Ira A. Fulton Schools of Engineering
Arizona State University

Course Syllabus - Fall A 2024

CSE 551: Foundations of Algorithms

Course Description

Algorithms, or a step-by-step process to efficiently reach the desired goal, have been part of human history since the 1200s. Algorithms are a fundamental component to any computerized system. In this foundational course, you will learn several different algorithms and be able to explain how they work and why they are considered good. This knowledge will help you:

1. Evaluate appropriate algorithmic techniques that can lead to more efficient solutions for a problem, instead of just coding the first idea that comes to mind.
2. Develop sound background knowledge on algorithms that will allow you to navigate the field's literature, beyond the context of this class.

In order to gain these skills, you will have to work through and understand several algorithmic techniques, including the mathematics necessary for analyzing the properties of these techniques and the algorithms based on them.

Specific topics covered include:

- Greedy Algorithms
- Stable Matching
- Divide-and-Conquer
- Dynamic Programming
- Amortized Analysis
- Network Flows
- NP-completeness
- Introduction to Randomized and Approximation Algorithms

Learning Outcomes

Learners completing this course will be able to:

- Identify and apply algorithmic techniques to solve a problem.
- Apply knowledge of algorithms in multiple contexts using multiple programming languages.
- Evaluate correctness and efficiencies of algorithms.

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

- Asymptotic Notation (Big-Oh)
- Recurrence relations
- Mathematical proofs
- Recursion
- Basic discrete math (e.g., sets, functions, logic, graphs, etc.)
- Worst-Case Analysis

Strong Application Skills

- Any one of the well-known programming languages like: C, C++, Java or Python

Proficient Experience

- Data structures and algorithms such as Sorting Algorithms, Hash Tables, Binary Search Trees, Heaps, and Red-Black Trees
- Greedy Algorithms, Divide-and-Conquer, Dynamic Programming
- Graph Algorithms such as Depth-First Search, Breadth-First Search, Minimum Spanning Trees (Kruskal's and Prim's Algorithms), and Shortest-Paths (Dijkstra's Algorithm)

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

- Current web browser

Technology Recommendations

- N/A

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.

For interested learners, the faculty course designer recommends this text:

> J. Kleinberg and E. Tardos, *Algorithm Design*. United States: Pearson Education, 2006.

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 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 required tasks in Module 0: Welcome and Start Here for the rest of the course to be unlocked.	August 15	August 21
Module 1: Stable Matching	August 22	August 25
Module 2: Greedy Algorithms	August 26	September 1
Module 3: Amortized Analysis and Splay Trees **ASU Day Off: Monday, September 2, 2024*	September 2	September 8
Module 4: Divide and Conquer	September 9	September 15
Exam 1	September 15	September 22
Module 5: Dynamic Programming	September 16	September 22
Module 6: Network Flows	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: Polynomial Time Reductions and NP-Completeness	September 30	October 6

Module 8: Approximation and Randomized Algorithms	October 7	October 12
Exam 2	October 6	October 12
Course Closes Past this date, Ed Discussion will no longer be monitored. Please download copies of what you would like from the course.		November 25

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

Late or Missed Coursework

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

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

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

Coursework Due Dates and Late Penalties

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

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

Exams

An automatic late penalty of 100% is applied after the scheduled due date and time. All practice and required coursework should be completed prior to taking your exams.

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

Course Content

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

Content and Assessment Details

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

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

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. At the end of each playlist, 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.

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.

Designated Assignment Discussion in Ed Discussion

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

Review Quizzes

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

Each review quiz has accompanying solutions provided to you so you can learn from your mistakes and reinforce your correct thinking. These are for your personal reference while you are a learner in this course. They are not to be shared with anyone else in any way outside of this course, per ASU's academic integrity and copyright policies. Violations of this agreement will be strictly enforced.

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

Practice Quizzes

Modules 1-8 each include one (1) practice quiz for a total of eight (8) practice quizzes in the course. Each practice quiz prepares you for the exams. Each practice quiz includes five - ten (5-10) questions. You will be allowed unlimited attempts for each of these quizzes. There is no time limit on how long you take to complete each attempt. Once you open a practice quiz, the timer will start and you are to complete the practice quiz in a single session. Practice quizzes in this course include the incorrect and correct answers.

Each practice quiz has accompanying solutions provided to you so you can learn from your mistakes and reinforce your correct thinking. These are for your personal reference while you are a learner in this course. They are not to be shared with anyone else in any way outside of this course, per ASU's academic integrity and copyright policies. Violations of this agreement will be strictly enforced.

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

Application Exercise

Modules 1-8 each include one (1) application exercise for a total of eight (8) application exercises in this course. Each application exercise consists of a downloadable document that presents a problem (or multiple problems) and typically includes four - six (4-6) questions. You are encouraged to download these documents and fill them out. Your answers are not submitted for grading, and you will not receive a score. Application exercises prepare you for the exams.

All application exercise documents and materials are provided in *Module 0: Welcome and Start Here* of your course, so you can preview what is expected and design your own learning schedules to complete these on time.

Each application exercise has accompanying solutions provided to you so you can learn from your mistakes and reinforce your correct thinking. These are for your personal reference while you are a learner in this course. They are not to be shared with anyone else in any way outside of this per ASU's academic integrity and copyright policies. Violations of this agreement will be strictly enforced.

There are no late penalties. Application exercises are **not** counted toward your final grade in the class.

Practice Exams

Your experience in this course may be different compared to other courses in the MCS Program. Practice exams in this course consist of downloadable documents with practice exam questions. You are encouraged to download these documents and fill them out as part of your exam preparations.

The practice exam questions are intended to help you study for the proctored exams. The best practice is to take the practice exams in the same setting and with the same parameters as your proctored exams, so you are comfortable navigating the space and you know what to review.

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. The proctored exams do not include feedback. Read the Exam Policy for your course for more information.

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

Proctored exams count toward your final grade in the class.

Exam Details	Exam 1	Exam 2
Content Covered	Modules 1, 2, 3, and 4	Modules 5, 6, 7, and 8
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 Essay (free response) questions	Multiple-choice questions with a single correct answer Multiple-choice questions with multiple correct answers Essay (free response) questions
Number of Questions	21 total questions (20 content questions + 1 academic integrity question)	21 total questions (20 content questions + 1 academic integrity question)
Availability Start	Sunday, September 15, 2024 at	Sunday, October 6, 2024 at

	12:01 AM AZ Time	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 In order to have enough time to complete the exam, you should start your exam no later than the listed date and time to ensure you have enough time to complete it before the due date.	Sunday, September 22, 2024 at 9:01 PM AZ Time	Saturday, October 12, 2024 at 9:01 PM AZ Time
Duration	120 minutes + plan for at least 15 minutes for proctoring set up	120 minutes + plan for at least 15 minutes for proctoring set up

Proctoring

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

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

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

Exam Allowances

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.
- You are to independently take the exam in a single session without leaving the testing space (e.g., no bathroom breaks) to ensure proctoring of the entire session.
- You are to stay within a clear view of the webcam throughout the duration of the proctored exam session.
- Before the exam concludes and the proctoring session ends, all scratch paper must be destroyed and all whiteboard markings must be erased.
- The last question in the exam will be a confirmation of you upholding ASU academic integrity.

Specific Allowances

- **Site URLs:** No
- **Open book:** No
- **Pre-written paper notes:** Yes. Please read the specifications and plan ahead accordingly; you can only choose **one (1)** of these options:
    - **Handwritten notes**: Hard copy; two (2) sheets; standard letter (8.5 in x 11 in) or A-4 paper; double-sided.
    - **Printed Notes**: Hard copy; one (1) sheet; standard letter (8.5 in x 11 in) or A-4 paper; double-sided.
- **Scratch paper**: Yes
    - Unlimited amount of blank scratch paper of any size, writing utensils (e.g., pens, pencils, markers, and/or highlighters) and erasers; please have extra ones in your testing area should you run out of ink, the pencil breaks, etc.
    - Before the exam concludes and the proctoring session ends, all scratch paper must be destroyed and all whiteboard markings must be erased. The last question in the exam will be a confirmation of learners executing these ASU academic integrity actions.
- **On-Screen Calculator**: No

- **Handheld calculator**: Yes
  - **Not** a separate device's calculator (e.g., mobile/cell phone) or anything with Internet access.
  - Scientific Calculator
- **Restroom breaks**: No
- **Copy and Paste**: No
- **Hats**: No
- **Headphones**: No
- **Take Exam in a Public Area**: No
- **Mobile Phone Use**: No
- **Background Noise (Occasional sounds expected in the testing area)**: No

Course Grade Breakdown

Course Work	Quantity	Team or Individual	Points
Exam 1	1	Individual	500
Exam 2	1	Individual	500
Total Course Points			1000

This course is **not** portfolio eligible because there are no course projects accounting for 30% or more of the overall course grade.

Grade Scale

Being a very challenging theory course and letter grades being based on two (2) exams, the grade scale serves as an **estimate** for letter grades. This is why the point values have such large ranges. A traditional curve will **not** be used to assign letter grades because learners will **not** be competing

against one another; however, the instructor reserves the right to categorize grades, which is often to the benefit of the learners and is based on academic performance.

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.

The instructor reserves the right to adjust individual grades, including possible pluses and minuses, based on, but not limited to: violations of academic integrity, achievement groupings, etc.

Range of Points	Percentage	Letter Grade
800 - 1000	80 - 100	**A+**
700 - 799.99	70 - 79.99	**A**
600 - 699.99	60 - 69.99	**B+**
500 - 599.99	50 - 59.99	**B**
400 - 499.99	40 - 49.99	**C**
300 - 399.99	30 - 30.99	**D**
0 - 299.99	0 - 29.99	**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.

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

No Generative AI Use Permitted

In this course, all assignments must be completed by the student. Artificial Intelligence (AI), including ChatGPT and other related tools used for creating of text, images, computer code, audio, or other media, are not permitted for use in any work in this class. Use of these generative AI tools will be considered a violation of the ASU Academic Integrity Policy, and students may be sanctioned for confirmed, non-allowable use in this course.

Copyright

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

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

Exam Policy

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 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.

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.

Course Creator

Andréa Richa, PhD

Andréa Richa, Ph.D. joined Arizona State University (ASU) in 1998. She is currently affiliated with the Biomimicry Center at ASU, and the Biosocial Complexity Initiative in general. Prof. Richa's main areas of expertise are in distributed/network algorithms and computing in general. More recently she has focused on developing the algorithmic foundations on what has been coined as programmable matter, through her work on self- organizing particle systems (SOPS) (see sops.engineering.asu.edu). Her work has been widely cited, and includes, besides SOPS, work on bio-inspired distributed algorithms, distributed load balancing, packet routing, wireless network modeling and topology control, wireless jamming, data mule networks, underwater optical networking, and distributed hash tables (DHTs). Dr. Richa received the 2017 Best Senior Researcher award from the School of Computing, Informatics, and Decision Systems Engineering (CIDSE). She was the recipient of an NSF CAREER Award in 1999, an Associate Editor of IEEE Transactions on Mobile Computing, and the keynote speaker and program\general chair of several prestigious conferences. In particular, Prof. Richa was the Program Committee Chair of the 31st International Symposium on Distributed Computing (DISC), 2017, one of the top two conferences in distributed computing. Prof. Richa has also delivered several invited talks both nationally and internationally. For a selected list of her publications and other accomplishments, CV, and current research projects, please visit www.public.asu.edu/~aricha or sops.engineering.asu.edu.