Ira A. Fulton Schools of Engineering
Arizona State University

Course Syllabus - Fall B 2023

CSE 543: Information Assurance and Security

Contact Information

Instructor (IoR):	Wasif Bokhari	**Preferred Name:**	Dr. Wasif (pronounced like vuh-sif)
		Pronouns:	He/Him/His
Live Events:	Wednesdays, 11:00AM - 12:00PM AZ Time		
Graduate Student Assistant (GSA):	Shahil Mohammed	**Preferred Name:**	Shahil (pronounced shah-hil)
		Pronouns:	He/Him/His
Live Support Sessions (GSA):	Mondays, 11:00AM - 12:00PM AZ Time		
Graduate Student Assistant (GSA):	Jahnavi Appaka	**Preferred Name:**	Jahnu (pronounced jah-noo) or Jahnavi (Jah-nah-vee)
		Pronouns:	She/Her/Hers
Live Support Sessions (GSA):	Fridays, 5:00PM - 6:00PM AZ Time		
Content, Assignment, and Project Questions:	Ed Discussion **Note**: Post public threads in Ed for all course content related questions (e.g. questions about assignment, quizzes). If you have a question/issue that is private in nature (e.g. grade appeal, late submission), please post a private thread in Ed Discussion.		
Technical Support:	Coursera Learner Help Center		

Note: Please make sure you are logged in so that support personnel recognize you as an ASU learner.

General Support: mcsonline@asu.edu
Note: When sending an email about this class, please include the prefix "CSE 543" in the subject line of your message. Please use this email address for questions/issues not related to course content such as technical issues with the Coursera platform, ProctorU, and general questions about the MCS program and advising.

Course Description

The course will provide an overview of the historical underpinnings and the current, global landscape of information assurance and security. Principles and strategies that modern information assurance practices should follow will be highlighted as well as legal and ethical issues. Solidly grasping the theoretical background supports learners to later ethically tackle challenging security tasks. A high-level view of physical and personnel security will be discussed with a focus on authentication and access control. The basics of cryptography, which forms the foundation of modern security, will be addressed, so learners can adopt secure crypto-practices and use secure cryptography in both their daily lives and their development duties. Information assurance in information systems and direct applications of entry-level cryptography in security will be covered. A strong grasp of this content enables learners to recognize common attacks on both local and global networks, and understand the security threats that some seemingly secure practices may entail. The essentials of web security, software security and related emerging problems and vulnerabilities will be featured. Learners taking this course will be challenged to demonstrate concepts and solve problems in a hands-on way in ethical hacking environments.

Specific topics covered include:

- Security and privacy principles
- Physical security
- Personnel security
- Contingency and disaster recovery planning
- Information assurance policies
- Authentication and access control
- Administrative security controls
- Risk analysis and management

- Computer virus and malware
- Network attacking attempts
- Phishing
- Social engineering
- Software security
- Definitions of software security
- Traditional software vulnerabilities
- Modern software vulnerabilities
- Vulnerability discovery
- Vulnerability mitigation
- Secure software development
- Laws and regulations about Information Assurance
- Ethical hacking

Technologies covered include:

- C
- x86-64 Assembly
- HTTP
- HTML
- JavaScript
- SQL
- Scripting languages
- Python

Learning Outcomes

Learners completing this course will be able to:

- Recognize common security threats and attacking attempts.
- Identify typical vulnerabilities in programs.
- Develop secure programs.
- Analyze legal and ethical concerns of computer security activities.
- Launch attacks in ethical hacking environments.

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

- Algebra
- Linear Algebra
- Algorithms
- Data Structures
- Computer Organization and Architecture
- Operating Systems
- Computer networking

Strong Application Skills

- Ability to effectively read C code
- Ability to effectively read Python code
- Confidence executing at least one programming language:
- Python
- Java
- C#
- C++
- C

Proficient Experience

- Clear understanding of theoretical and applied industry-relevant operating systems and computer networks (e.g., Ethernet, ARP, Routing, IP Addresses, Fragmentation, ICMP, UDP, TCP, and x86-64 assembly)
- Experience reading technical specifications and documentation

Technology Requirements

Hardware

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

Software/Other

- Most reference code will be provided as a Python script. Therefore, Python is strongly recommended. Note: For some coursework, the course team will not be able to help you if you choose any language that is not Python, Java, or C#; therefore, to create the best learning experience, Python is strongly recommended. This is noted on the overview docs where it applies.
- Browser (e.g., Chrome, FireFox, or Microsoft Edge), an HTTP request sender (curl), and Burp Suite
- Ability to access AWS resources
- You are strongly encouraged to use Python 3 and the scapy package

The course project will be completed using the language that the learner chooses. However, the course team will not be able to help the learner if they choose any language that is not Python, Java, C#, or C.

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.

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.

Week/Title	Begins at 12:01 AM Arizona (AZ) Time	Ends at 11:59 PM Arizona (AZ) Time
Welcome and Start Here	October 5, 2023	October 15, 2023
Week 1: Foundations of Information Assurance and Security	October 11, 2023	October 15, 2023
Week 2: Physical Security, Personnel Security, Authentication, and Access Control	October 16, 2023	October 22, 2023
Week 3: Cryptography	October 23, 2023	October 29, 2023
Week 4: IA in Information Systems	October 30, 2023	November 5, 2023
Exam 1	November 5, 2023	November 12, 2023
Week 5: Web Security **ASU Day Off: Friday, November 10, 2023*	November 6, 2023	November 12, 2023
Week 6: Software Security	November 13, 2023	November 19, 2023
Course Survey	This will be updated in your course.	This will be updated in your course.
Week 7: Privacy and Ethical Issues **ASU Day Off: Thursday, November 23, 2023 and Friday, November 24, 2023*	November 20, 2023	November 26, 2023

Exam 2	November 26, 2023	December 03, 2023
Request for Faculty Review: MCS Portfolio Project Report Inclusion Request Optional, degree-seeking learner degree requirement 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.	November 20	First submission deadline by: December 5, 2022 Last submission deadline (if necessary) by December 22, 2023
Faculty Feedback for the Review: MCS Portfolio Project Report Inclusion Request Optional, degree-seeking learner degree requirement	December 8, 2023	January 5, 2024
Course Closes Once the course closes, you will no longer be able to access coursework you have submitted, so please download copies of what you would like from the course (e.g., Request for Faculty Review: MCS Portfolio Project Report Inclusion Request)		January 19, 2024

Grades are due December 11, 2023. Please see the ASU Academic Calendar for additional information.

Assignment Deadlines and Late Penalties

Unless otherwise noted, all graded work is due on **Sundays at 11:59 PM Arizona (AZ) time**. 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.

Graded Quizzes

A single-automatic late penalty of 5% is applied after the scheduled due date and time.

- **Week 1 Graded Quiz:** - due at the end of Week 1
- **Week 2 Graded Quiz** - due at the end of Week 2
- **Week 7 Graded Quiz** - due at the end of Week 7

Assignments

A single-automatic late penalty of 5% is applied after the scheduled due date and time.

- **Assignment 1: Caesar Cipher** - due at the end of Week 3
- **Assignment 2: Esper Cipher** - due at the end of Week 3
- **Assignment 3: UDP Spoofing** - due at the end of Week 4
- **Assignment 4: TCP Spoofing** - due at the end of Week 4
- **Assignment 5: Pwn Them All** - due at the end of Week 5
- **Assignment 6: Finding Crashes** - due at the end of Week 6

Project

A single-automatic late penalty of 5% is applied after the scheduled due date and time.

- **Fuzz Them All Project** - due at the end of Week 7

Exams

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

- **Exam 1** - available from Sunday, November 05, 2023 at 12:01 AM AZ Time until Sunday, November 12, 2023 at 11:59 PM AZ Time.
- **Exam 2** - available from Sunday, November 26, 2023 at 12:01 AM AZ Time until Sunday, December 03, 2023 at 11:59 PM AZ Time.

Course Content

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.

Feedback Descriptions

The feedback descriptions are specific to auto-graded or auto-feedback items in the course.

- **Limited**: you will be able to see your Total Score, which includes the overall total percent (%) and the number (#) of points.
- **Partial**: you will be able to see your Question Score, which includes the correct or incorrect status and the total points for each question.
- **Full**: you will be able to see your Options and Feedback, which includes any itemized additional feedback.

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 weekly Live Event hosted by the instructor, please clearly indicate your request in your Ed Discussion thread.

Lecture Videos

The concepts you need to know are presented through a collection of video lectures. You may stream these videos for playback within the browser by clicking on their titles or download the videos. Where available, you may download the individual slides that go along with the videos. To further support learning, all of the videos include transcripts and most include PDF lecture slides. Weekly overview 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.

A media guide is included at the beginning of each week in the Overview section. These guides are designed to give you a snapshot description of each week's media components and to provide the week's PDF lecture slides or note-taking materials where available, so you can plan your learning and quickly go back and review material as you prepare for your coursework.

Recommended Resources

Please explore the recommended resources to deepen your knowledge and enhance your skills on the topics covered each week. Although the content in these resources will not be explicitly assessed, they may support your learning and successful completion of coursework.

Discussions

Ed Discussion

Ed Discussion (Ed) is being used in place of Coursera 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 course work. 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

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

Designated Assignment and Project Discussions in Ed Discussion

Use Ed to discuss items relating to the course assignments and project. 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.

Practice Quizzes

There is a practice quiz to help prepare you for each graded quiz. You may retake these as often as you like at any point in the course. You are encouraged to read the full feedback, review your answer choices, and compare them to the correct answers. With the feedback as your guide, you may use these as opportunities to study for other assessments and tasks in the course.

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

Graded Quizzes

Weeks 1, 2, and 7 each include one (1) graded quiz for a total of three (3) graded quizzes in the course. Each graded quiz includes eight to ten (8-10) single-select multiple choice questions. You will be allowed one (1) attempt for each of these quizzes. There is a sixty (60) minute time limit to complete each graded quiz. Once you open a graded quiz, the timer will start and you are to complete the assessment in a single session. Graded quizzes in this course include limited feedback. Read the Graded Quiz and Exam Policy for your course for more information.

All of the graded quizzes count toward your final grade in the class.

Individual Programming Assignments

This course includes six (6) individual assignments. All assignments are provided in the first week of the course in the *Welcome and Start Here* section, so you can preview what is expected and design your own learning schedules to complete these on time. The assignments have a submission space at the end of the week it is due.

Assignments count toward your final grade in the class.

Individual Project

This course includes one (1) individual project. All projects are provided in the first week of the course in the *Welcome and Start Here* section, so you can preview what is expected and design your own learning schedules to complete these on time. The project has a submission space at the end of the week it is due. The project may be included in the Request for Faculty Review: MCS Portfolio Project Report Inclusion Request, which is optional and for degree-seeking learners only.

The project counts toward your final grade in the class.

Request for Faculty Review: MCS Portfolio Project Report Inclusion Request

This is an optional task for degree students wanting to use this course's project 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 you meet the criteria (see your MCS Handbook for more details):

- 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 deadline. The Request for Faculty Review: MCS Portfolio Project Report Inclusion Request does not count toward your final grade in the class.

- Address this project in your Request for Faculty Review: MCS Portfolio Project Report Inclusion Request:
    - Fuzz Them All Project

Practice Exams

In order to help you prepare for your proctored exams, you will have practice exams. Since they are intended to be practice opportunities and to help you learn, 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 full, 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 Live Events and/or Live 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, timed exams. These consist of Exam 1 and Exam 2. Proctored exams include limited 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	Exam 1	Exam 2
Content Covered	Weeks 1, 2, 3, and 4	Weeks 5, 6, and 7
Question Type	Single-answer multiple choice questions	Single-answer multiple choice questions
Number of Questions	26 total questions (25 content questions pulled randomly from a question bank + 1 academic integrity question)	26 total questions (25 content questions pulled randomly from a question bank + 1 academic integrity question)
Availability Start	Sunday, November 05, 2023 at 12:01 AM AZ Time	Sunday, November 26, 2023 at 12:01 AM AZ Time
Availability End	Sunday, November 12, 2023 at 11:59 PM AZ Time	Sunday, December 03, 2023 at 11:59 PM AZ Time
Last Available ProctorU Appointment	Sunday, November 12, 2023 at 9:01 PM AZ Time	Sunday, December 03, 2023 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

Exam Allowances

- Any resources not included in this list are **not** allowed during the exam or in your exam space.
- This is a closed resource exam. No resources are allowed.
- **Hard copy and/or soft copy texts, books, and/or other reference materials downloaded on your device or on a website:** None
- **Calculators**: None
- **Notes:** None
- **Web:** None
- **Software:** None
- **Other technologies, devices, and means of communication:** None
- **Whiteboard, scratch paper, writing utensils, erasing resources**: Learners are *strongly* encouraged to use the whiteboard option instead of scratch paper.
    - If using a whiteboard, learners may have erasable whiteboard markers and what is needed to erase writing on the whiteboard; please have extra whiteboard markers and eraser resources in your testing area.
    - If using scratch paper, learners may have an 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.
- **Other**:

- Learners 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. Once you open the exam, your testing session begins.
- You will be allowed one (1) attempt to take and complete each exam.
- Learners are to stay within a clear view of the proctor throughout the duration of the proctored exam session.
- You will be unable to open the exam until the exam proctor enters the password during the date and time you scheduled to take your exam with ProctorU.
- Your exam will automatically be submitted if it is not completed before the deadline.

- **Reminder**: All virtual machines must be closed *prior* to starting proctoring.

Proctoring

ProctorU is an online proctoring service that allows learners to take exams online while ensuring the integrity of the exam for the institution.

- You are expected to scan your testing space using your webcam for the proctor. Proctoring also requires you to have adequate sound and a working microphone. Please plan accordingly.
- You are strongly encouraged to schedule your exams within the first two weeks of the course to ensure you find a day and time that works best for your schedule. Time slots can fill up quickly, especially during high volume time periods.
  - You *must* set up your proctoring at least 72 hours prior to the exam.
- **The exam proctor will input the exam password**.
- Additional information and instructions are provided in the *Welcome and Start Here* section of the course.
- **When you are going to schedule exams, you *must* pick "Coursera" as your institution.**

- Learners with exam accommodations through Student Accessibility and Inclusive Learning Services (SAILS) and Pat Tillman Veterans Center (PTVC), should not schedule exams until they receive an email invitation specifically for them from ProctorU.
- Your ID needs to be in English. See your MCS Onboarding Course for more information.

Course Grade Breakdown

Course Work	Quantity	Team or Individual	Percentage of Grade
Graded Quizzes	3	Individual	8%
Assignments	6	Individual	50%
Project*	1	Individual	30%
Exam 1	1	Individual	6%
Exam 2	1	Individual	6%

*The project counts 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 include pluses but will not include minuses.

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

Grade Scale

A+	97 - 100%	**B+**	87% - 89.99%	**C+**	77% - 79.99%	**D**	60% - 69.99%
A	90% - 96.99%	**B**	80% - 86.99%	**C**	70% - 76.99%	**E**	<60%

Grades at 59.99 and below will result in a letter grade of E.

Live Events

This course has two types of live events: **Instructor Live Events** and **GSA Live Support Sessions**. Check the Live Events page in your course for your local time and access details. Although we try to be consistent for our learners' planning purposes, the Live Event schedule is subject to change throughout the course, so stay up-to-date on the event details by checking your Course Announcements and the Live Events page in your course.

You may join all live events from the course's Live Events page. The event's title will become active as a Zoom link ten (10) minutes before each event starts. You will also receive an email with a link to the Live Event or Live Support Session the day before the event starts.

Read about the specific policies related to Live Events in the Policy section of this syllabus: Live Events, Policy Regarding Expected Classroom Behavior, and the Student Code of Conduct for more detailed information.

Instructor Live Events - Weekly

Instructor Live Events are a valuable part of the learning experience because learners can meet with the course instructor and fellow classmates to learn more about course topics, special topics within the field, and discuss coursework. If you are able to attend these events, you are strongly encouraged to do so. If you have specific questions or topics of interest to be discussed during these events, please indicate your request in an Ed Discussion thread. Although it may not be possible to address all requests during the live 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 live event.

Instructor Live Events will be recorded and uploaded to the course. These can be found at the end of each week in the course.

GSA Live Support Sessions - Weekly

Live Support Sessions offer a chance for learners to get their questions answered from the course team. Although the course team is responsive to trends in Ed Discussion and mcsonline@asu.edu emails, these events focus on addressing learners' specific questions related to content: clarifications, reteaching, assessment review, etc. These sessions are not intended to address program or course design questions or feedback. GSAs do not have the authority to weigh in or make decisions regarding those items, so please do not include those at this time. These sessions are specific to helping learners learn materials and understand various course assessments. Feedback of that nature is best addressed by sending a grade appeal through posting a private thread in Ed Discussions and please include it in your course survey.

Live Support Sessions are recorded, but not uploaded into the course. It is at the discretion of the IoR if these sessions will be added during the course session.

Course Outline with Assignments

Please review the ASU Days Off for more details. Course teams will not be working on ASU's days off.

Welcome and Start Here (10/5 - 10/15)

Topics

- ☐ Academic Integrity
- ☐ Required Prior Knowledge and Skills and Technology Requirements
- ☐ Course Syllabus
- ☐ Course Assignments Overview
- ☐ Course Projects Overview
- ☐ Exam Information and ProctorU

Other Tasks

- ☐ Schedule your proctoring with ProctorU for your proctored exams

- For learners needing accommodations, submit requests through Connect and review the Student Accessibility and Inclusive Learning Services (SAILS) and/or the Pat Tillman Veterans Center (PTVC).
- Learners with exam accommodations through SAILS or PTVC should **not** schedule exams until they receive an invitation specifically for them from ProctorU.

- ☐ Activity: Zeemap
- ☐ Discussion: Get to Know Your Classmates in Ed Discussion
- ☐ Required Checkpoint: Technology Access and Installation
- ☐ Required Checkpoint: Getting Started Quiz

Graded Coursework

- ☐ N/A

Week 1: Foundations of Information Assurance and Security (10/11 - 10/15)

Topics

- ☐ Security Principles
- ☐ Security Strategies
- ☐ Mission Assurance and Risk Management
- ☐ IA Policies, Contingency, and Disaster Recovery Planning

Other Tasks

- ☐ Schedule your proctoring with ProctorU for your proctored exams.
  - For learners needing accommodations, submit requests through Connect and review the Student Accessibility and Inclusive Learning Services (SAILS) and/or the Pat Tillman Veterans Center (PTVC).
  - Learners with exam accommodations through SAILS or PTVC, should not schedule exams until they receive an invitation specifically for them from ProctorU.
- ☐ Week 1: Practice Quiz

Graded Coursework

- ☐ Week 1: Graded Quiz

Week 2: Physical Security, Personnel Security, Authentication, and Access Control (10/16 - 10/22)

Topics

- ☐ Physical and Personnel Security
- ☐ Authentication
- ☐ Access Control

Other Tasks

- ☐ Schedule your proctoring with ProctorU for your proctored exams.
    - For learners needing accommodations, submit requests through Connect and review the Student Accessibility and Inclusive Learning Services (SAILS) and/or the Pat Tillman Veterans Center (PTVC).
    - Learners with exam accommodations through SAILS or PTVC, should not schedule exams until they receive an invitation specifically for them from ProctorU.
- ☐ Week 2: Practice Quiz

Graded Coursework

- ☐ Week 2: Graded Quiz

Week 3: Title (10/23 - 10/29)

Topics

- ☐ Common Crypto Algorithms
- ☐ Bad Crypto
- ☐ Common Weaknesses in Crypto Uses

Other Tasks

- ☐ N/A

Graded Coursework

- ☐ Assignment 1: Caesar Cipher Submission Space

- [ ] Assignment 2: Esper Cipher Submission Space

Week 4: IA in Information Systems (10/30 - 11/5)

Topics

- [ ] Introduction to Network Security
- [ ] Common Attacks on Networks
- [ ] IA in Outsourcing and Open-Source Software
- [ ] IA in Cloud Computing

Other Tasks

- [ ] Schedule your proctoring with ProctorU for your proctored exams.
    - [ ] For learners needing accommodations, submit requests through Connect and review the Student Accessibility and Inclusive Learning Services (SAILS) and/or the Pat Tillman Veterans Center (PTVC).
    - [ ] Learners with exam accommodations through SAILS or PTVC, should not schedule exams until they receive an invitation specifically for them from ProctorU.

Graded Coursework

- [ ] Assignment 3: UDP Spoofing
- [ ] Assignment 4: TCP Spoofing

Exam 1 (11/5 - 11/12)

Reminders

- [ ] Schedule your proctoring with ProctorU for your proctored exams, if you have not already done, at least 72 hours prior to your desired exam date and within the availability window.
- [ ] Covers content from weeks 1, 2, 3, and 4.
- [ ] Review the details and allowances information for this exam.
- [ ] Prepare for the exam and complete the practice exam.

Week 5: Web Security (11/6 - 11/12)

**ASU Day Off: Friday, November 10, 2023*

Topics

- ☐ Web Security Overview
- ☐ HTML
- ☐ Web Applications
- ☐ Common Vulnerabilities in Web Applications
- ☐ Phishing

Other Tasks

- ☐ N/A

Graded Coursework

- ☐ Assignment 5: Pwn Them All

Week 6: Software Security (11/13 - 11/19)

Topics

- ☐ Software Security Overview
- ☐ Common Vulnerabilities in Software
- ☐ Memory Model, X86-64 Assembly Language, and Debugging
- ☐ Buffer Overflows
- ☐ Defenses against Memory Corruption

Other Tasks

- ☐ Complete the course survey before your final exam (strongly encouraged, appreciated, and used by the course team).

Graded Coursework

- ☐ Assignment 6: Finding Crashes

Week 7: Privacy and Ethical Issues (11/20 - 11/26)

**ASU Day Off: Thursday, November 23, 2023 and Friday, November 24, 2023*

Topics

- ☐ Ethical Hacking

Other Tasks

- ☐ Week 7: Practice Quiz
- ☐ Schedule your proctoring with ProctorU for your proctored exams, if you have not already done, at least 72 hours prior to your desired exam date and within the availability window.
- ☐ Request for Request for Faculty Review: MCS Portfolio Project Report Inclusion Request.
    - Optional for degree students wanting to use this course's projects as part of their portfolio degree requirement/specialization requirements.
- ☐ Complete the course survey before your final exam (strongly encouraged, appreciated, and used by the course team).

Graded Coursework

- ☐ Fuzz Them All Project
- ☐ Week 7: Graded Quiz

Exam 2 (11/26 - 12/03)

Reminders

- ☐ Complete the course survey before your final exam (strongly encouraged, appreciated, and used by the course team).
- ☐ Schedule your proctoring with ProctorU for your proctored exams, if you have not already done, at least 72 hours prior to your desired exam date and within the availability window.
- ☐ Covers content from weeks 5, 6, and 7.
- ☐ Review the details and allowances information for this exam.
- ☐ Prepare for the exam and complete the practice exam.

Policies

All ASU and Coursera policies will be enforced during this course. For policy details, please consult the MCS Graduate Handbook and the MCS Onboarding Course.

Graded Quizzes and Exams

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), weekly (i.e., unit) practice quizzes, practice exams, and other assignments or exercises. For all these learning activities, the questions and correct answers are provided to learners. When available, auto-generated typed 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 for their questions on graded assessments, please submit questions by posting a private thread in Ed Discussions. 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 live events hosted by any course team member do not take attendance.

Learners are to complete all graded coursework (e.g., projects and exams). If exceptions for graded coursework deadlines need to be made for excused absences, please reach out to the course team by the end of the second week of the course by posting a private thread in Ed Discussions. Review the exam availability windows and schedule accordingly. The exam availability windows allow for your

own flexibility and you are expected to plan ahead. Personal travel does not qualify as an excused absence and does not guarantee an exception.

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”.

Live Event 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 Classroom Behavior section of the syllabus and the Student Code of Conduct for more detailed information.

Policy Regarding Expected Classroom 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. 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 in any communication channel (e.g., Ed Discussion, Zoom, Live Events, etc.), please notify the course team using the mcsonline@asu.edu email. For more specifics on appropriate participation, please review our Netiquette infographic.

Our classroom community rules are to:

- Be professional
- Be positive
- Be polite
- Be proactive

Academic Integrity

Students in this class must adhere to ASU's 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. In addition, all engineering students are expected to adhere to both the ASU Academic Integrity Honor Code and the Fulton Schools of Engineering Honor Code. All academic integrity violations will be reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). The AIO maintains a record of all violations and has access to academic integrity violations committed in all other ASU colleges/schools.

Specific academic integrity announcements for this class:

- Computer science is a field that honors integrity to the maximum extent. As an introductory course to security, this course has a zero-tolerance policy towards academic integrity violations.
- Any academic integrity violations will lead to a failure of this course (no refunds) with a failing grade (E), and the violation will be reported to the university.

Copyright

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).

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.

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 will be made for students having disabilities. Students needing accommodations must register with ASU Student Accessibility and Inclusive Learning Services. 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. ASU Student Accessibility and Inclusive Learning Services will send the instructor of record a notification of approved accommodations and students are copied on these letters. It is recommended that students reply to the faculty notification letters, introduce themselves to their instructor, and share anything they might want to disclose.

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.

Mandated sexual harassment reporter: 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.

Disclaimer

The information in this syllabus may be subject to change without advance notice. Stay informed by checking course announcements and the syllabus section of your course.

Course Creator

Dr. Ruoyu “Fish” Wang

Dr. Ruoyu "Fish" Wang is an Assistant Professor in the School of Computing and Augmented Intelligence (SCAI) at Arizona State University (ASU). He received his Ph.D. degree from the Department of Computer Science at the University of California, Santa Barbara in 2018 and his Bachelor's degree in Computer Software at Tsinghua University in 2013. Dr. Wang's research focuses

on system security, especially on automated binary program analysis and reverse engineering of software. As part of his research, Dr. Wang co-founded the binary analysis platform, angr.

Besides research, Dr. Wang plays many CTFs and is a core member of the CTF team Shellphish and pwndevils. Dr. Wang was a core member of the CGC team Shellphish CGC, with whom he won third place in the Final Event of the DARPA Cyber Grand Challenge in 2016.