Ira A. Fulton Schools of Engineering
Arizona State University

Course Syllabus - Fall A 2024

CSE 575: Statistical Machine Learning

Course Description

Deriving generalizable models from some given training data is central to statistical machine learning. Statistical machine learning has found wide applications in many fields including artificial intelligence, computer vision, natural language processing, finance, bioinformatics, and etc. This course provides a systematic introduction to common learning paradigms in statistical machine learning, accompanied by an exploration of a set of foundational algorithms. Main topics covered include supervised learning, unsupervised learning, and deep learning.

Specific topics covered include:

- Mathematical foundations for machine learning
- Maximum likelihood estimation
- Naive Bayes classification
- Logistic regression
- Support vector machines
- Probabilistic graphical models
- Mixture models
- K-means clustering
- Spectral clustering
- Dimensionality reduction
- Principal component analysis
- Neural networks and deep learning
- Convolutional neural networks

Technologies covered include:

- Python
- Matlab
- Ed Lessons
- Google Colab
- PyTorch

Any 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.

Learning Outcomes

Learners completing this course will be able to:

- Distinguish between supervised learning and unsupervised learning
- Apply common probability distributions in machine learning applications
- Use cross-validation to select parameters
- Use maximum likelihood estimate (MLE) for parameter estimation
- Implement fundamental learning algorithms such as logistic regression and K-means clustering
- Implement more advanced learning algorithms such as support vector machines and convolutional neural networks
- Design a deep network using an exemplar application to solve a specific problem
- Apply key techniques employed in building deep learning architectures

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

- Basics of linear algebra
- Basics of probability and statistics
- Basics of calculus and set theory
- Basics of algorithm design and analysis

Strong Application Skills

- Programming in Python
- Ability to effectively read Python code
- Confidence in executing at least one programming language:

    - Python
    - Matlab
    - R

Proficient Experience

Note: It is highly recommended that learners use Python to complete the coursework to get more support from the course team.

- High-level programming language.
    - Python or Matlab
- Ability to implement Machine Learning algorithms using Python
- Familiarity with any one of the following frameworks:
    - Jupyter Notebook
    - Google Colab
    - Pytorch
- Familiarity with the following tools/libraries:
    - Numpy
    - Pandas
    - Tensorflow
    - Keras
    - Matplotlib
    - Scikit Learn

Course Access

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

Technology Requirements

Proctoring

- Honorlock Minimum System Requirements

Hardware

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

Software/Other

- GPU environments like Google Colab or personal setup on your own
- Technology integrations will be provided through Canvas
- Jupyter Notebook
- Tensorflow
- Keras
- Matlab
- Scipy

Note: The course project will be completed using the language that you choose. However, the course team will not be able to help you if you choose any language that is not Python, Java, 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. Any required readings are provided within or are accessible through the course of the ASU Library.

Professor Christopher Bishop, PhD has given ASU permission to provide his textbook *Pattern Recognition and Machine Learning* to you in this course.

You may print portions of the book or the entire book, but you may **not** share the PDF, in whole or part, with any parties outside of this course.

1. Material in *Pattern Recognition and Machine Learning* that corresponds with topics covered in the lecture videos is highlighted in the course's Recommended Readings, which can be found in the overview section at the beginning of each week.

2. PRMLT | Pattern Recognition and Machine Learning Toolbox is a companion to Professor Bishop's textbook. On it you will find a package that is a Matlab implementation of the algorithms described in the book, some of which are covered in this course.

For interested learners, Drs. He, Tong, and Li recommend:

- *The Elements of Statistical Learning: Data Mining, Inference, and Prediction, Second Edition*. Trevor Hastie, Robert Tibshirani, and Jerome Friedman. Springer, 2009.
- *Semi-Supervised Learning*. Olivier Chapelle, Bernhard Sch¨olkopf, and Alexander Zien. The MIT Press, 2006.
- *Kernel Methods for Pattern Analysis*. John Shawe-Taylor and Nello Cristianini. Cambridge University Press, 2004.
- *Pattern Classification, Second Edition*. Richard Duda, Peter Hart, and David Stork. Wiley, 2000.
- *Machine Learning*. Tom Mitchell. McGraw Hill, 1997.
- *Introduction to Data Mining*. Pang-Ning Tan, Michael Steinbach, and Vipin Kumar. Addison Wesley, 2005.
- *Data Mining: Theories, Algorithms, and Examples*. Nong Ye. CRC Press, 2013.

Course Schedule and Important Dates

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

Module: Title	Begins at 12:01 AM Arizona (AZ) Time	Ends at 11:59 PM Arizona (AZ) Time
Orientation and Onboarding Review You must complete the required tasks in the Orientation and Onboarding Review for Module 0: Welcome and Start Here to be unlocked.	August 15	August 18

Module 0: Welcome and Start Here You must complete the required tasks in Module 0: Welcome and Start Here for the rest of the course to be unlocked.	August 15	August 21
Module 1: Introduction to Machine Learning	August 22	August 25
Module 2: Mathematical Foundations and Supervised Learning	August 26	September 01
Module 3: Supervised Learning, Linear Machines, and Support Vector Machines **ASU Day off - Labor Day September 2*	September 02	September 08
Module 4: Linear Machines, SVM, and Graphical Models	September 09	September 15
Exam 1	September 15	September 22
Module 5: Unsupervised Learning and Clustering	September 16	September 22
Module 6: Spectral Clustering and Dimensionality Reduction	September 23	September 29
Course Evaluation You may also refer to ASU's Office of Evaluation and Educational Effectiveness (UOEEE) for dates.	This will be updated in your course.	This will be updated in your course.
Module 7: Dimensional Reduction, Neural Networks, Deep Learning, and Exemplar Applications	September 30	October 06
Deadline to Submit all Graded Coursework	N/A	October 06
Exam 2	October 06	October 12

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.	N/A	First submission deadline by: Last submission deadline October 28, 2024
Faculty Feedback for the Review: MCS Portfolio Project Report Inclusion Request Optional, degree-seeking learner degree requirement ASU Day off, November 11, 2024	October 28, 2024	November 11
Course Closes Past this date, Ed Discussion will no longer be monitored. Please download copies of what you would like from the course (e.g., Request for Faculty Review: MCS Portfolio Project Report Inclusion Request).		November 25

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

Late or Missed Coursework

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

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

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

Coursework Due Dates and Late Penalties

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

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

This course has a designated deadline to submit all graded coursework. This deadline means graded coursework submitted after the date, will not be evaluated and result in a grade of zero (0) points. Please review the Course Schedule and Important Dates section.]

Graded Quizzes

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

- **Module 1 Graded Quiz**
- **Module 2 Graded Quiz**
- **Module 3 Graded Quiz**
- **Module 4 Graded Quiz**
- **Module 5 Graded Quiz**

- **Module 6 Graded Quiz**
- **Module 7 Graded Quiz**

Assignments

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

- **Mini-Assignment: Mathematical Foundations**
- **Mini-Assignment: Estimators**
- **Mini-Assignment: SVMs - Part 1**
- **Mini-Assignment: SVMs - Part 2**
- **Mini-Assignment: Dimensionality Reduction - Part 1**
- **Mini-Assignment: Dimensionality Reduction - Part 2**
- **Mini-Assignment: Key Techniques for Deep Learning**

Projects

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

- **Density Estimation and Classification**
- **K-means-Strategy, Part 1 and Part 2**
- **Classification Using Neural Networks and Deep Learning**

Exams

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

- **Exam 1**
- **Exam 2**

Course Content

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

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

Content and Assessment Details

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

PlayPosit Lecture Playlists

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

A media guide is included at the beginning of each module in the Overview section. These guides are designed to give you a snapshot description of each module's media components and to provide 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.

Playposit Interactions: Knowledge Checks

Playposit provides opportunities for interaction and reflection as you learn the course content. After lecture videos, there are interactions called knowledge checks. Interactions are designed to support your learning, highlight specific content, encourage active viewing and/or note-taking and provide practice opportunities. They are untimed, ungraded learning opportunities to test your knowledge of the concepts presented during the lecture videos. You may retake these as often as you would like at

any point in the course.

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

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

Readings

Suggested readings may accompany topics. They are supplementary or enrichment materials for you to further understand the course topics.

Discussions

Ed Discussion

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

Discussions in Ed are designed to provide:

- Clarification
- Feedback
- Enrichment and deeper learning
- Connections between concepts or key ideas
- Reflection opportunities of real-world experiences
- Respectful debate and perspective building
- Resource sharing
- Networking

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

Discussion Prompts in Ed Discussion

There are discussion prompts alongside other items in the course. Please review the directions and prompts carefully. Posts/Threads should be categorized by their designated module and title in Ed. After responding, you can see and comment on your peers' responses.

There are no late penalties. Responses to discussion prompts are not counted toward your final grade in the course.

Designated Assignment and Project Discussion in Ed Discussion

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

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

Graded Quizzes

Modules 1-6 each include one (1) graded quiz and Module 7 includes two (2) graded quizzes for a total of eight (8) graded quizzes in the course. Each graded quiz includes several single-select multiple choice questions. You will be allowed one (1) attempt for each of these quizzes. There is a time limit (45 - 60 minutes) on each quiz. Once you open a graded quiz or test, 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.

Seven (7) of the eight (8) quizzes count toward your final grade in the class. The lowest one (1) quiz is automatically dropped from your grade. Graded quizzes count toward your final grade in the class.

Assignments

This course includes seven (7) individual mini-assignments. All assignment overview documents and materials are provided in the *Welcome and Start Here* section of your course, so you can preview what is expected and design your own learning schedules to complete these on time.

There are no late penalties associated with assignments. All assignments count toward your final grade in the class.

Individual Projects

This course includes three (3) 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.

There are no late penalties associated with assignments. All assignments count toward your final grade in the class.

Ed Lessons

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

All assignments for this course will use Ed Lessons. You must complete and then submit your work in Ed Lessons. Carefully review submission directions outlined in the assignment overview documents in order to correctly earn credit.

Request for Faculty Review: MCS Portfolio Project Report Inclusion Request

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

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

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

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

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

Address one of these projects in your Request for Faculty Review: MCS Portfolio Project Report Inclusion Request:

- Density Estimation and Classification
- K-means-Strategy
- Classification Using Neural Networks and Deep Learning

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, you have unlimited attempts and they are untimed and ungraded, and include feedback.

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

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

Proctored Exams

You have two (2) proctored exams. These consist of Exam 1 and Exam 2. Proctored exams do not include feedback. Read the Graded Quiz and Exam Policy for your course for more information.

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

The Proctored exams count toward your final grade in the class.

Exam Details	Exam 1	Exam 2
Content Covered	Module 1, 2, 3, and 4	Module 5, 6, and 7
Question Type **Grading Note:** For multiple choice questions with multiple correct answers, you earn credit for each correct answer option selected; however, credit is automatically deducted for each incorrect answer option selected. You cannot earn less than zero (0) for any question. If no answer option is selected, you will earn zero (0) points for no attempt, so it is best to provide an answer to every question.	Multiple-choice questions with a single correct answer Multiple-choice questions with multiple correct answers	Multiple-choice questions with a single correct answer Multiple-choice questions with multiple correct answers
Number of Questions	21 total questions (20 content questions pulled randomly from a question bank + 1 academic integrity question)	21 total questions (20 content questions pulled randomly from a question bank + 1 academic integrity question)
Availability Start	Sunday, September 15, 2024 at 12:01 AM AZ Time	Sunday, October 06, 2024at 12:01 AM AZ Time
Availability End	Sunday, September 22, 2024 at 11:59 PM AZ Time	Saturday, October 12, 2024 at 11:59 PM AZ Time
Scheduling Reminder	Sunday, September 22, 2024 at	Saturday, October 12, 2024 at

In order to have enough time to complete the exam, you should start your exam no later than the listed date and time to ensure you have enough time to complete it before the due date.	9:01 PM AZ Time	9:01 PM AZ Time
Duration	120 minutes + plan for at least 15 minutes for proctoring set up	120 minutes + plan for at least 15 minutes for proctoring set up

Proctoring

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

Honorlock

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

Honorlock will be enabled for your practice exams, but you will not be recorded or flagged for actions performed while taking it. Treat this as a technology check to confirm that your system will work as expected.

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

Exam 1 and Exam 2 Allowances

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

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

Reminders

- You are to independently take your exams in a single session. Once you open your exam, your testing session begins and you will need to complete it within the allotted time. Your exam will automatically be submitted if it is not completed before the deadline. You will be allowed one (1) attempt to take and complete your exams.
- If you anticipate needing bathroom breaks during your exam, prior to opening the exam, please post a private thread to your instructor in Ed. If you take bathroom breaks during the exam, and you have not already notified your instructor, please post a private thread, so your instructor is aware.
- You are to independently take the exam in a single session without leaving the testing space (e.g., no bathroom breaks) to ensure proctoring of the entire session.
- You are to stay within a clear view of the webcam throughout the duration of the proctored exam session,unless needing a bathroom break.
- Before the exam concludes and the proctoring session ends, all scratch paper must be destroyed and all whiteboard markings must be erased.
- The last question in the exam will be a confirmation of you executing these ASU academic integrity actions.

Specific Allowances

- **Site URLs:** no
  - **Course website:** None
  - **Pre-approved website**: None
- **Open book:** [no]
- **Pre-written paper notes:** yes
  - **Handwritten notes**: one (1) sheet of hard copy front-and-back, handwritten, printed, or a combination of handwritten and printed notes on standard letter (8.5 inches x 11 inches)/A-4 paper as reference during the exam. No electronic/digital notes are allowed.
- **Scratch paper/Whiteboard**: yes

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

- **Handheld calculator**: no
- **On-Screen Calculator**: yes
  - Device's calculator
  - Windows/OS
  - Online calculator
- **Scientific Calculator**: no
- **Restroom breaks**: yes, but only within Honorlock
- **Copy and Paste**: no
- **Hats**: no
- **Headphones**: no
- **Take Exam in a Public Area**: no
- **Mobile Phone Use**: no
- **Background Noise (Occasional sounds expected in the testing area)**: yes

Course Grade Breakdown

Course Work	Quantity	Individual or Team	Points
Graded Quizzes	8	Individual	100
Mini-Assignments	7	Individual	200
Project 1: Density Estimation and Classification	1	Individual	300

Project 2: K-means-Strategy	1	Individual	
Project 3: Classification Using Neural Networks and Deep Learning	1	Individual	
Exam 1	1	Individual	200
Exam 2	1	Individual	200
Total Course points			1000

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

Grade Scale

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

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

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

0 - 599.99	0 - 59.99	**E**

Zoom Meetings

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

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

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

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

Zoom Recordings

- Instructor Zoom Events are **recorded and shared** through the "Zoom" navigation link in your course. These can be found by going to the "Cloud Recordings" tab. These recordings will be unavailable after 120 days.

- IA Zoom Support Sessions are **recorded**, but **not uploaded** into the course. It is at the discretion of the instructor if these sessions will be shared during the course session.
- Grader Zoom Support Sessions are **recorded**, but **not uploaded** into the course.

Policies

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

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

ASU Code of Conduct

Expected Behavior

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

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

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

Our classroom community rules are to:

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

Academic Integrity

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

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

Use of Generative AI

Use of Generative AI Permitted Under Some Circumstances or With Explicit Permission

Some assignments in this course may include or allow use of Artificial Intelligence (AI), including ChatGPT or related tools for the creation of text, images, computer code, audio, or other media. The instructor will inform you when, where and how you may use these tools, and provide guidance for attribution. Use of generative AI tools in any other context in this course will be considered a violation of the ASU Academic Integrity Policy, and students may be sanctioned for confirmed, non-allowable use. If at any point you have questions about what is permitted, contact the instructor to discuss before submitting work.

Copyright

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

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

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), module practice quizzes, practice exams, and other coursework. When available, the questions and correct answers are provided to learners. Depending on the type of questions, auto-generated feedback is built into the course to further help learners learn in real-time. Please thoroughly review your course to ensure that you are aware of the types of practice opportunities available to you.

For academic integrity purposes, once grades are made available, learners will see their overall total scores. Like other standardized tests, such as the GRE and SAT, learners will receive a singular

grade for the graded quizzes and exams, but the questions, correct and incorrect answers, and feedback to each question will **not** be provided.

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

Absence Policies

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

Excused absences do not relieve students of responsibility for any part of the coursework required during the period of absence. If exceptions for graded coursework deadlines need to be made for known excused absences, please reach out to the course team by the end of the second week of the course by sending a private thread to the course team on Ed. Review availability windows and due dates for coursework and schedule accordingly. The exam availability windows allow for your own flexibility and you are expected to plan ahead.

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

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

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

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

Zoom Meetings

Recording Notice

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

Expectations

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

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

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

Disability Accommodations

Suitable accommodations are made for students with disabilities. Students needing accommodations must register with ASU Student Accessibility and Inclusive Learning Services (SAILS) office. Students

should communicate the need for an accommodation at the beginning of each course so there is sufficient time for it to be properly arranged. These requests should be submitted through the online portal. See ACD 304-08 Classroom and Testing Accommodations for Students with Disabilities. SAILS will send the instructor a notification of accommodations. It is recommended that students communicate with instructors regarding documented accommodations.

Harassment and Sexual Discrimination

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

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

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

Photo Requirement

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

Warning of Offensive Class Materials

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

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

Course Creators

Jingrui He

Jingrui He, PhD is an associate professor in the School of Computing and Augmented Intelligence (SCAI) within the Fulton Schools of Engineering (FSE) at Arizona State University (ASU). She received her PhD from Carnegie Mellon University. She joined ASU in 2014 and directs the Statistical Learning Lab (STAR Lab). Her research focuses on rare category analysis, heterogeneous machine

learning, active learning and semi-supervised learning, with applications in social media analysis, healthcare, manufacturing process, etc.

Baoxin Li

Baoxin Li, PhD is currently a professor and the chair of the Computer Science & Engineering Program and a Graduate Faculty Endorsed to Chair in the Electrical Engineering and Computer Engineering programs. From 2000 to 2004, he was a Senior Researcher with SHARP Laboratories of America, where he was the technical lead in developing SHARP's HiIMPACT Sports™ technologies. He was also an Adjunct Professor with the Portland State University from 2003 to 2004. His general research interests are on visual computing and machine learning, especially their application in the context of human-centered computing.

Hanghang Tong

Hanghang Tong, PhD is an associate professor at School of Computing and Augmented Intelligence (SCAI) within the Fulton Schools of Engineering (FSE) at Arizona State University (ASU) since August 2014. Before that, he was an assistant professor at the Computer Science Department, City College, City University of New York, a research staff member at IBM T.J. Watson Research Center and a Post-doctoral fellow in Carnegie Mellon University. His research interest is in large scale data mining for graphs and multimedia.