lab is due.

**Announcements on Piazza, Moodle and Oakland Email Address** All course announcements are made on Piazza. Major announcements may be also directly emailed to Oakland email address of the student. Labs will be posted on Moodle. It is the responsibility of the student to keep updated about course via regular checking of Piazza, Moodle and their Oakland email. Email address used is the one provided in SAIL.

**Digital device usage** Use of any digital device, including but not limited to cell phones, laptops and tablets, is disallowed in the class, except in case of an emergency.

**Email communications** Students should use their Oakland email addresses, should they need to communicate with the instructor. Emails sent from other addresses, rather than student's Oakland email, will not be answered.

**Voice and video recordings** No voice or video recording of the class is allowed.

**Academic conduct** All members of the academic community at Oakland University are expected to practice and uphold standards of academic integrity and honesty. Academic integrity means representing oneself and one's work honestly. Misrepresentation is cheating since it means students are claiming credit for ideas or work not actually theirs and are thereby seeking a grade that is not actually earned.

**Special considerations** Students with disabilities who may require special accommodations should make an appointment with campus Disability Support Services. Students should also bring their needs to the attention of the instructor as soon as possible by providing the Letter of Accommodations created by DSS. For academic help, such as study and reading skills, contact the Academic Skills/Tutoring Center.

**Emergency preparedness** It is the responsibility of each student to understand the evacuation and "lockdown" guidelines to follow when an emergency is declared. Few starting steps are:

- OU uses an emergency notification system through text, email, and landline. These notifications include campus closures, evacuation, lockdowns and other emergencies. Register for these notifications at <https://wwwp.oakland.edu/uts/student-services/emergencynotification>
- If an emergency arises on campus, call the OUPD at 248-370-3331.
- Review protocols for evacuation, lockdown and other emergencies via the classroom's red books (hanging on the wall) and <http://oakland.edu/prepared>.