

Course Syllabus - Spring A 2022

CSE 535: Mobile Computing

Contact Information

Instructor: Ali Altunkaya

Teaching Assistants: Zeyad Alghamdi
Tariq Nasim

Content Questions: Weekly discussion forums

**Project or
Assignment Questions:** Designated discussion forums

Slack Channel: Direct Link: asu-2221-cse535-24522.slack.com

Note: 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 recognize you as an ASU learner.

General Support: mcsonline@asu.edu

Note: When sending an email about this class, please include the prefix "CSE 535" in the subject line of your message.

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

Course Description

The goal of this course is to provide an in-depth understanding of the fundamental concepts and challenges in the area of mobile computing and study the existing and proposed solutions for these challenges from both a research and development perspective. Several topics, including mobile app development, wireless communication, mobile technology management,

mobility tracking, context awareness, and programming applications on mobile systems, will be covered in this course. Course work will involve programming assignments, a team idea paper, discussions, quizzes, and a project.

Specific topics covered include:

- Mobile programming
- Internet of Things (IoT)
- Edge and cloud computing
- Mobile networking
- Mobile information access
- Adaptive applications enabled by machine learning and AI
- Energy-aware systems
- Location-aware computing
- Mobile security and privacy

Technologies covered include:

- Android Application Development
- Java
- Python
- TensorFlow

Learning Outcomes

Learners completing this course will be able to:

- Design a context-aware application.
- Identify the advantages of using context in applications.
- Explore the challenges arising due to changes in the environment in which computation is performed.
- Identify relevant environment changes and analyze their causes, such as mobility, availability of data, and resource constraints.
- Define smartness and identify salient features that distinguish smart applications from traditional ones in the context of smart city, smart grid, smart transportation, smart mobile applications, and autonomous systems, such as autonomous cars.
- Describe key features of Internet of Things (IoT) and design a distributed smart application using IoT.
- Define cloud computing, crowdsourcing, volunteer computing, and other novel variants of pervasive computing.
- Analyze nonfunctional requirements of smart mobile applications, such as safety security sustainability.

- Apply popular tools, such as machine learning, security protocols, AI, and software testing, to validate safety, security, and sustainability of smart mobile applications.
- Acquire programming skills on popular mobile platforms, such as Android.
- Develop, end-to-end, a sensor-enabled smart autonomous practical application.

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

- Networking
- Operating Systems
- Security
- Probability
- Statistics
- Algorithms

Strong Application Skills

- Ability to read Python code
- Ability to write code in Java, Python

Note: The course projects will be completed using the Android Application Development Environment and Python.

Proficient Experience

- Understanding of mobile computing system models.
- Mobile networking: Mobile device routing, Handoff, ARP.
- Experience Reading Research Papers
- Understanding of context-aware applications and the role of device usage, mobility patterns in context-aware applications.
- Mobile Application security
- Understanding energy and power consumption of a mobile application.

Technology Requirements

Hardware

- Standard personal computer with major operating system
 - Memory: At least 2GB RAM (4GB RAM recommended)
 - Processor: At least 1GHz (2GHz or more recommended)
 - Operating system: Windows 7 or higher / OS X v10.7 or higher
- Reliable, strong Internet connection
- Webcam
- Microphone

Software/Other

- Android Studio Integrated Development Environment (IDE) with the software development kit (SDK) bundle (check the [System Requirements](#) for Android Studio)
- Python, Java, and Tensorflow for the programming assignments

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. Required course readings from the ASU [IEEE Xplore](#) research database will be provided within each week these are assigned.

Course Content

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

Assessments

Feedback Descriptions

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

Assessment Types

- Knowledge checks: ungraded, auto-feedback, untimed, unlimited attempts
- Practice quizzes: ungraded, auto-feedback, untimed, unlimited attempts
- Weekly graded quizzes: graded, auto-graded, 45 minutes timed, 1 attempt
- Computation quiz (Weeks 1 and 2 only): graded, auto-graded, 45 minutes timed, 2 attempts, full feedback
- Assignments: graded, peer-graded and course team-graded, attempts vary
- Peer review: graded, peer-graded, untimed, 1 attempt
- Project: graded, peer-graded and instructor-graded, untimed, 1 attempt
- Exam 1/Exam 2: graded, auto-graded, 120 minutes timed, proctored, 1 attempt

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. To further support learning, all of the videos include transcripts and most include PDF lecture slides. For lecture videos using slides, you may download the accompanying PDF lecture slide decks. For lecture videos using the lightboard, full lecture slides are not able to be provided for videos; however, downloadable PDFs of key points may be included.

Readings: Required course readings from the ASU [IEEE Xplore](#) research database will be provided within each week these are assigned.

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.*

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 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. Knowledge checks are not counted towards your overall course grade.*

Practice quizzes: Most weeks, you are presented with at least one practice quiz, intended for you to assess your understanding of the topics. The practice quizzes will help prepare you for the graded quizzes and the exams. You are encouraged to read the 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. You will be allowed unlimited attempts for each practice quiz. Each attempt may present a different selection of questions to you. There is no time limit on how long you take to complete each attempt of the quiz. *There are no late penalties. These quizzes are not counted toward your final grade in the class.*

Graded quizzes: Each week, you are presented with at least one (1) weekly graded quiz. There are no quizzes in Week 3 of the course. This course has a total of six (6) weekly graded quizzes. Each graded quiz includes eight to ten (8-10) single-select and multiple-select choice question types. You will be allowed one (1) attempt for each of these quizzes. Weeks one and two (1-2) also include a computation quiz. The computation quizzes are also graded and you are allowed two (2) attempts. To ensure academic integrity and graduate-level rigor, please be advised that, *unless otherwise noted*, there is between a 45 limit to complete the weekly graded quizzes and computation quizzes. Once you open a graded quiz or computation quiz, the timer will start and you are to complete the assessment in a single session. Resets will not be granted. For academic integrity purposes, the feedback is limited, so 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, one-time late penalty of 5% is applied to quizzes submitted after the scheduled due date and time. For those of you who have taken other courses in the MCS program, this may be different from your previous learning experiences: only the highest four (4) quiz scores count toward your grade.*

Peer Review: Several portions of this course utilize peer review. Each learner is expected to review others' work in a professional and respectful manner. Peer review will be monitored and reviewed by the course team. *Although there are no late penalties, it is important to submit your work as close to the due date as you can because classmates grade most of the assignments within three (3) days of the due date, and if you submit yours too late, there may not be anyone to review your work. The non-optional peer review counts toward your final grade in the class.*

- **Project: SmartHome Gesture Control Application Part 1 Demo Video** - due at the end of Week 4 on Sunday, February 6, 2022 at 11:59 PM AZ Time. Graded, peer-reviewed, instructor reviewed, full feedback.
- **(Optional) Idea Paper Draft Peer Review** - due at the end of Week 5 on Sunday, February 13, 2022 at 11:59 PM AZ Time. Ungraded, peer-reviewed, instructor-reviewed, full feedback.

Assignments: This course includes one (1) team paper. This team paper assignment includes two peer review assignments and one team submission. Instructions for these assignment

components 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 assignment components have a submission space at the end of the week each part is due. *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 10% for each day late is applied to assignments submitted after the scheduled due date and time. Assignments count toward your final grade in the class.*

- **Team Formation Survey**- due at the end of Week 1 on Sunday, January 16, 2022 at 11:59 PM AZ Time. Auto-graded.
- **Team Charter** - due at the end of Week 3 on Sunday, January 30, 2022 at 11:59 PM AZ Time. Course team-reviewed.
- **(Optional) Idea Paper Draft Peer Review**- due at the end of Week 5 on Sunday February 13, 2022 at 11:59 PM AZ Time. Peer-reviewed. Ungraded.
- **Idea Paper** - due at the end of Week 6 on Sunday, February 20, 2022 at 11:59 PM AZ Time. Graded, peer-graded and instructor-graded, full feedback
- **Idea Paper Teammate Review** - due at the end of Week 6 on Sunday, February 20, 2022 at 11:59 PM AZ Time. Graded, confidential, instructor reviewed

Project: This course includes one (1) individual project with two (2) parts. All project information is provided in the *Welcome and Start Here* section of the first week of the course, so you can preview what is expected and design your own learning schedules to complete these on time. At the beginning of the specific week when the project is due, the project will be re-introduced. A submission area is provided at the end of this week. As a set, both parts of the project are to be included in the Request for Faculty Review: MCS Project Portfolio submission, which is optional. *An automatic late penalty of 10% for each day late is applied to projects submitted after the scheduled due date and time. The project parts count toward your final grade in the class.*

- **SmartHome Gesture Control Application Part 1 - File and Demo Video Submission** - due at the end of Week 4 on Sunday, February 6, 2022 at 11:59 PM AZ Time. Graded, peer-reviewed, instructor graded, full feedback.
- **SmartHome Gesture Control Application Part 2 - Code/Programming Submission** - due at the end of Week 7 on Sunday, February 27, 2022 at 11:59 PM AZ Time. Graded, instructor-graded, full feedback.

Request for Faculty Review: MCS Project Portfolio: This is an optional task for degree learners 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. *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.

- **Project: SmartHome Gesture Control Application** is what you will be using for the Request for Faculty Review: MCS Project Portfolio submission (optional)
- Request for Faculty Review: MCS Project Portfolio submission (optional) is **due - March 16, 2022 at 11:59 PM AZ Time**
- Faculty will review and approve or deny the Faculty Review: MCS Project Portfolio submission (optional) by - March 30, 2022 at 11:59 PM AZ Time.

Proctored exams: You have two (2) proctored, timed exams. These consist of Exam 1 and Exam 2. The feedback is limited. 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.*

Exam 1 Details

- **Content covered:** Weeks 1, 2, 3, and 4
- **Question type(s):** multiple choice and multiple select question types (some questions will require computation)
- **Number of questions:** 20 content questions + 1 academic integrity question = 21 total questions
- **Availability:** Wednesday, February 9th, 2022 at 12:01 AM AZ Time - Sunday February 13th, 2022 at 11:59 PM AZ time
- **Duration:** Plan for 15 minutes for proctoring set up and 2 hours (120 minutes) for the exam

Exam 2 Details

- **Content covered:** Weeks 5, 6, and 7
- **Question type(s):** Multiple choice and multiple select question types (some questions will require computation)
- **Number of questions:** 24 content questions + 1 academic integrity question = 25 total questions
- **Availability:** Friday, February 25th, 2022 at 12:01 AM AZ Time - Wednesday, March 2nd, 2022 at 11:59 PM AZ time
- **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):** None

- **Calculators (all):** Four-function calculator, scientific calculator, graphing calculator, computer's calculator, online calculator, or a financial calculator.
- **Notes in any format of any kind (all):** One (1) hard copy of hand-written notes on a piece of standard letter-size A4 paper (front and back) to use as a reference during the exam.
- **Web (all):** None
- **Software (all):** Microsoft Excel
 - Note: No pre-programmed formulas are allowed.
- **Other technologies, devices, and means of communication (all):** 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](#).
- **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.

- You are strongly encouraged to schedule your exam(s) 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 [SAILS](#) (Student Accessibility and Inclusive Learning Services) 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
Graded Quizzes The lowest 4 quizzes will be automatically dropped.	8	Individual	15%
Idea Paper <ul style="list-style-type: none"> Team Formation survey Team Charter Idea Paper Submission Idea Paper Teammate Review 	3	Team	15%
SmartHome Project* <ul style="list-style-type: none"> Part 1 Files Part 1 Demo Video Part 2 Code 	3	Individual	40%
Exams	2	Individual	30% (15% each)

*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. Of the eight (8) graded quizzes, the four (4) lowest quiz scores will automatically be dropped from your overall grade at the end of the session. Grades will not be rounded. Grades in this course will *not* include pluses or minuses.

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

A	90% - 100%
B	80% - 89%
C	70% - 79%
D	60% - 69%
E	<60%

Course Schedule

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: Mobile Computing System Models	January 10, 2022	January 16, 2022
Week 2: Context-Aware Computing *Martin Luther King Jr. Day	January 17, 2022 January 17, 2022	January 23, 2022
Week 3: Mobile Programming	January 24, 2022	January 30, 2022
Week 4: Mobile Security	January 31, 2022	February 6, 2022
Exam 1	February 9, 2022	February 13, 2022
Week 5: Tackling Mobility for Communication	February 7, 2022	February 13, 2022
Week 6: Power and Energy	February 14, 2022	February 20, 2022
Week 7: Internet of Things (IoT)	February 21, 2022	February 27, 2022
Exam 2	February 25, 2022	March 2, 2022
Request for Faculty Review: MCS Project Portfolio submission (optional)	February 27, 2022	March 16, 2022

Faculty Feedback for the Review: MCS Project Portfolio submission (optional)	March 16, 2022	March 30, 2022
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Grades are due March 4, 2022. (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. These will be located towards the end of each week.

CSE 535 Spring A 2022 Live Sessions will be on Mondays at 3:00 PM AZ Time

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 as a general practice are not uploaded into the course. Uploading valuable parts of these sessions is at the discretion of the faculty.

CSE 535 Spring A 2022 GSA office hours will be on Wednesdays at 9 AM AZ Time

Note: Please refer to your course's Live Events tab for dates and times.

Assignment Deadlines and Late Penalties

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

An automatic, one-time late penalty of 5% is applied to quizzes submitted after the scheduled due date and time.

An automatic late penalty of 10% **for each day late** is applied to assignments and projects submitted after the scheduled due date and time.

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 (0) points. This does not include established accommodations for learners with disabilities.

Course Outline with Assignments

Week 1: Mobile Computing System Models (January 10, 2022 - January 16, 2022)

Content

- ☐ Welcome and Start Here
- ☐ Introduction to Mobile Computing System Models Overview
- ☐ Mobile Computing Models 1, 2, 3, 4, 5
- ☐ Adaptation and Smartness in Mobile Computing

Other Tasks

- ☐ Schedule your proctoring with [ProctorU](#) for your proctored exam(s)
- ☐ For learners needing accommodations, submit requests through [Connect](#) and review the [ASU Student Accessibility and Inclusive Learning Services](#) website.
- ☐ Knowledge Checks
- ☐ Week 1 Practice Quiz
- ☐ Week 1 Practice Computation Question
- ☐ Team Formation Survey

Graded Coursework

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- ☐ Week 1 Graded Quiz
- ☐ Week 1 Graded Computation Quiz

Week 2: Context-Aware Computing (January 17, 2022 - January 23, 2022)

Content

- ☐ Introduction to Context-Aware Computing
- ☐ Context Models and Context-Aware Applications
- ☐ BrainNet – A Framework for Cognitive Mobile Computing
- ☐ Mobility Models
- ☐ Machine Learning for Context Models

Other Tasks

- ☐ Schedule your proctoring with [ProctorU](#) for your proctored exam(s), if not yet completed
- ☐ Knowledge Checks
- ☐ Week 2 Practice Quiz

Graded Coursework

- ☐ Week 2 Graded Quiz
- ☐ Week 2 Graded Computation Quiz

Week 3: Mobile Programming (January 24, 2022 - January 30, 2022)

Content

- ☐ Introduction to Mobile Programming
- ☐ Android Programming
- ☐ Android Multithreading
- ☐ Graphics Processing Unit (GPU) Programming

Other Tasks

- ☐ None (there are no practice or graded quizzes in Week 3)

Graded Coursework

- ☐ Team Charter

Week 4: Mobile Security (January 31, 2022 - February 6, 2022)

Content

- ☐ Introduction to Mobile Security
- ☐ Mobile Banking Apps, Medical Control Apps and Safety Security Interrelation
- ☐ Traditional Security Protocols
- ☐ Recent Trends in Mobile Security

Other Tasks

- ☐ Knowledge check
- ☐ Week 4 Practice Quiz

Graded Coursework

- ☐ Week 4 Graded Quiz
- ☐ Project: SmartHome Gesture Control Application- Part 1 Files Submission
- ☐ Project: SmartHome Gesture Control Application- Part 1 Demo Video

Exam 1 (February 9, 2022 - February 13, 2022)**Reminders**

- ☐ Schedule your proctoring with [ProctorU](#) for your proctored exam(s), 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: Tackling Mobility for Communication (February 7, 2022 - February 13, 2022)**Content**

- ☐ Introduction to Tackling Mobility for Communication
- ☐ Location Management
- ☐ Mobile Internet Protocol (IP)

Other Tasks

- ☐ Knowledge Checks
- ☐ Week 5 Practice Quiz
- ☐ OPTIONAL Idea Paper Draft Submission

Graded Coursework

- ☐ Week 5 Graded Quiz

Week 6: Power and Energy (February 14, 2022 - February 20, 2022)**Content**

- ☐ Introduction to Power and Energy
- ☐ Difference Between Power and Energy
- ☐ Challenges of Measuring Power and Energy Consumptions of Mobile Applications
- ☐ Compare Different Application Execution Mechanisms with Respect to Power and Energy

Other Tasks

- ☐ Knowledge Checks
- ☐ Week 6 Practice Quiz
- ☐ Complete the course survey before your final exam (*strongly encouraged, appreciated, and used by the course team*)

Graded Coursework

- ☐ Week 6 Graded Quiz
- ☐ Idea Paper Submission
- ☐ Idea Paper Teammate Review

Week 7: Internet of Things (IoT) (February 21, 2022 - February 27, 2022)**Content**

- ☐ Introduction to Internet of Things (IoT)
- ☐ Cyber Physical Systems (CPS) – Properties, Issues and Challenges
- ☐ IoT Applications

Other Tasks

- ☐ Knowledge Checks
- ☐ Week 7 Practice Quiz

- ☐ Request for Faculty Review: MCS Project Portfolio Submission (*optional - for degree learners 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

- ☐ Week 7 Graded Quiz
- ☐ Project: SmartHome Gesture Application Control- Part 2 Code Submission

Exam 2 (February 25, 2022 - March 2, 2022)

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 exam(s), if you have not already done, at least 72 hours prior to your desired exam date and within the availability window.
- ☐ Ensure you have a reliable, strong Internet connection for the exam and you have reviewed the technology requirements for taking an exam using ProctorU. Run a systems check, if needed. Make sure your webcam and microphone/audio are working properly.
- ☐ Covers content from weeks 1, 2, 3, 4, 5, 6, and 7
- ☐ Review the details and allowances information for this exam
- ☐ Prepare for the exam and complete the practice exam

Request for Faculty Review: MCS Project Portfolio Submission (February 27, 2022 - March 16, 2022)

Reminders

- ☐ Submit your Request for Faculty Review: MCS Project Portfolio Submission (*optional - for degree learners wanting to use this course's projects as part of their portfolio degree requirement/specialization requirements*)
 - Request for Faculty Review: MCS Project Portfolio submission (optional) is **due - March 16, 2022 at 11:59 PM AZ Time**
 - Faculty will review and provide feedback and an approval or denial of approval by March 30, 2022.

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. Absence from teamwork and group work are not tolerated: it is expected that every group member will participate in the group work. The instructor reserves the right to adjust individual grades based on, but not limited to: workload imbalance, inappropriate behavior, lack of productivity, etc.

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

Learners in this class must adhere to ASU’s academic integrity policy, which can be found at <https://provost.asu.edu/academic-integrity/policy>). Learners are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. In addition, all engineering learners 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. Learners 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 learners 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](#))

Learners, 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 learners having disabilities. Learners needing accommodations must register with [ASU Student Accessibility and Inclusive Learning Services](#). Learners 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 learners are copied on these letters. It is recommended that learners 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 learners, faculty members, staff employees, and guests. ASU expressly prohibits discrimination, harassment, and retaliation by employees, learners, 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(s)



Ayan Banerjee, PhD designed this course.

Dr. Banerjee is an Assistant Research Professor at the School of Computing and Augmented Intelligence (SCAI), Arizona State University (ASU). His research interests include pervasive computing in healthcare and analysis, safety verification of embedded system software. Dr. Banerjee currently focuses on data driven analysis and modeling in many different domains including diet monitoring, gesture recognition, and biological process modeling. He works closely with government agencies such as the Food and Drug Administration and medical agencies such as Mayo Clinic. Dr. Banerjee is also interested in hybrid system-based modeling

and safety verification of closed loop control systems which interact with the physical environment, also known as Cyber-Physical Systems. In addition, his work includes developing management algorithms for sustainable data centers using renewable sources of energy.