

Course Syllabus

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Course Information

Course Name: Cryptography for Cybersecurity

Course Number: CS463/563

Prerequisites: [MATH 162M \(https://catalog.odu.edu/search/?P=MATH%20162M\)](https://catalog.odu.edu/search/?P=MATH%20162M)

Semester/Year: Fall 2023

Instructor Information

Instructor: Susan Zehra

Instructor Email: szehra@odu.edu (<mailto:szehra@odu.edu>)

Instructor Office Hours: Via Zoom - Mondays 10 am to 11 am, or by appointment

Office Hours Zoom Link: <https://odu.zoom.us/j/91696336483?pwd=dE8wa2JRNSSt0WS9UbzhISUFZSk9vQT09> (<https://odu.zoom.us/j/91696336483?pwd=dE8wa2JRNSSt0WS9UbzhISUFZSk9vQT09>)

Course Type

This is an asynchronous course offered online through Canvas. This course does not have any required lecture times.

Course Description

After completing this 3-credit course, students should have strong mathematical foundations including information theory, number theory, factoring, and prime number generation; cryptographic protocols including basic building blocks and protocols; cryptographic techniques including key generation and key management, and applications; cryptographic algorithms including DES, AES, Stream Ciphers, Hash functions, digital signatures, and more.

Readings

Required Textbook

Paar, C. Pelzl, J. (2010). *Understanding Cryptography: A Textbook for Students and Practitioners*. Springer Heidelberg Dordrecht London New York, 1st edition.

ISBN: 978-3-642-04100-6

Other readings are listed in each module.

Course Objectives

Upon successful completion of this course, students will:

1. Recognize the general purpose and goals of the online course
2. Explain functionality of current cryptographic techniques
3. Identify basic mathematical techniques underlying cryptology
4. Evaluate the computational and memory needs of cryptographic techniques
5. Measure the security strengths and risks of cryptographic techniques
6. Discern implications of hardware and software implementations of cryptographic techniques
7. Analyze and critique new cryptographic protocols
8. Analyze applications in terms of security needs
9. Match the security needs of application with appropriate cryptographic techniques

More specific objectives for each topic are listed within each module.

How the Course Works

Methods of Delivery/Learning Activities

This online course employs several methods of delivery and learning activities including online lectures and presentations, threaded discussions, websites, video clips, reading and written assignments, self-assessment checks, examinations, e-mail, and electronic access of information.

Grading Criteria

Your grade in this class will be based on the following:

Criteria	Percentage
Mid-Term Examination	25%
Final Examination	25%
Discussion & CIQ	5%
Course Project	20%
Homework	25%
Total	100%

Grading Scale

The grading scale is as follows (+ and - modifiers will be applied as appropriate):

For CS 563

Letter Grade	Range
A	95-100
A-	90-94
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
F	0-69

For CS 463

Letter Grade	Range
A	90-100
A-	87-89
B+	84-86
B	80-83
B-	77-79
C+	74-76
C	70-73
C-	67-69
D+	64-66
D	60-63
D-	57-59
F	0-56

Late Assignments

Any assignment submitted after its deadline is considered late. The following penalties for late assignments apply:

- 0-24 hours late: -20%
- 25-48 hours late: -35%
- After 48 hours: Late work will not be accepted

This time limit includes weekends—they are counted just like weekdays.

I reserve the right to specify that late submissions will not be accepted for particular assignments.

Student Responsibilities

Time Management

Students are expected to spend 10 hours per week on the course materials and assignments. Out of 10 hours, students are expected to spend approximately 3 hours per week to read the material and another 3 hours/week for the homework and discussions.

Utilizing Online Components

Refer to the START HERE section within the Canvas menu and the course tour

Attendance

Since this is an online course, there is no mandatory attendance policy. However, students are expected to actively participate in the discussions, homework submissions, and journal writing. Each of these components is graded and counted toward the final grade.

Course Policies

Online Classroom Conduct (Netiquette)

Students are expected to follow good [Netiquette](http://www.albion.com/netiquette/corerules.html)  (<http://www.albion.com/netiquette/corerules.html>) rules. Netiquette is the accepted behavior for online participation. The following is a list of general guidelines for this course:

- Check your grammar and spelling.
- Keep your comments focused on the topic.
- Strive to write succinctly and clearly.
- Share your knowledge and include supportive evidence for your comments.
- Do not use all capital letters, as that is viewed as shouting.
- Avoid flaming—disrespectful language is unacceptable.

Attendance

Since this is an online course, there is no mandatory attendance policy. However, students are expected to actively participate in the discussions, homework submissions, and journal writing. Each of these components is graded and counted toward the final grade.

Tests and Makeups

The same information for homework will apply for tests and makeup work: If a situation has occurred that requires your time and attention and which will prevent submitting your work on time, please notify

your instructor 24 hours before the scheduled due date.

Course Disclaimer

Every attempt is made to provide a syllabus that is complete and that provides an accurate overview of the course. However, circumstances and events may make it necessary for the instructor to modify the syllabus during the semester. This may depend, in part, on the progress, needs, and experiences of the students.

University Policies

Honor Pledge

"I pledge to support the honor system of Old Dominion University. I will refrain from any form of academic dishonesty or deception, such as cheating or plagiarism. I am aware that as a member of the academic community, it is my responsibility to turn in all suspected violators of the honor system. I will report to Honor Council hearings if summoned." By attending Old Dominion University you have accepted the responsibility to abide by this code. This is an institutional policy approved by the Board of Visitors. For more information please visit [Honor Council](https://www.odu.edu/about/monarchcitizenship) (<https://www.odu.edu/about/monarchcitizenship>).

Important Note on the Use of AI Tools: Please note that the use of AI tools such as ChatGPT is strictly prohibited for this blog. Any use of such tools will be considered a violation of the university honor code and will result in disciplinary action. Students must use their own knowledge and skills to complete any homework, assignments, quizzes, blogs, papers, discussion posts, etc.

Educational Accessibility

Old Dominion University is committed to ensuring equal access to all qualified students with disabilities in accordance with the Americans with Disabilities Act. The Office of Educational Accessibility (OEA) is the campus office that works with students who have disabilities to provide and/or arrange reasonable accommodations.

- If you experience a disability which will impact your ability to access any aspect of my class, please present me with an accommodation letter from OEA so that we can work together to ensure that appropriate accommodations are available to you.
- If you feel that you will experience barriers to your ability to learn and/or testing in my class but do not have an accommodation letter, please consider scheduling an appointment with OEA to determine if academic accommodations are necessary.

The Office of Educational Accessibility is located at 1021 Student Success Center and their phone number is [\(757\)683-4655](tel:(757)683-4655) (tel: +17576834655). Additional information is available at the [OEA Website](http://www.odu.edu/educationalaccessibility/) (<http://www.odu.edu/educationalaccessibility/>).

University Email Policy

The Old Dominion University e-mail system is the official electronic mail system for distributing course-related communications, policies, announcements and other information. A University e-mail user ID and password are necessary for authentication and access to numerous electronic resources (Canvas, faculty websites, etc.).







Withdrawal


A syllabus constitutes an agreement between the student and the course instructor about course requirements. Participation in this course indicates your acceptance of its teaching focus, requirements, and policies. Please review the syllabus and the course requirements as soon as possible. If you believe that the nature of this course does not meet your interests, needs or expectations, if you are not prepared for the amount of work involved—or if you anticipate that the class meetings, assignment deadlines, or abiding by the course policies will constitute an unacceptable hardship for you—you should drop the class by the drop/add deadline, which is located in the ODU [Schedule of Classes](https://www.odu.edu/academics/calendar) (<https://www.odu.edu/academics/calendar>). For more information, please visit the Office of the [University Registrar](https://www.odu.edu/registrar) (<https://www.odu.edu/registrar>).








Student Acknowledgement

"I, _____, have completely read this syllabus and understand and agree to the course requirements".

Course Summary:

Date	Details	Due
Sun Sep 3, 2023	 CIQ Journal - Module 1 (https://canvas.odu.edu/courses/140623/assignments/1980127)	due by 11:59pm
	 Module 1 Discussion (Personal Introduction) (https://canvas.odu.edu/courses/140623/assignments/1980116)	due by 11:59pm
Sun Sep 10, 2023	 Homework 2 (https://canvas.odu.edu/courses/140623/assignments/1980136)	due by 11:59pm
	 Module 2 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980117)	due by 11:59pm
Sun Sep 17, 2023	 Module 3 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980118)	due by 11:59pm
	 Homework 3 (https://canvas.odu.edu/courses/140623/assignments/1980137)	due by 11:59pm

Date	Details	Due
Sun Sep 24, 2023	 Homework 4 (https://canvas.odu.edu/courses/140623/assignments/1980138)	due by 11:59pm
	 Module 4 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980119)	due by 11:59pm
Sun Oct 1, 2023	 Homework 5 (https://canvas.odu.edu/courses/140623/assignments/1980139)	due by 11:59pm
	 Module 5 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980120)	due by 11:59pm
Sun Oct 8, 2023	 CIQ journal - Module 6 (https://canvas.odu.edu/courses/140623/assignments/1980128)	due by 11:59pm
	 Homework 6 (https://canvas.odu.edu/courses/140623/assignments/1980140)	due by 11:59pm
	 Module 6 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980121)	due by 11:59pm
Sun Oct 15, 2023	 Homework 7 (https://canvas.odu.edu/courses/140623/assignments/1980141)	due by 11:59pm
	 Module 7 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980122)	due by 11:59pm
Sun Oct 22, 2023	 CS463 Mid-term Exam (Only for those who are registered for CS463) (https://canvas.odu.edu/courses/140623/assignments/1980113)	due by 11:59pm
	 CS563 Mid-term Exam (Only for those who are registered for CS563) (https://canvas.odu.edu/courses/140623/assignments/1980115)	due by 11:59pm
Sun Oct 29, 2023	 Module 9 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980123)	due by 11:59pm
	 Homework 9	due by 11:59pm

Date	Details	Due
	(https://canvas.odu.edu/courses/140623/assignments/1980142)	
	 Module 10 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980124)	due by 11:59pm
Sun Nov 5, 2023	 Topic of the Course Project (https://canvas.odu.edu/courses/140623/assignments/1980143)	due by 11:59pm
	 Homework 10 (https://canvas.odu.edu/courses/140623/assignments/1980133)	due by 11:59pm
	 CIQ Journal - Module 10 (https://canvas.odu.edu/courses/140623/assignments/1980129)	due by 11:59pm
Sun Nov 12, 2023	 Homework 11 (https://canvas.odu.edu/courses/140623/assignments/1980134)	due by 11:59pm
	 Module 11 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980125)	due by 11:59pm
	 Homework 12 (https://canvas.odu.edu/courses/140623/assignments/1980135)	due by 11:59pm
Sun Nov 19, 2023	 Module 12 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980126)	due by 11:59pm
	 CIQ Journal - Module 14 (https://canvas.odu.edu/courses/140623/assignments/1980130)	due by 11:59pm
Sun Dec 3, 2023	 Course Project Submission (https://canvas.odu.edu/courses/140623/assignments/1980132)	due by 11:59pm
	 Module 13 Discussion (https://canvas.odu.edu/courses/140623/assignments/1980131)	due by 11:59pm
	 CS463 Final Exam (https://canvas.odu.edu/courses/140623/assignments/1980114)	due by 11:59pm
Tue Dec 12, 2023	 CS563 Final Exam (https://canvas.odu.edu/courses/140623/assignments/1980112)	due by 11:59pm