

Lamar University
College of Arts & Sciences
Department of Computer Science

COSC4301/5340 Cyber Security SYLLABUS

Section 02(COSC4301) and 01(COSC5340) Fall 2017

INSTRUCTOR: DR. Xingya Liu

OFFICE:	Maes Room 86
OFFICE HOURS:	T & R 2:00-5:00 pm or by appointment
OFFICE PHONE:	409-880-8677
EMAIL ADDRESS:	xliu@lamar.edu
CLASS HOURS:	MWF 9:10-10:05 am
CLASS ROOM:	Maes 211B

Course description:

This course covers the principles of computer systems security. Topics include: network attacks and defenses, operating system holes, application security (web, email, databases, etc.), viruses, privacy, and the security issues on some hot topics, such as smart grid and internet of things. Two course projects focus on understanding the nature of new treats and building reliable code, respectively.

This is an upper division undergraduate course available to computer science majors and non-majors alike. The only prerequisite is the traditional CS1/CS2 programming sequence. We assume that the student in COSC 4301 is familiar with a high-level programming language such as C, C++, Java, or Python. The course does not assume that the students have had individual courses in databases, operating systems, networking, web programming, or distributed systems.

Learning outcomes:

Students who successfully complete the class will be able to:

- Identify the nature of threats and vulnerabilities in most softwares, networks, systems, webs, and applications.
- Analyze a network intrusion, breach, or attack, and then design methods for its secure protocol.
- Secure systems that are not vulnerable to application program attack, such as a buffer overflow attacks.
- Construct websites that are not vulnerable to clients attack, such as XSS attacks or SQL injection attacks.
- Be familiar with cryptography techniques and security models.
- Have a cybersecurity sense to detect vulnerable holes for emerging technologies.

Textbook:

Michael Goodrich, Roberto Tamassia: Introduction to Computer Security. Pearson (1st Edition), 2011
ISBN-13: 978-0-321-51294-9, ISBN-10: 0-321-51294-4

Recommended materials:

Matt Bishop: Introduction to Computer Security. Addison-Wesley (1st Edition), 2005, ISBN: 0-321-24744-2.
The electronic version is available for free on the website of Matt Bishop
(<http://iips.icci.edu.iq/images/exam/Introduction-to-Computer-Security-pdf-DONE.pdf>)

Point distribution:

Assignment	Points
Homework	15
First Project	15
Midterm Exam	20
Second Project	25
Final Exam	25
Total Points	100
*Attendance	
**Quiz	8

* if number of absence ≥ 19
Total points *= 0.59;
 elseif number of absence ≥ 13
Total points *= 0.9;
 elseif number of absence == 0
Total points *= 1.1;
 else
Total points *= 1;
 ** Bonus points

Late policy: any late submission of a homework or project will get a 30% deduction of the assigned points per 24 hours. No point will be given for a late submitted quiz or exam.

Grading scale:

Total Points	Grade
88-120	A
75-87.9	B
62-74.9	C
50-61.9	D
0-49	F

- Each homework will be graded in a 10-point system at first. Then, the one with the highest grade will be counted as bonus points with a 20% scaling. Others will be scaled 50% to the total points.
- Midterm and final exam will be graded in a 50-point system at first, and then scaled 40% and 50% to the total points, respectively.
- Each quiz will be scaled to 1 bonus point.
- Each project will be graded directly with its assigned points.

Tentative schedule:

Week 1	Syllabus, Introduction, Physical Security	9/11-9/15, homework 1 due on 9/18
Week 2	Malware, Viruses, Privacy	9/18-9/22,
Week 3	Network Security I	First Project Assigned
Week 4	Network Security II	
Week 5	Network Security III	
Mid-term Exam		To be announced on Blackboard
Week 6	Operating Systems Security I	Second Project Assigned
Week 7	Operating Systems Security II	
Week 8	Web Security I	
Week 9	Web Security II	
Week 10	Applications Security	
Week 11	Cryptography, Security Models, Practice	11/20-11/24, no class on 11/24
Week 12	Project 1- Presentation and Peer review	11/27-12/1, first project due on 11/26
Week 13	Project 2- Presentation and Peer review	12/4-12/8, second project due on 12/3
Final Exam		To be announced on Blackboard

Disability statement:

Lamar University is committed to providing equitable access to learning opportunities for all students. The Disability Resource Center (DRC) is located in the Communications building room 105. Office staff collaborate with students who have disabilities to provide and/or arrange reasonable accommodations.

For students:

- If you have, or think you may have, a disability (e.g., mental health, attentional, learning, chronic health, sensory, or physical), please contact the DRC at [409-880-8347](tel:409-880-8347) or drc@lamar.edu to arrange a

confidential appointment with the Director of the DRC to explore possible options regarding equitable access and reasonable accommodations.

- If you are registered with DRC and have a current letter requesting reasonable accommodations, we encourage you to contact your instructor early in the semester to review how the accommodations will be applied in the course.

Emergency procedures:

Many types of emergencies can occur on campus; instructions for severe weather or violence/active shooter, fire, or chemical release can be found at:

<http://www.lamar.edu/about-lu/administration/risk-management/index.html>

Following are procedures for the first two:

Severe Weather

- Follow the directions of the instructor or emergency personnel.
- Seek shelter in an interior room or hallway on the lowest floor, putting as many walls as possible between you and the outside.
- If you are in a multi-story building, and you cannot get to the lowest floor, pick a hallway in the center of the building.
- Stay in the center of the room, away from exterior walls, windows, and doors.

Violence/Active Shooter (CADD)

- CALL -8311 from a campus phone (880-8311 from a cell phone). Note: Calling 9-1-1 from either a campus phone or cell phone will contact Beaumont City Police Dispatch rather than University Police.
- AVOID- If possible, self-evacuate to a safe area outside the building. Follow directions of police officers.
- DENY- Barricade the door with desks, chairs, bookcases or any other items. Move to a place inside the room where you are not visible. Turn off the lights and remain quiet. Remain there until told by police it is safe.
- DEFEND- Use chairs, desks, cell phones or whatever is immediately available to distract and/or defend yourself and others from attack.

Academic continuity statement:

In the event of an announced campus closure in excess of four days due to a hurricane or other disaster, students are expected to login to Lamar University's website's homepage (www.Lamar.edu) for instructions about continuing courses remotely.

Plagiarism and Academic Dishonesty Policy:

The Lamar University computer science department considers academic dishonesty, including cheating, collusion, and plagiarism, as defined in the student handbook, a serious academic offense. Students guilty of such misbehavior will be subject to the following penalties:

First offense: Student will receive a failing grade on the exam or assignment [a zero], with no possibility for make-up. If the offense is flagrant, the student may receive an F in the course. The student's name and documented offense will be placed on file in the history department.

Second offense: Student will receive an F in the course with no possibility for make-up. The student's name and documented offense will be forwarded to the proper university officials.

All accused students shall be entitled to a written notice of the offense and the penalty assessed, and notified of his or her right to appeal to the department chair/advisory committee.