# Course Syllabus - Fall A 2024
## CSE 539: Applied Cryptography

## Course Description

Cryptography provides the underlying security methods for the web and many other computer applications. This course covers the design usage of cryptographic protocols for online and offline computing applications. Assuring the quality, validity, and privacy of information is one of the key applications of Cryptography. Applications of cryptography range from signatures and certificates to trustless multiparty computations

Specific topics covered include:

- Large Numbers, Random Numbers, Hash Functions and Number Theory
- Encryption Methods and Common Ciphers
- Password Storage and Password Cracking
- Authentication, Key Exchange and Man in the Middle (MITM) Attacks
- Secure messaging, Kerberos and Secure Sockets Layer (SSL) or Transport Level Security (TLS)
- RSA and why it works
- Advanced Cryptographic Protocols
- Anonymity, money and secure election algorithms

Technologies covered include:

- .NET
- C#

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# Learning Outcomes

Learners completing this course will be able to:

- Differentiate the major algorithmic techniques used in cryptography.
- Explain the concept and correctness of cryptographic protocols.
- Perform identification of vulnerabilities in systems.
- Explain the algorithms used for constructing cryptographic computations.
- Perform steps needed for encryption, authentication, integrity, certification, and data privacy.
- Explain complex protocols that involve many steps and computing agents who do not trust each other.

# Estimated Workload/ Time Commitment Per Week

Average of 18 - 20 hours per week

# Required Prior Knowledge and Skills

This course will be very challenging, and learners are expected to learn the necessary technologies on their own time.

## Proficient Mathematical Skills and Theoretical Understanding

- Discrete math
- Computer organization and architecture
- Operating systems
- Data structures
- Algorithms
- Algebra
- Computer organization

## Strong Application Skills

- Linux

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- Ability to effectively install and use Linux command line tools
- Ability to effectively read and write C# or confidence in your ability to learn C#
- C# on Linux
  - An understanding of C or Java on Linux should be sufficient to get started with C#. If you do not know C#, but do know C or Java, there is no reason to avoid taking this course.

Note: C# is the only language supported by the autograders.

## Proficient Experience

- Clear understanding of what a file is, how it is stored on disk, and how to manipulate files
- Experience working with data at the byte level in both data structures and files
  - Manipulating bytes of data in variables and in files
- Experience working with numerical data in different radices
  - Specifically, base 2, base 10, and base 16
  - Representing constants of these bases in code
- Clear understanding of how numbers are represented
  - Endianness
  - Size restrictions (32-bit Integer, 64-bit Integer, BigInteger)
- Experience implementing Algebraic formulas
  - Especially logarithms and exponents
- Programming using C or C++ using Linux (Python or Java is useful)

# Course Access

Your ASU courses can be accessed by both my.asu.edu and asu.instructure.com; bookmark both in the event that one site is down.

# Technology Requirements

## Proctoring

- Honorlock Minimum System Requirements

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# Hardware

- Standard personal computer with major operating system
- Reliable, strong Internet connection
- Webcam
- Microphone

# Software and Other

- Linux Operating System, Ubuntu 18.04 (or higher) 64-bit with administrator capability (ability to install new software).
  - Learners can run this OS in a virtual machine, if it is not your main machine.
- .NET Core 8.0 SDK
- Hex editor
  - You can use an online hex editor.
- Access to external websites
  - C# documentation
  - Hashing calculator
  - Encryption calculator
- Ed Discussion
- zyBooks

# Textbook and Readings

At the graduate level, inquiry, research, and critical reading are part of the learning experience; however, this course does not have a required textbook. Any required readings are provided within or are accessible through the course of the ASU Library.

For interested learners, the instructor of record/the faculty course designer recommends the text(s):

Menezes, Alfred J., van Oorschot, Paul C., & Vanstone, Scott A. *Handbook of Applied Cryptography,* digital sample chapters, CRC Press, 2007. http://cacr.uwaterloo.ca/hac/

Free, digital sample chapters of the *Handbook of Applied Cryptography* are available online. It is your responsibility to read the copyright notice on the website prior to downloading. If these should become unavailable, this will not negatively impact your learning of the necessary content to perform well on the assessments in this course (e.g., projects and exams). The lecture videos provide you with the necessary information.

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Access Steps
1. Go to the *Handbook of Applied Cryptography* website.
2. Read available copyright information. It is up to learners to stay current on this information and not to violate copyright laws.
3. Select the "ps" or "pdf" of the chapter listed in the course for you to read.
4. Refer to the "Contents in Brief" section for the page numbers of each section.
5. Locate the recommended section to read within the text (e.g., scroll or use a search feature).
6. Take notes while reading the section and relate it back to the lecture video(s) and knowledge checks.

# Course Schedule and Important Dates

Course teams will not be working on ASU's days off* and those are listed in the Course Schedule. Please review the ASU Days Off for more details.

| Module: Title | Begins at 12:01 AM Arizona (AZ) Time | Ends at 11:59 PM Arizona (AZ) Time |
|---|---|---|
| Orientation and Onboarding Review<br>You must complete required tasks in the Orientation and Onboarding Review for Module 0: Welcome and Start Here to be unlocked. | August 15 | August 22 |
| Module 0: Welcome and Start Here<br>You must complete required tasks in Module 0: Welcome and Start Here for the rest of the course to be unlocked. | August 15 | August 21 |
| Module 1: Introduction to Cryptography | August 22 | August 25 |
| Module 2:  Building Blocks: Random Numbers, Hash Functions, Encryption | August 26 | September 01 |
| Module 3: Passwords: Storage and Security<br><br>*ASU Day off | September 02 | September 08 |

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| | | |
|---|---|---|
| Module 4: Authentication, Key Exchange, Public Keys and Man-in-the-Middle (MITM) Attacks | September 09 | September 15 |
| Midterm Exam | September 15 | September 22 |
| Module 5: Cryptographic Protocols, Building Blocks, and Concepts | September 16 | September 22 |
| Module 6: RSA and Number Theory | September 23 | September 29 |
| Course Evaluation<br>You may also refer to ASU's Office of Evaluation and Educational Effectiveness (UOEEE) for dates. | This will be updated in your course. | This will be updated in your course. |
| Module 7: Advanced Cryptographic Protocols | September 30 | October 06 |
| Module 8: Money and Politics | October 07 | October 12 |
| Deadline to Submit all Graded Coursework | N/A | October 12 |
| Final Exam | October 06 | October 12 |
| Request for Faculty Review: MCS Portfolio Project Report Inclusion Request<br>Optional, degree-seeking learner degree requirement<br><br>If you submit by the first deadline and it is not accepted, you are encouraged to review the feedback and re-submit it a second time by the last submission deadline. Anything submitted past the last submission deadline will **not** be reviewed for approval in your portfolio to meet your degree requirements. You will have to repeat this process for another course and a project from that course. | First submission deadline by: October 22, 2024 | Last submission deadline: October 28, 2024 |
| Faculty Feedback for the Review: MCS Portfolio Project Report Inclusion Request | October 28 | November 11 |

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|---|---|---|
| Optional, degree-seeking learner degree requirement | | |
| Course Closes<br>Past this date, Ed Discussion will no longer be monitored. Please download copies of what you would like from the course (e.g., Request for Faculty Review: MCS Portfolio Project Report Inclusion Request). | | November 25 |

Grades are due October 14, 2024. Please see the ASU Academic Calendar for additional information.

# Late or Missed Coursework

When possible, kindly notify the instructor before a coursework deadline by creating a private thread in Ed.

If an urgent situation or emergency arises and you are unable to submit the assignment on time, please send the instructor a private thread on Ed as soon as you are able to.

Follow the appropriate University policies to request an accommodation for religious practices or to accommodate a missed assignment due to University-sanctioned activities.

# Coursework Due Dates and Late Penalties

Unless otherwise noted, all coursework is due on **Sundays at 11:59 PM Arizona (AZ) time**. Due dates in your course are set up in Arizona Standard time. Use a Time Converter to ensure you account for the difference in time zones and remember to update your course settings to reflect your time zone (see your onboarding course for directions). Arizona does **not** observe daylight savings time.

Review specific due dates directly in your course. For learners with accommodations through Student Accessibility and Inclusive Learning Services (SAILS) and/or the Pat Tillman Veterans Center (PTVC), please work with your SAILS consultant and/or PTVC Advocacy Team, Connect, and your instructor.

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# Application Exercises

This is an ungraded assignment. No late penalty is applied after the scheduled due date and time, but in order to complete all work by the final submission date, it is highly recommended to follow the course schedule.

- **Application Exercise:** Introduction to Cryptography

- **Application Exercise:** Building Blocks

- **Application Exercise:** Cryptographic Protocols, Building

# Projects

An automatic 10% penalty per day is applied after the scheduled due date and time.

- **Steganography and Cryptanalysis Project**

- **Hash Project**

- **Diffie-Hellman and Encryption Project**

- **RSA Project**

# Exams

An automatic late penalty of 100% is applied after the scheduled due date and time.

- **Midterm Exam**

- **Final Exam**

# Course Content

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Each course in the MCS program is uniquely designed by expert faculty, so learners can best master the learning outcomes. As a result, course features and experiences are not the same across all MCS courses. Learners are expected to plan accordingly to accommodate for these differences.

# Content and Assessment Details

If you have specific questions related to instructional and assessment items in this course that you would like to be considered to be addressed in the Zoom meeting hosted by the instructor, please clearly indicate your request in your Ed Discussion thread.

For details regarding how points are earned in different types of assessments, please refer to your onboarding course

## PlayPosit Lecture Playlists

The course content is presented through a collection of Playposit Playlists embedded in each module. Playposit is a video platform that prompts interaction and note-taking while viewing course content. The playlists launch automatically and you can playback the course content by selecting the video titles in the playlist. The videos can be rewatched, but playlist videos cannot be downloaded. The playlist pages will include the downloadable video transcripts and any applicable supplementary material. Other course materials that accompany the lectures will be found in the media guides.

A media guide is included at the beginning of each module in the Overview section. These guides are designed to give you a snapshot description of each module's media components. The lectures for this course were recorded using the Lightboard; therefore, there are no associated PDF lecture slides.

Overview videos, assignment videos, and project-related videos do not have PDF lecture slides because they are not lectures and have associated documents specific to them. The interview videos build context for the course and do **not** have PDF slides.

### Playposit Interactions: Knowledge Checks

Playposit provides opportunities for interaction and reflection as you learn the course content. After the video lectures, there are interactions called knowledge checks. Interactions are designed to support your learning, highlight specific content, encourage active viewing and/or note-taking and provide practice opportunities. They are untimed, ungraded learning opportunities to test your

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knowledge of the concepts presented during the lecture videos. You may retake these as often as you would like at any point in the course.

You can toggle the clipboard icon on the left of the screen and select a review to see all the questions. You are accountable for this information as it may be assessed in different ways in other graded coursework.

There are no late penalties. Interactions are not counted toward your final grade in the class.

## Recommended Resources

Readings from the *Handbook of Applied Cryptography* have been selected to accompany a variety of topics throughout the course. Although not required, they are *strongly recommended*, especially for those interested in careers in this field; however, all assessed content is covered in the video lectures.

## Discussions

### Ed Discussion

Ed Discussion (Ed) is being used in place of Canvas Discussion Forums. The purpose of Ed Discussion is to provide a place for learners to ask questions and receive answers from course staff and peers about course content and coursework. The course team is engaged in discussions, but it is also a space to clarify, support, and enrich learner-to-learner communication and learning. There are designated categories for course items. You must select a category and subcategory to start a thread.

Discussions in Ed are designed to provide:
- Clarification
- Feedback
- Enrichment and deeper learning
- Connections between concepts or key ideas
- Reflection opportunities of real-world experiences
- Respectful debate and perspective building
- Resource sharing
- Networking

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There are no late penalties. Ed is not counted toward your final grade in the course.

**Designated Assignment and Project Discussion in Ed Discussion**

Use Ed to discuss items relating to the course assignments and projects. Questions/Threads should be categorized by their designated title in Ed. Please check for questions already asked and answered, or marked as resolved.

There are no late penalties. Responses in Ed are not counted toward your final grade in the course.
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# Assignments

This course includes three (3) individual assignments called application exercises. All assignment overview documents and materials are provided in the *Welcome and Start Here* section of your course, so you can preview what is expected and design your own learning schedules to complete these on time.

There are no late penalties associated with assignments.

# Individual Projects

This course includes four (4) individual projects. All project overview documents and materials are provided in the *Welcome and Start Here* section of your course, so you can preview what is expected and design your own learning schedules to complete these on time. Review the "Request for Faculty Review: MCS Portfolio Project Report Inclusion Request" section of this syllabus for what can be used from this course to potentially meet the degree portfolio requirement, which is optional and for degree-seeking learners only.

There are late penalties associated with the projects. These projects count toward your final grade in the class.

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**zyBooks zyLabs**

All projects for this course will use zyBooks zyLabs. You must complete and then submit your work zyBooks. Carefully review submission directions outlined in the project overview documents in order to correctly earn credit.

## Request for Faculty Review: MCS Portfolio Project Report Inclusion Request

This is an optional task for degree students wanting to use this course's projects as part of their portfolio degree requirement/specialization requirements. Review your onboarding course and the Welcome and Start Here section of your course for more details. The submission space is towards the end of the course.

Your Request for Faculty Review: MCS Portfolio Project Report Inclusion Request will be evaluated only if the criteria is met (see your MCS Handbook for more details):

- Your course is designated as a portfolio eligible course
- You address the designated project(s), which equal 30% or more of your overall course grade
- Your final course letter grade of a B* or higher

*Degree-seeking students with course letter grades that are lower than a B will not have their submissions reviewed.

Although there are no late penalties, these requests must be submitted by the designated deadlines. The Request for Faculty Review: MCS Portfolio Project Report Inclusion Request does not count toward your final grade in the class.

Addressthese projects in your Request for Faculty Review: MCS Portfolio Project Report Inclusion Request:

- Steganography and Cryptanalysis Project
- Hash Project
- Diffie-Hellman and Encryption Project
- RSA Project

## Practice Exams

In order to help you prepare for your proctored exams, you will have practice exams. Since they are

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intended to be practice opportunities and to help you learn, you have unlimited attempts and they are untimed, ungraded, and include feedback.

You may engage with your peers in Ed Discussion to address questions, share resources and strategies, and provide feedback to help one another learn. You are encouraged to read the feedback, review your answer choices, and compare them to the correct answers. You are encouraged to submit questions in Ed Discussion for the course team to address during Zoom Events and/or Zoom Support Sessions. Use the feedback to guide your learning and to study for the proctored exam.

There are no late penalties. Practice exams are not counted toward your final grade in the class.

## Proctored Exams

You have two (2) proctored exams. These consist of a Midterm Exam and a Final Exam. The proctored exams do not include feedback. Read the Graded Quiz and Exam Policy for your course for more information.

No late exams will be permitted or accepted and will result in a score of zero (0) points. This does not include established accommodations for learners receiving accommodations through Student Accessibility and Inclusive Learning Services (SAILS) and and/or the Pat Tillman Veterans Center (PTVC).

Proctored exams count toward your final grade in the class.

| Exam Details | Midterm Exam | Final Exam |
|---|---|---|
| **Content Covered** | Weeks 1, 2, 3, and 4 | Weeks 1, 2, 3, 4, 5, 6, 7, and 8 (cumulative) |
| **Question Type** | Multiple choice questions single correct answer **and** multiple choice questions with multiple correct answers | Multiple choice questions single correct answer **and** multiple choice questions with multiple correct answers |
| **Number of Questions** | 26 total questions | 26 total questions |

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|---|---|---|
| | (25 content questions pulled randomly from a question bank + 1 academic integrity question) | (25 content questions pulled randomly from a question bank + 1 academic integrity question) |
| **Availability Start** | Sunday, September 15, 2024 at 12:01 AM AZ Time | Sunday, October 06, 2024 at 12:01 AM AZ Time |
| **Availability End** | Sunday, September 22 at 11:59 PM AZ Time | Sunday, October 12, 2024 at 11:59 PM AZ Time |
| **Scheduling Reminder** <br> In order to have enough time to complete the exam, you should start your exam no later than the listed date and time to ensure you have enough time to complete it before the due date. | Sunday, September 22 at 9:01 PM AZ Time | Sunday, October 12, 2024 at 9:01 PM AZ Time |
| **Duration** | 120 minutes + plan for at least 15 minutes for proctoring set up | 120 minutes + plan for at least 15 minutes for proctoring set up |

# Proctoring

Learners needing allowance accommodations need to work through the Student Accessibility and Inclusive Learning Services (SAILS) and/or the Pat Tillman Veterans Center (PTVC).

# Midterm Exam and Final Exam Allowances

Learners needing accommodations need work through the Student Accessibility and Inclusive Learning Services (SAILS) and/or the Pat Tillman Veterans Center (PTVC).

Any items not included in this list are **not** allowed during the exam or in your exam space.

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## Reminders

- You are to independently take your exams in a single session. Once you open your exam, your testing session begins and you will need to complete it within the allotted time. Your exam will automatically be submitted if it is not completed before the deadline. You will be allowed one attempt within the deadline.

- You will **not** be allowed to start the exam less than 2.5 hours before the exam submission deadline. You are expected to start and complete the exam well before the exam deadline.

- You are to independently take the exam in a single session without leaving the testing space (e.g., no bathroom breaks) to ensure proctoring of the entire session.

- You are to stay within a clear view of the webcam throughout the duration of the proctored exam session.

- Before the exam concludes and the proctoring session ends, all scratch paper must be destroyed and all whiteboard markings must be erased.

- The last question in the exam will be a confirmation of you upholding ASU academic integrity.

## Specific Allowances

- **Site URLs:** no
    - **Course website:** None
    - **Pre-approved website**: None

- **Open book:** no
- **Pre-written paper notes:** yes
    - **Handwritten notes**:
        - Midterm: One (1) page front and back, handwritten (not typed or printed), paper may be no larger than standard A4 letter size (8.5x11)
        - Final Exam: Two (2) pages front and back, handwritten (not typed or printed), paper may be no larger than standard A4 letter size (8.5x11)
    - **Note Card(s**): none
    - **Printed Notes**: none
    - **Formula Sheet(s)**: none
    - **PowerPoint/Slides**: none
    - **Excel/Spreadsheet**: none

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- **Scratch paper**: Yes
  - Unlimited amount of blank scratch paper of any size, writing utensils (e.g., pens, pencils, markers, and/or highlighters) and erasers; please have extra ones in your testing area should you run out of ink, the pencil breaks, etc.
  - Before the exam concludes and the proctoring session ends, all scratch paper must be destroyed and all whiteboard markings must be erased. The last question in the exam will be a confirmation of learners executing these ASU academic integrity actions.

- **Handheld calculator**: Yes
  - Only Scientific Calculator
- **On-Screen Calculator**: No
  - Device's calculator
  - Windows/OS
  - Online calculator

- **Scientific Calculator**: Yes
  - Four Function Calculator
  - Scientific Calculator
  - Graphing Calculator: TI-83, TI-84, TI-84 Plus CE, Catiga CS -121, Casio Prizm FX-CG50, NumWorks Graphic Calculator, TI-Nspire CX II CAS, HP Prime Graphing Calculator
  - Financial Calculator

- **Restroom breaks**: No

- **Copy and Paste**: No

- **Hats**: No

- **Headphones**: No

- **Take Exam in a Public Area**: No

- **Mobile Phone Use**: No

- **Background Noise (Occasional sounds expected in the testing area)**: No

# Honorlock

Honorlock will proctor your exams this session. Honorlock is an online proctoring service. You do **not** need to create an account or schedule an appointment in advance. Honorlock is available twenty-four hours a day and seven days a week (24 hours/7 days).

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Honorlock will be enabled for at least one practice assessment in your course to prepare you for the proctored exams in this course.

Review your onboarding course and the Welcome and Start Here section in your course for more information about Honorlock and how to download the required Chrome Extension.

## Course Grade Breakdown

| Course Work | Quantity | Team or Individual | Points |
|---|---|---|---|
| Steganography and Cryptanalysis Project* | 1 | Individual | 100 |
| Hash Project* | 1 | Individual | 100 |
| Diffie-Hellman and Encryption Project* | 1 | Individual | 100 |
| RSA Project* | 1 | Individual | 100 |
| Midterm Exam | 1 | Individual | 300 |
| Final Exam | 1 | Individual | 300 |
| **Total Course Points** | | | 1000 |

*The project(s) count for 30% or more of the overall course grade, so this is a portfolio eligible course. See the MCS Graduate Handbook for more information about the portfolio requirement if you are a degree student.

## Grade Scale

You must earn a cumulative grade of 70% to earn a "C" in this course. You must earn at least a "C" to receive graduate credit. This course has no grade curving. All graded coursework will be included to calculate grades (i.e., no graded items will be dropped). Grades will not be rounded. Grades in this course will not include pluses or minuses.

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The instructor reserves the right to adjust individual grades based on, but not limited to: violations of academic integrity.

| Range of Points | Percentage | Letter Grade |
|---|---|---|
| 900 - 1000 | 90 - 100 | A |
| 800 - 899.99 | 80 - 89.99 | B |
| 700 - 799.99 | 70 - 79.99 | C |
| 600 - 699.99 | 60 - 69.99 | D |
| 0 - 599.99 | 0 - 59.99 | E |

# Zoom Meetings

This course has three (3) types of Zoom meetings:

- **Instructor Zoom Events:** If you have specific questions or topics of interest to be discussed, please indicate your request in an Ed Discussion thread. Although it may not be possible to address all requests during the Zoom event, the instructor is interested in tailoring this time to your questions and interests. The instructor will be following a set agenda, so please be mindful of that when engaging in the Zoom event.
- **Instructional Assistant (IA) Zoom Support Sessions:** These sessions offer a chance for learners to get their questions answered from the IAs. Although the course team is responsive to trends in Ed Discussion, these events focus on addressing learners' specific questions related to content: clarifications, reteaching, assessment preparation, etc.
- **Grader Zoom Support Sessions:** These sessions are singularly focused on addressing questions related to **grading**.

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Check the Zoom tab in the navigation menu of your course. Although we try to be consistent for our learners' planning purposes, the schedule is subject to change throughout the course, so stay up-to-date on the event details by checking your Ed and course announcements.

Read about the specific policies related to Zoom meetings directly in your onboarding course and your course pages: Syllabus, ASU Course Policies, and any additional course-specific policy information in the Welcome and Start Here area. Additional information may be included in the Policies section of this syllabus. You are responsible for adhering to all policies.

## Zoom Recordings

- Instructor Zoom Events are **recorded and shared** through the "Zoom" navigation link in your course. These can be found by going to the "Cloud Recordings" tab. These recordings will be unavailable after 120 days.
- IA Zoom Support Sessions are **recorded**, but **not uploaded** into the course. It is at the discretion of the instructor if these sessions will be shared during the course session.
- Grader Zoom Support Sessions are **recorded**, but **not uploaded** into the course.

# Policies

For ASU, FSE, and MCS policies, review your onboarding course and read the ASU Online Course Policies in your course's navigation menu.

This section refers to course-specific policies. Please refer to the ASU Course Policies section in your course, your onboarding course, and the Welcome and Start Here section of your course in addition to the policies listed in this section.

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# ASU Code of Conduct

## Expected Behavior

The aim of education is the intellectual, personal, social, and ethical development of the individual. The educational process is ideally conducted in an environment that encourages reasoned discourse, intellectual honesty, openness to constructive change, and respect for the rights of all individuals. Self-discipline and a respect for the rights of others in the university community are necessary for the fulfillment of such goals.

Students in this class are expected to acknowledge and embrace the FSE Student Professionalism Expectation.
An instructor may withdraw a student from a course with a mark of "W" or "E" or employ other interventions when the student's behavior disrupts the educational process. For more information, review SSM 201–10.

If you identify something as unacceptable classroom behavior (e.g., in Canvas, Ed Discussion, Zoom, etc.), please notify the course team.

Our classroom community rules are to:
- Be professional
- Be positive
- Be polite
- Be proactive

## Academic Integrity

All engineering students are expected to adhere to the ASU Student Honor Code and the ASU academic integrity policy, which can be found at https://provost.asu.edu/academic-integrity/policy. Students are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. If you have taken this course before, you may not reuse or submit any part of your previous assignments without the express written permission from the instructor.

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All student academic integrity violations are reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). Withdrawing from this course will not absolve you of responsibility for an academic integrity violation and any sanctions that are applied. The AIO maintains a record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

## Use of Generative AI is Generally Permitted Within Guidelines

Artificial Intelligence (AI), including ChatGPT, are being used in workplaces all over the world to save time and improve outcomes by generating text, images, computer code, audio, or other media. If at any point you have questions about what is permitted, contact the instructor to discuss before submitting work.

## Copyright

You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's/learner's original work, unless the student/learner first complies with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

The contents of this course, including lectures (Zoom recorded lectures included) and other instructional materials, are copyrighted materials. Students may not share outside the class, including uploading, selling or distributing course content or notes taken during the conduct of the course. Any recording of class sessions is authorized only for the use of students enrolled in this course during their enrollment in this course. Recordings and excerpts of recordings may not be distributed to others. (see ACD 304–06, "Commercial Note Taking Services" and ABOR Policy 5-308 F.14 for more information).

## Exam Policy

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Each course in the MCS program is uniquely designed by expert faculty so that learners can best master the learning outcomes specific to each course. By design, course features and experiences are different across all MCS courses.

In the MCS program, we strive to provide learners with exercises and applied practice beyond quizzes and exams that align with the hands-on nature of the computer science industry. Ungraded practice opportunities may include, but are not limited to: in-video-questions (IVQs), knowledge check quizzes (KCs), module practice quizzes, practice exams, and other coursework. When available, the questions and correct answers are provided to learners. Depending on the type of questions, auto-generated feedback is built into the course to further help learners learn in real-time. Please thoroughly review your course to ensure that you are aware of the types of practice opportunities available to you.

For academic integrity purposes, once grades are made available, learners will see their overall total scores. Like other standardized tests, such as the GRE and SAT, learners will receive a singular grade for the graded quizzes and exams, but the questions, correct and incorrect answers, and feedback to each question will **not** be provided.

If learners desire 1:1 feedback, please send a private thread to the course team on Ed and/or attend a Zoom meeting with the course team. Rather than receiving the exact questions learners had correct and incorrect and the answers to those questions, learners will likely receive the concepts that were covered in the assessment questions so they will know what they need to review prior to other assessments and how to apply this information in their professional environments.

## Absence Policies

There are no required or mandatory attendance events in this online course. Different types of Zoom meetings hosted by any course team member do not take attendance. [Opportunity to insert expectations for teamwork/group work and what "attendance" or "absences" look like. A line can be added about grade adjustments based on individual contributions to teamwork/group work...*The instructor reserves the right to adjust individual grades based on, but not limited to: …]

Excused absences do not relieve students of responsibility for any part of the coursework required during the period of absence. If exceptions for graded coursework deadlines need to be made for known excused absences, please reach out to the course team by the end of the second week of the course by sending a private thread to the course team on Ed. Review availability windows and due

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dates for coursework and schedule accordingly. The exam availability windows allow for your own flexibility and you are expected to plan ahead.

Review the resources for what qualifies as an excused absence and review the late penalties in the Assignment Deadlines and Late Penalties section of the syllabus and the course:

a. Excused absences related to religious observances/practices that are in accord with ACD 304–04, "Accommodation for Religious Practices" (please see Religious Holidays and Observances).

b. Excused absences related to university sanctioned events/activities that are in accord with ACD 304–02, "Missed Classes Due to University-Sanctioned Activities".

c. Excused absences related to missed class due to military line-of-duty activities that are in accord with ACD 304–11, "Missed Class Due to Military Line-of-Duty Activities," and SSM 201–18, "Accommodating Active Duty Military".

# Zoom Meetings

## Recording Notice

Instructors will record Zoom meetings. An archived recording will be made available in Canvas for enrolled students, instructors, or support personnel. Creation of recordings for individuals or groups beyond these requires consent from students who are recorded.

## Expectations

The environment should remain professional at all times. Inappropriate content/visuals, language, tone, feedback, etc. will not be tolerated, reported and subject to disciplinary action. Review the policy regarding Expected Behavior section of the syllabus, ASU Student Code of Conduct, and FSE Student Professionalism Expectation for more detailed information.

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## Policy Against Threatening Behavior, per the Student Services Manual, ([SSM 104-02](#))

Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services (see [SSM 104-02](#)). Interfering with the peaceful conduct of university-related business or activities or remaining on campus grounds after a request to leave may be considered a crime. All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students.

## Disability Accommodations

Suitable accommodations are made for students with disabilities. Students needing accommodations must register with [ASU Student Accessibility and Inclusive Learning Services](#) (SAILS) office. Students should communicate the need for an accommodation at the beginning of each course so there is sufficient time for it to be properly arranged. These requests should be submitted through the [online portal](#). See [ACD 304-08](#) Classroom and Testing Accommodations for Students with Disabilities. SAILS will send the instructor a notification of accommodations. It is recommended that students communicate with instructors regarding documented accommodations.

## Harassment and Sexual Discrimination

Arizona State University is committed to providing an environment free of discrimination, harassment, or retaliation for the entire university community, including all students, faculty members, staff employees, and guests. ASU expressly prohibits discrimination, harassment, and retaliation by employees, students, contractors, or agents of the university based on any protected status: race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, gender identity, and genetic information.

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at [https://sexualviolenceprevention.asu.edu/faqs](https://sexualviolenceprevention.asu.edu/faqs).

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As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, https://eoss.asu.edu/counseling is available if you wish to discuss any concerns confidentially and privately. ASU online students may access 360 Life Services, https://goto.asuonline.asu.edu/success/online-resources.html.

# Photo Requirement

Arizona State University requires each enrolled student and university employee to have on file with ASU a current photo that meets ASU's requirements (your "Photo"). ASU uses your Photo to identify you, as necessary, to provide you educational and related services as an enrolled student at ASU. If you do not have an acceptable Photo on file with ASU, or if you do not consent to the use of your photo, access to ASU resources, including access to course material or grades (online or in person) may be negatively affected, withheld or denied.

# Warning of Offensive Class Materials

Your written warning that some course content may be deemed offensive by some students and how to bring this to the attention of the instructor or, alternatively, to the unit chair or director

Example: If you feel any course material is offensive, please reach out to the instructor by sending a private thread on Ed.

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# Course Creator



## Partha Dasgupta, PhD

Dr. Partha Dasgupta is an Associate Professor in the School of Computing, Informatics, and Decision Systems Engineering at Arizona State University (ASU). His core areas of expertise are in Computer Security, Cryptography and Operating Systems. His current research focus is the use of cryptography and secure software systems to provide security and dependability of consumer computing. He has significant prior research results and publications in construction of distributed operating systems, high performance systems and secure computing infrastructures. In addition to ASU, Dr. Dasgupta has held faculty positions at Georgia Tech and New York University.

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