

Course Syllabus - Spring B 2023

CSE 598: Engineering Blockchain Applications

****Disclaimer**** This syllabus is to be used as a guideline only. The information provided is a summary of topics to be covered in the class. Due dates and timings are subject to change. Follow the announcements from Instructor.

Contact Information

Instructor: Swathi Punathumkandi : pswathi@asu.edu

Teaching Sahil Kharya

Assistants:

Content Questions: Weekly discussion forums

Project or

AssignmentQuestion: Designated discussion forums

Zoom Link: <https://asu.zoom.us/j/3820983366>

Slack Channel: Direct Link:

Note: <https://app.slack.com/client/T044XGSELSE/C044QTYU030>

You must join/access this workspace using your ASURITE credentials.

Content Issues: Course "Report an Issue" tool (clickable link on every content page)

Technical Support: [Coursera Learner Help Center](#)

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

General Support: mconline@asu.edu

Note: When sending an email about this class, please include the prefix "CSE 598" in the subject line of your message.

Please use this email address for private questions. If it is a question that would benefit your classmates and is not private, please post it in the discussion forums.

Course Description

Blockchain technology is revolutionizing digitalization prospects for many industries and emerging as an exciting and rapidly growing field. By detailing the architecture of the technology, this course ensures that learners will be well versed in blockchain fundamentals. At

the same time, it is designed to put learners on the leading edge by presenting the abstract nature of blockchain technology and emphasizing its broad applicability. Topics include the mathematical and cryptographic underpinnings of the technology, as well as mining, consensus protocols, networking, and decentralized governance.

Specific topics covered include:

- Getting started and the Blockchain's abstractions and applications
- Hash Functions
- Cryptographic and Mathematical foundations of the blockchain
- Transactions on the Blockchain
- Mining
- Blockchain Consensus
- Peer-to-Peer Networks
- Governance

Technologies covered include:

- Hyperledger Fabric
- Solidity
- Ethereum

Learning Outcomes

Learners completing this course will be able to:

- Navigate the complexities of applying blockchain technology to an area of personal interest
- Navigate relevant documentation and resources to engineer blockchain applications
- Apply the Elliptic Curve Digital Signature Algorithm to identity management and computer security
- Determine the validity of chains given general consensus rules
- Determine whether changes in consensus rules for a Nakamoto network will result in a successful protocol fork
- Compare proof-of-work secured blockchains' security to alternate security methods
- Evaluate an optimal mix of network design and operational parameters to ensure network scalability and throughput
- Evaluate the trade-off between security and computational complexity
- Use Hyperledger Fabric to build a custom decentralized blockchain network configuration
- Use Hyperledger Composer to build a business application
- Deploy an ERC-20 Token Standard contract on an Ethereum-based network using Solidity

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
- Operating Systems
- Computer networking
- Cryptography

Strong Application Skills

- Confidence executing at least one programming language:
 - Python
 - Java
 - C++
 - C
 - Javascript

Note: The course projects will be completed using nodejs and Solidity.

Proficient Experience

- Knowledge of networking concepts.
- Experience in programming.
- Understanding of docker containers.
- Familiarity with Node JS is desirable.

Technology Requirements

Hardware

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

Software/Other

- Linux, Windows or Mac-OS with an ability to install docker containers
- npm install
- NodeJS supported IDE.
- Access to one of the following browsers: Chrome, Firefox, Edge, Brave
- To complete coursework (e.g., assignments and projects), these applications/languages are required:
 - Solidity
 - NodeJS

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.

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

- 1) [Bitcoin and Cryptocurrency Technologies: A Comprehensive Introduction](#) Arvind Narayanan, Joseph Bonneau, Edward Felten, Andrew Miller & Steven Goldfeder (2016)
- 2) Mastering bitcoin: programming in open blockchain (SECOND EDITION), Andreas Antonopoulos
- 3) [Mastering Blockchain](#) , 3rd edition, Imran Bashir (2020)
- 4) The Basics of Bitcoin and Blockchain, Antony Lewis
- 5) Blockchain Basics: A non technical Introduction in 25 steps, Daniel Drescher

Course Content

Instruction

- Video lectures
- Other video or media
- Readings
- Discussion forums
- Virtual office hours hosted by course team members
- Live events hosted by the instructor

Assessments

- Knowledge Check Quizzes (individual, ungraded, auto-feedback, 15 minutes timed, unlimited attempts)
- Graded Discussions (individual, human-graded, untimed, unlimited attempts)
- Graded Quizzes (individual, auto graded, limited feedback, 60 minutes timed, 1 attempt)
- Individual Projects (individual, auto-graded, limited feedback)
- Final exam (individual, auto graded, 120 minutes timed, proctored) **Will announce the dates**

Feedback Descriptions

- 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

Details of the main instructional and assessment elements in this course:

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.

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 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, assignment videos, and project-related videos do not have PDF lecture slides because they are not lectures and have associated documents specific to them.

Discussion forums: Discussion forums are present each week in the course and include designated forums for each project. Although the course team is engaged in these discussions, the forums are spaces to clarify, support, and enrich learner-to-learner communication and learning. *If you have specific questions that you would like to be considered to be addressed in the weekly Live Event hosted by the instructor, please indicate your request in your post.*

Graded discussion forums: Select weeks include one or more graded discussion prompts. You will find these assignments among each week's other content. Each prompt provides a space for you to respond. After responding, you can see and comment on your peers' responses. All prompts and responses are also accessible from the general discussion forum and the module discussion forum. *No late submissions for graded discussions will be accepted after the scheduled due date and time. These discussions are counted toward your final grade in the class.*

- **Interest Area Discussion 1: Engineering Blockchain Applications Interest Area**
 - Due at the end of Week 1 on Sunday, March 19 at 11:59PM AZ Time.
- **Navigating Resources Discussion 1: Foundational Reading**
 - Due at the end of Week 1 on Sunday, March 19 at 11:59PM AZ Time.
- **Interest Area Discussion 2: Interest Area and Current Blockchain Efforts**
 - Due at the end of Week 2 on Sunday, March 26 at 11:59PM AZ Time.
- **Navigating Resources Discussion 2: Solidity Documentation**
 - Due at the end of Week 2 on Sunday, March 26 at 11:59PM AZ Time.
- **Interest Area Discussion 3: Applying Blockchain Technology to Interest Area**
 - Due at the end of Week 3 on Sunday, April 2 at 11:59PM AZ Time.
- **Navigating Resources Discussion 3: Ethereum Developer Documentation 1**
 - Due at the end of Week 3 on Sunday, April 2 at 11:59PM AZ Time.
- **Interest Area Discussion 4: Blockchain Technology and Interest Area Tradeoffs**
 - Due at the end of Week 5 on Sunday, April 16 at 11:59PM AZ Time.
- **Navigating Resources Discussion 4: Ethereum Developer Documentation 2**
 - Due at the end of Week 5 on Sunday, April 16 at 11:59PM AZ Time.
- **Interest Area Discussion 5: Blockchain Technology and Interest Area Feasibility**
 - Due at the end of Week 6 on Sunday, April 23 at 11:59PM AZ Time.
- **Navigating Resources Discussion 5: Hyperledger Documentation**
 - Due at the end of Week 6 on Sunday, April 23 at 11:59PM AZ Time.
- **Interest Area Discussion 6: Blockchain Technology and Interest Area Next Steps**
 - Due at the end of Week 7 on Sunday, April 30 at 11:59PM AZ Time.
- **Navigating Resources Discussion 6: Hyperledger White Papers**
 - Due at the end of Week 7 on Sunday, April 30 at 11:59PM AZ Time.

Knowledge checks: Designed to support your learning, these are short, ungraded quizzes to test your knowledge of the concepts presented in the lecture videos. You may take your time, review your notes, and learn at your own pace because knowledge checks are untimed. With unlimited attempts, you may retake these as often as you would like at any point in the course. You are encouraged to read the limited 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. *If you have specific questions that you would like to be considered to be addressed in the weekly Live Event hosted*

by the instructor, please indicate your request in your post. There are no late penalties. Knowledge checks are not counted towards your overall course grade.

Graded quizzes: Each week includes one (1) graded quiz. Each graded quiz includes 10 multiple choice and fill-in-the-blank questions. You will be allowed one (1) attempt for each of these quizzes. There is a 60 minutes time limit for each graded quiz. Graded quizzes in this course include limited feedback. For academic integrity purposes, once grades are made available, learners will see their overall total scores. Correct and incorrect answers and feedback to each question will **not** be provided. Read the Graded Quiz and Exam Policy for more information. *If you have specific questions that you would like to be considered to be addressed in the weekly Live Event hosted by the instructor, please indicate your request in your post. No late submissions for graded quizzes will be accepted after the scheduled due date and time. These quizzes count toward your final grade in the class. The lowest score will be dropped.*

- **Week 1 Quiz: The Blockchain's Abstractions and Applications**
 - Due at the end of Week 1 on Sunday, March 19 at 11:59 PM AZ Time.
- **Week 2 Quiz: Hash Functions**
 - Due at the end of Week 2 on Sunday, March 26 at 11:59 PM AZ Time.
- **Week 3 Quiz: Cryptographic and Mathematical Foundations of the Blockchain**
 - Due at the end of Week 3 on Sunday, April 2 at 11:59 PM AZ Time.
- **Week 4 Quiz: Transactions on the Blockchain**
 - Due at the end of Week 4 on Sunday, April 9 at 11:59 PM AZ Time.
- **Week 5 Quiz: Mining**
 - Due at the end of Week 5 on Sunday, April 16 at 11:59 PM AZ Time.
- **Week 6 Quiz: Blockchain Consensus**
 - Due at the end of Week 6 on Sunday, April 23 at 11:59 PM AZ Time.
- **Week 7 Quiz: Peer-to-Peer Networks**
 - Due at the end of Week 7 on Sunday, April 30 at 11:59 PM AZ Time.
- **Week 8 Quiz: Governance**
 - Due at the end of Week 8 on Sunday, April 30 at 11:59PM AZ Time.

Projects: This course includes two (2) individual projects. 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. Each project has a submission space at the end of the week it is due. As a set of 2, the projects and MCS Project Portfolio written reports may be included in the Request for Faculty Review: MCS Project Portfolio submission, which is optional. *If you have specific questions that you would like to be considered to be addressed in the weekly Live Event hosted by the instructor, please indicate your request in your post. An automatic late penalty of 20% is applied to projects submitted after the scheduled due date and time. These projects count toward your final grade in the class.*

- **Project 1: Project on NFT**
 - Due at the end of Week 4 on Sunday, April 9, 2023 at 11:59PM AZ Time. [Auto-graded] [Limited Feedback]
- **Project 2: Hyperledger Fabric Private Blockchain and Chaincodes**
 - Due on Tuesday, May 2, 2023 at 11:59PM AZ Time. [Auto-graded] [Limited Feedback]

Request for Faculty Review: MCS Project Portfolio: 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. *If you have specific questions that you would like to be considered to be addressed in the weekly Live Event hosted by the instructor, please indicate your request in your post. Although there are no late penalties, these requests must be submitted by the designated deadline. The Request for Faculty Review: MCS Project Portfolio does not count toward your final grade in the class.*

- Address these projects in your Request for Faculty Review: MCS Project Portfolio:
 - Project 1: Project on NFT
 - Project 2: Hyperledger Fabric Private Blockchain and Chaincodes
- Request for Faculty Review: MCS Project Portfolio - due on Thursday, May 4, 2023 at 11:59PM AZ Time.
- Faculty feedback should be received by April 27, 2023.

Proctored exam: You have one (1) proctored, timed exam. This consists of a final exam. Proctored exams include limited feedback. For academic integrity purposes, once grades are made available, learners will see their overall total scores. Correct and incorrect answers and feedback to each question will **not** be provided. Read the Graded Quiz and Exam Policy for more information. *An automatic late penalty of 100% is applied to exams after the scheduled due date and time. No late exams will be permitted or accepted and will result in a score of zero points (0). This does not include established accommodations for learners with disabilities. Proctored exams count toward your final grade in the class.*

Final Exam

Details

- **Content covered:** Entire Syllabus(Week 1-8)
- **Question type(s):** single-answer multiple choice questions
- **Number of questions:** 20 content questions
Availability: Will announce the dates
- **Duration:** Plan for 15 minutes for proctoring set up and 2 hours (120 minutes) for the exam

Exam Allowances

- **Hardcopy and/or digital books and/or reference materials (all):** N/A
- **Calculators (all):** : A four-function, scientific or graphing calculator
- **Notes in any format of any kind (all):** Two pages (both sides) handwritten notes or two pages (both sides) typed notes.
- **Web (all):** N/A
- **Software (all):** Excel or other spreadsheet program (that includes Google Spreadsheet). All virtual machines must be closed prior to starting proctoring. If other Google suite products other than Spreadsheet is used you will be in violation of the exam rules.
- **Other technologies, devices, and means of communication (all):** N/A
- **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](#).
- **Note:** 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 sound and a microphone. Please plan accordingly.
- **The exam proctor will input the exam password.**
- Additional information and instructions are provided in the *Welcome and Start Here* section of the course.
- Learners with exam accommodations through [Student Accessibility and Inclusive Learning Services \(SAILS\)](#) should not schedule exams until they receive an 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
Auto-Graded Quizzes	8	Individual	10%
Engineering Blockchain Applications Interest Area Discussion Posts	6	Individual	20%
Engineering Private/Public Blockchain Applications Readings Discussion Posts	6	Individual	20%
Project 1: Hyperledger Fabric Private Blockchain and Chaincodes	1	Individual	20%
Project 2: Creating an ERC-20 Token Standard Smart Contract on Ethereum	1	Individual	20%
Final Exam	1	Individual	10%

*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 include pluses or minuses.

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

A+	97% - 100%
A	94% - 96.99%
A-	90% - 93.99%
B+	85.99% - 89.99%
B	80% - 85.99%
B-	77% - 79.99%
C+	73% - 76.99%
C	70% - 72.99%
D	60% - 69%
E	<60%

Course Schedule and Important Dates

Course teams will not be working on ASU's days off* and those are listed by name 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
Week 1: Blockchain's Abstractions and Applications	March 13	March 19
Week 2: Hash Functions	March 20	March 26
Week 3: Cryptographic and Mathematical Foundations of the Blockchain	March 27	April 2
Week 4: Transactions on the Blockchain	April 3	April 9
Week 5: Mining	April 10	April 16
Week 6: Blockchain Consensus	April 17	April 23
Week 7: Peer-to-Peer Networks	April 24	April 30
Week 8: Governance and Course Wrap-Up	May 1	May 7
Final Exam	Will announce the dates *	Will announce the dates *
Request for Faculty Review: MCS Project Portfolio submission (optional)	May 4	May 4
Faculty Feedback for the Review: MCS Project Portfolio submission (optional)	April 27	April 27

Please see the [ASU Academic Calendar](#) for additional information.

Live Events

This course has two types of live events: **live sessions** and **virtual office hours**. 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 Live Event details by checking your Course Announcements and the Live Events page in your course.

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.

Live Sessions - Weekly

Live Sessions 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 Live Sessions, you are strongly encouraged to do so. If you have specific questions or topics of interest to be discussed during the live events, please indicate your request in your discussion forum post. Although it may not be possible to address all requests live, the instructor is interested in tailoring the live events to your questions and interests. The instructor will be following a set agenda, so please be mindful of that when engaging in the live session.

Live Sessions hosted by the faculty will be recorded and uploaded to the course.

Virtual Office Hours - Weekly

Virtual Office Hours offer a chance for learners to get their questions answered from the course team. Although the course team is responsive to trends in the discussion forums and mcsonline@asu.edu emails, virtual office hours 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. Assistants 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 in the communication channel: mcsonline@asu.edu and please include it in your course survey.

Virtual office hours are recorded, but not uploaded into the course.

Assignment Deadlines and Late Penalties

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

- Graded Quizzes, Graded Discussions, and the Final Exam **will not be accepted late.**
- Projects will incur a one-time late penalty of 20%.

*** You may get some Extra credit Assignments during the course.

Course Outline with Assignments

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

Week 1: The Blockchain's Abstractions and Applications (3/13 - 3/19)

Content

- Introduction to Blockchain Technology
- Benefits of Blockchain Technology
- Blockchain Applications
- The Blockchain Ecosystem

Graded Coursework

- Graded Discussion: Engineering Blockchain Applications Interest Area
- Graded Discussion: Foundational Reading
- Week 1 Quiz: The Blockchain's Abstractions and Applications

Week 2: Hash Functions (3/20 - 3/26)

Content

- Introduction to Hash Functions
- Hash Functions for Password Handling
- Application-Appropriate Hash Function
- Merkle Trees and Merkle Proofs

Graded Coursework

- Graded Discussion: Interest Area and Current Blockchain Efforts
- Graded Discussion: Solidity Documentation
- Week 2 Quiz: Hash Functions

Week 3: Cryptographic and Mathematical Foundations of the Blockchain (3/27 - 4/2)

Content

- Elliptical Curves Digital Signatures
- Private Key Handling
- Other Mathematical Concepts

Graded Coursework

- Graded Discussion: Applying Blockchain Technology to Interest Area
- Graded Discussion: Ethereum Developer Documentation 1
- Week 3 Quiz: Cryptographic and Mathematical Foundations of the Blockchain

Week 4: Transactions on the Blockchain (4/3 - 4/9)

Content

- Introduction to Transactions
- Scripts
- State Channels
- Wallets

Graded Coursework

- Week 4 Quiz: Transactions on the Blockchain
- Project 1 Submission

Week 5: Mining (4/10 - 4/16)

Content

- Introduction to Mining

- Mining and Network Attacks
- Mining Pools
- Mining Considerations

Graded Coursework

- Graded Discussion: Blockchain Technology and Interest Area Tradeoffs
- Graded Discussion: Ethereum Developer Documentation 2
- Week 5 Quiz: Mining

Week 6: Blockchain Consensus (4/17 - 4/23)

Content

- Introduction to Blockchain Consensus
- Consensus Algorithms

Other Tasks

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

Graded Coursework

- Graded Discussion: Blockchain Technology and Interest Area Feasibility
- Graded Discussion: Hyperledger Documentation
- Week 6 Quiz: Blockchain Consensus

Week 7: Peer-to-Peer Networks (4/24 - 5/30)

Content

- Introduction to Computer Network Architecture
- Nodes
- Block Propagation
- SPV Clients

Graded Coursework

- Graded Discussion: Blockchain Technology and Interest Area Next Steps
- Graded Discussion: Hyperledger White Papers
- Week 7 Quiz: Peer-to-Peer Networks

Other Tasks

- Request for Faculty Review: MCS Project Portfolio Submission (*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*)

Week 8: Governance and Course Wrap-Up (5/1 - 5/6)

Content

- Decision-Making on Decentralized Networks
- Hard and Soft Forks
- Network Signaling
- Two-Tiered Network Governance

Graded Coursework (Will be announced by the instructor)

- Week 8 Quiz: Governance
- Project 2 Submission
- Course Survey

- Optional: Portfolio Inclusion Report for ASU MCS Degree

Final Exam (Will announce the dates)

Reminders

- Covers content from weeks 1, 2, 3, 4, 5, 6,7 and 8
- Review the details and allowances information for this exam

Slack Channel

This course will have a unique Slack workspace where you can communicate with your classmates.

Note: You must join/access this workspace using your ASURITE credentials.

Slack is intended to provide a space to create community with your classmates. Please remember to follow the communication protocol pinned in your Slack channel to ensure that any questions or concerns you have are addressed in a timely manner. Also, please remember [ASU's Academic Integrity policy](#), and please refrain from sharing assessment questions, answers or solutions.

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 Quiz and Exam Policy

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 to mcsonline@asu.edu. 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. Live Events, both Live Sessions hosted by the instructor and Virtual Office Hours hosted by the course team 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 using the mcsonline@asu.edu email address. 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 on the class platform (e.g., Coursera discussion forum) or communication channels (e.g., Zoom, virtual live session, virtual office hours, Slack, etc.), please notify the course team using the mcsonline@asu.edu email. In the discussion forums, you can also flag the post for our attention. 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.

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.