



<b>Course Name:</b>	Network Security
<b>Course Number:</b>	CS 478
<b>Credits:</b>	4
<b>Instructors:</b>	Scott Kerlin (400) ( <a href="mailto:Scott.Kerlin@OregonState.edu">Scott.Kerlin@OregonState.edu</a> )
<b>Graduate Teaching Assistant:</b>	Ritika Vinayak Rane ( <a href="mailto:raner@OregonState.edu">raner@OregonState.edu</a> )
<b>Prerequisite:</b>	CS-372

## Course Description

Introduction to the skills and tools necessary to investigate network security. Packet capture, fuzzing, protocol analysis. Introduction to firewalls and intrusion prevention/detection systems.

## Communication

Please post all course-related questions in the **Ed Discussions** so that the whole class may benefit from our conversation. Please contact your instructor privately for matters of a personal nature. We will strive to reply to course-related questions within 48 business hours. We will strive to return your assignments and grades for course activities to you within one week of the due date. You can find a detailed communication policy as well as information on **Microsoft Teams** Office Hours on the Course Homepage.

## Course Credits

This course combines approximately 120 hours of online activities, lab sessions, and assignments for 4 credits.

## Technical Assistance

If you experience any errors or problems while in your online course, contact 24-7 Canvas Support through the Help link within Canvas. If you experience computer difficulties, need help downloading a browser or plug-in, or need assistance logging into a course, contact the IS Service Desk for assistance. You can call (541) 737-8787 or visit the [IS Service Desk](#) online.

## Learning Resources

This course is primarily taught via streaming media and posted online resources. No textbook is required. Computing resources provided via Vsphere environment.

Primary office hours are via Slack call or WebEx session. I **strongly** encourage you to purchase a quality headset or microphone setup. Recommendations and details of meeting electronically will be posted to the introductory module on Canvas.

Note to prospective students: Please check with the OSU Beaver Store for up-to-date information for the term you enroll ([OSU Beaver Store Website](#) or 800-595-0357). If you purchase course materials from other sources, be very careful to obtain the correct ISBN.

## Measurable Student Learning Outcomes

Upon successful completion of this course, students will be able to:

1. **Select** among packet capture strategies for specific situations
2. **Analyze** protocols to determine potential security weaknesses
3. **Create** protocol fuzzers to find potential vulnerabilities
4. **Select** appropriate defensive strategies based on goals

## Evaluation of Student Performance

This course uses a weighted average of assignments. All assignments will be graded out of 100 points, with the following weights towards the final grade:

- Homework Assignments – 30%
- Weekly write-ups – 40%
- Final Exam – 30%

While discussion will not be explicitly graded, it is expected that you will be involved in the online discussions.

### Letter Grade

Grade	Percent Range
A	93-100
A-	90-92.99
B+	87-89.99
B	83-86.99
B-	80-82.99
C+	77-79.99
C	73-76.99
C-	70-72.99
D+	67-69.99
D	63-66.99
D-	60-62.99
F	0-59.99

## Course Content

Week	Topic	Learning Activities
1	Introduction, policy, legal aspects, audit	Module Summary, Explorations*, HW1
2	Network Reconnaissance	Module Summary, Explorations*
3	Capturing packets with tcpdump	Module Summary, Explorations*
4	Packet capture with Wireshark	Module Summary, Explorations*, HW2
5	Packet Processing with Scapy	Module Summary, Explorations*
6	Advanced Scapy	Module Summary, Explorations*, HW3
7	Protocol Reversing	Module Summary, Explorations*, HW4
8	Protocol Fuzzing	Module Summary, Explorations*
9	Firewalls	Module Summary, Explorations*, HW5
10	IDS/IPS	Module Summary, Explorations*
Finals		Final Paper

\*Explorations are ungraded learning activities that typically involve a hands-on activity related to the current topic. These include usage of tools, looking at packet captures, etc.

**Note:** There will be modifications to the course activities. Activities will be updated by approximately 2 weeks prior to the start of the week. Please see the Modules section within the course for the most updated list.

## Course Policies

### Discussion Participation

Students are expected to participate in all graded discussions. While there is great flexibility in online courses, this is not a self-paced course. For graded discussions, you will need to participate on at least two different days each week, with your first post due no later than Wednesday evening, and your second and third posts due by the end of each week.

### Late Work Policy

All assignments must be submitted before the due date. Late submissions will not be accepted. If you do not submit before the due date, you will receive no credit.

### Revision Grace Period

The "revision grace period" policy is for quizzes, assignments, discussion boards, and pretty much everything we can reasonably find a way to apply it to. The exceptions come in the final week where all course material must be done before finals week and finals cannot be submitted late. If you are unable to fulfill an assignment, project step, or quiz to your satisfaction before the due date--for any reason--you may notify the TA (via a Canvas comment and email along with the original on-time submission) that you plan to submit a revision. You may then submit a revision within 3 days. The final is not eligible for late revisions.

If you:

1. submit a partial fulfillment of the requirements before the due date,
2. notify the TA in your Canvas submission comments when you submit your first attempt, and then
3. resubmit a revised version of your work within 3 days,

your grade will reflect your final submission only without incurring penalties. If you do not resubmit within 3 days, your grade will reflect your original (potentially incomplete) submission.

Exceptions may be made at the instructor's discretion for documented emergencies e.g. hospitalization, or extraordinary extenuating circumstances.

### Makeup Exams

Makeup exams will be given only for missed exams excused in advance by the instructor. Excused absences will not be given for airline reservations, routine illness (colds, flu, stomach aches), or other common ailments. Excused absences will generally not be given after the absence has occurred, except under very unusual circumstances.

### Incompletes

Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or birth of your child), if the student has turned in 80% of the points possible (in other words, usually everything but the final paper), and at the discretion of the instructor. If you are having any difficulty that might prevent you completing the coursework, please don't wait until the end of the term; let me know right away.

### Statement Regarding Religious Accommodation

Oregon State University is required to provide reasonable accommodations for employee and student sincerely held religious beliefs. It is incumbent on the student making the request to make the faculty member aware of the request as soon as possible prior to the need for the accommodation. See the [Religious Accommodation Process for Students](#).

### Guidelines for a Productive and Effective Online Classroom

Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility. Civility is an essential ingredient for academic discourse. All

communications for this course should be conducted constructively, civilly, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. In all you say and do for this course, be professional. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course, paying particular attention to the following:

- Unless indicated otherwise, please complete the readings and view other instructional materials for each week before participating in the discussion board.
- Read your posts carefully before submitting them.
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences.
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process. Please word your responses carefully, and recognize that others are expected to challenge your ideas. A positive atmosphere of healthy debate is encouraged.

### **Expectations for Student Conduct**

Student conduct is governed by the university's policies, as explained in the [Student Conduct Code](#). Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the university's regulations regarding civility.

### **Academic Integrity**

Integrity is a character-driven commitment to honesty, doing what is right, and guiding others to do what is right. Oregon State University Ecampus students and faculty have a responsibility to act with integrity in all of our educational work, and that integrity enables this community of learners to interact in the spirit of trust, honesty, and fairness across the globe.

Academic misconduct, or violations of academic integrity, can fall into seven broad areas, including but not limited to: cheating; plagiarism; falsification; assisting; tampering; multiple submissions of work; and unauthorized recording and use.

It is important that you understand what student actions are defined as academic misconduct at Oregon State University. The OSU Libraries offer a [tutorial on academic misconduct](#), and you can also refer to the [OSU Student Code of Conduct](#) and the [Office of Student Conduct and Community Standards website](#) for more information. More importantly, if you are unsure if something will violate our academic integrity policy, ask your professors, GTAs, academic advisors, or academic integrity officers.

### **TurnItIn**

Your instructor may ask you to submit one or more of your writings to Turnitin, a plagiarism prevention service. Your assignment content will be checked for potential plagiarism against Internet sources, academic journal articles, and the papers of other OSU students, for common or borrowed content. Turnitin generates a report that highlights any potentially unoriginal text in your paper. The report may be submitted directly to your instructor or your instructor may elect to have you submit initial drafts through Turnitin, and you will receive the report allowing you the opportunity to make adjustments and ensure that all source material has been properly cited. Papers you submit through Turnitin for this or any class will be added to the OSU Turnitin database and may be checked against other OSU paper submissions. You will retain all rights to your written work. For further information, visit [Academic Integrity for Students: Turnitin – What is it?](#)

### **Statement Regarding Students with Disabilities**

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval, please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members

of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

## Accessibility of Course Materials

All materials used in this course are accessible. If you require accommodations please contact [Disability Access Services \(DAS\)](#).

Additionally, Canvas, the learning management system through which this course is offered, provides a [vendor statement](#) certifying how the platform is accessible to students with disabilities.

## Tutoring and Writing Assistance

[TutorMe](#) is a leading provider of online tutoring and learner support services fully staffed by experienced, trained and monitored tutors. Students connect to live tutors from any computer that has Internet access. TutorMe provides a virtual whiteboard that allows tutors and students to work on problems in a real time environment. They also have an online writing suite where tutors critique and return essays within 24 to 48 hours. Access TutorMe from within your Canvas class by clicking on the Tools button in your course menu.

The Oregon State [Online Writing Suite](#) is also available for students enrolled in Ecampus courses.

## Ecampus Reach Out for Success

University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about [resources that assist with wellness and academic success](#).

Ecampus students are always encouraged to discuss issues that impact your academicsuccess with the [Ecampus Success Team](#). Email [ecampus.success@oregonstate.edu](mailto:ecampus.success@oregonstate.edu) to identify strategies and resources that can support you in your educational goals.

- **For mental health:**

Learn about [counseling and psychological resources for Ecampus students](#). If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741- 741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255).

- **For financial hardship:**

Any student whose academic performance is impacted due to financial stress or the inability to afford groceries, housing, and other necessities for any reason is urged to contact the Director of Care for support (541-737-8748).

## Student Evaluation of Courses

The online Student Evaluation of Teaching system opens to students during the week before finals and closes the Monday following the end of finals. Students receive notification, instructions and the link through their ONID. They may also log into the system via Online Services. Course evaluation results are extremely important and used to help improve courses and the online learning experience for future students. Responses are anonymous (unless a student chooses to "sign" their comments, agreeing to relinquish anonymity) and unavailable to instructors until after grades have been posted. The results of scaled questions and signed comments go to both the instructor and their unit head/supervisor. Anonymous (unsigned) comments go to the instructor only.

## Student Bill of Rights:

OSU has twelve established student rights. They include due process in all university disciplinary processes, an equal opportunity to learn, and grading in accordance with the course syllabus:

- <https://asosu.oregonstate.edu/advocacy/rights>