

attack vectors, risk assessment, security controls, plans and policies), we will delve into the following topics: principles of secure software design and defensive programming, authorization and access control, and cryptography.

Learning Outcomes:

Upon completion of this course, the student will be able to:

- Analyze the tradeoffs of balancing key security properties (e.g., confidentiality, integrity, and availability)
- Describe the concepts of risk, threats, vulnerabilities and attack vectors, authentication, authorization, access control
- Describe the following principles of secure design: principle of least privilege and isolation, principle of fail-safe and deny-by-default, end-to-end data security, and principle of complete mediation
- Discuss the benefits of having multiple layers of defense
- Identify the different roles of prevention mechanisms and detection/deterrence mechanisms
- Discuss the limitations of malware countermeasures (e.g., signature-based detection, behavioral detection)
- Identify instances of social engineering attacks and denial of service attacks
- State the purpose of cryptography and describes several ways to use it in data communications
- Explain how public key infrastructure supports digital signing and encryption
- Explain how key exchange protocols work and how they fail
- Discuss cryptographic protocols and their properties
- Describe real-world applications of cryptographic primitives and protocols
- Appreciate the dangers of inventing one’s own cryptographic methods

Course Grading Policy:

Your final grade for this course will be based on three components, namely exams, programming projects and homework. Your overall numerical grade for the course will be computed as the weighted sum of the component grades using the following weights:

Component	Weight
Exams (4)	55%
Assignments	25%
Mini Homework	20%

Tentative exam dates are as follows:

- **Exam 1 - Monday, 9/27**
- **Exam 2 - Wednesday, 10/20**
- **Exam 3 - Monday, 11/15**
- **Exam 4 - Wednesday, 12/15**

Your letter grade for the course will be computed as follows:

Numerical Score	Grade	Numerical Score	Grade
>=92	A	72-78	C
90-92	A-	70-72	C-

88-90	B+	68-70	D+
82-88	B	62-68	D
80-82	B-	60-62	D-
78-80	C+	<60	F

While this overall grading scheme is fixed, I will be happy to discuss any issue you may have with individual grades. If you notice a mistake or have a question regarding a specific grade, please come and talk to me *as soon as possible*. Please do not wait until the end of the semester to bring up grading issues.

Assignment/Mini Homework Deadlines

Mini homework are distributed in lecture and are generally due back at the start of the next lecture. Late mini homework submissions will NOT be accepted.

Each assignment comes with a deadline (day and time) by which it must be submitted. You are allotted *three* assignment credit days you can use through the semester. A credit day is exactly 24 hours or less. You can use unused credit days to submit an assignment after its deadline, without penalty. Any assignment submitted after the deadline, plus any credit days you have unused, will receive a zero.

For example, if you have 2 unused credit days available and an assignment is due on Tuesday at 5:00PM, you can submit it anytime by exactly Thursday at 5:00PM without penalty. Do note that if you submit your assignment on Thursday at 5:01PM, you will be penalized 100% of the score of the assignment and thus receive a zero! Note also that if you submit your assignment on Wednesday at 5:01PM, you will be charged two credit days (but no penalty, obviously).

Attendance Policy:

I do not require attendance for this course, but I do encourage you to attend and hope it will be beneficial to you. When attending class, please do come prepared for, and participate actively, in it. Material may be discussed during the lectures that is not available on Canvas. If you miss class, it is your responsibility to make sure you catch up on anything you may have missed.

Extensions and Makeups:

Extensions on deadlines may be granted at the discretion of the instructor if you provide a valid justification (in the form of a written excuse from a medical doctor or the Dean of Students Office) **before** the due date.

Collaborating versus Cheating:

Unless otherwise stated in the assignment or project, all submissions must be entirely your own work. While it is acceptable to discuss the homework and assignments at a high level (for example, at the design level) with others, you must submit your own work. **You may not “borrow” any piece of code or design of any length from someone else, the internet, or any other source, unless you can live with a zero and the other potential academic sanctions of cheating** (see [UWO Student Discipline Code 2007](#), Chapter UWS 14).

Accommodations:

The University of Wisconsin Oshkosh supports the right of all enrolled students to a full and equal educational opportunity. It is the University’s policy to provide reasonable accommodations to students who have documented disabilities that may affect their ability to participate in course activities or to meet course requirements.

Students are expected to inform instructors of the need for accommodations as soon as possible by presenting an Accommodation Plan from either the Accessibility Center, Project Success, or both. Reasonable accommodations for students with disabilities is a shared instructor and student responsibility.

The Accessibility Center is part of the Dean of Students Office and is located in 125 Dempsey Hall. For more information, email accessibilitycenter@uwosh.edu, call 920-424-3100, or visit the Accessibility Center Website.

Statement Regarding Diversity, Equity & Inclusion:

Diversity drives innovation, creativity, and progress. At the University of Wisconsin Oshkosh, the culture, identities, life experiences, unique abilities, and talents of every individual contribute to the foundation of our success. Creating and maintaining an inclusive and equitable environment is of paramount importance to us. This pursuit prepares all of us to be global citizens who will contribute to the betterment of the world. We are committed to a university culture that provides everyone with the opportunity to thrive.

Required Disclosure Statement:

Students are advised to see the following URL for disclosures about essential consumer protection items required by the Students Right to Know Act of 1990:

<https://uwosh.edu/financialaid/consumer-information/>