

Course Syllabus - Fall B 2024

CSE 568: Biocomputing

Course Description

Bio-inspired computing methods are derived from information processing mechanisms found throughout the living world. Bio-inspired algorithms are used widely across the field of computer science in areas such as optimization, robotics, artificial intelligence, software engineering, security and modeling. This graduate-level introduction to bio-inspired computing discusses computational methods based on biological processes and how they are applied to solve computational problems. The course will cover computational algorithms, models, and applications that are inspired from three primary areas of biology: evolution, immunology and social insects. Cutting edge applications of biology in computing will also be discussed.

Specific topics covered include:

- Evolution
- Biological underpinnings
- Evolutionary computation and genetic programming
- Search spaces and biased sampling, algorithms for recombination, selection and mutation
- Applications in software engineering and artificial intelligence
- Immunology
- Biological underpinnings
- Applications: negative selection algorithm, artificial immune systems, computer security
- Social insects
- Biological underpinnings
- Applications: ant colony optimization (ACO) algorithms, trail following and network algorithms
- Current frontiers: Collective computation and swarm robotics
- Biological perspective on neurocomputing
- Why AI is harder than we think
- Applications: Olfactory systems and similarity search
- Frontiers of bio-inspired computing
- Metabolic scaling: Predicting power consumption on chips
- Molecular computing: DNA storage technologies

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Technologies covered include:

- Python
- Java

Learning Outcomes

Learners completing this course will be able to:

- Use biological concepts and knowledge in algorithms.
- Solve computational problems with bio-inspired algorithms.
- Demonstrate familiarity with applications of bio-inspired computing in engineering.
- Discuss and use new biological concepts and applications

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

- Computer science knowledge, including data structures, algorithms and complexity theory
- Basic probability, statistics, and linear algebra
- Critical thinking and reading skills

Strong Application Skills

- Competence in computer programming
- Ability to read and comprehend Python code

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- Confidence executing Python assignments
- Ability to read scientific literature

Proficient Experience

- Mathematical programming maturity
- Strong Python programming experience
- Data analysis and reporting conventions

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

- To complete coursework, these applications/languages are required:
 - Python >3.6
- Technology integrations will be provided through zyBooks
 - Python (3.11)
 - Jupyter Notebook

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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](#).

For interested learners, the instructor of record and the faculty course designer recommend the texts:

M. Mitchell, *An introduction to Genetic Algorithms*. Cambridge, MA, USA: Mit Press, 1996.

L. M. Sompayrac, *How the Immune System Works*, 7th Edition. Wiley-Blackwell, 2022.

D. M. Gordon, *Ant Encounters: Interaction Networks and Colony Behavior*. Princeton University Press, 2010.

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.	October 10, 2024	October 13, 2024
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.	October 10, 2024	October 15, 2024
Module 1: Bio-Inspired Computing	October 16, 2024	October 20, 2024
Module 2: Evolution I	October 21, 2024	October 27, 2024
Module 3: Evolutionary Algorithms II	October 28, 2024	November 03, 2024

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Module 4: Immunology I	November 04, 2024	November 10, 2024
Module 5: Immunology II (Cyber-Bio) <i>*ASU Day Off: Monday, November 11, 2024</i>	November 11, 2024	November 17, 2024
Module 6: Social Insects and Collective Computation	November 18, 2024	November 24, 2024
Course Evaluation You may also refer to ASU's Office of Evaluation and Educational Effectiveness (UOEEO) for dates.	November 22, 2024	December 01, 2024
Module 7: Biological Perspective on Neurocomputing <i>*ASU Day Off: Thursday, November 28, 2024 and Friday, November 29, 2024</i>	November 25, 2024	December 01, 2024
Module 8: Frontiers of Bio-Inspired Computation	November 25, 2024	December 01, 2024
Deadline to Submit all Graded Coursework	N/A	December 08, 2024
Final Exam	December 01, 2024	December 08, 2024
Request for Faculty Review: MCS Portfolio Project Report Inclusion Request Optional, degree-seeking learner degree requirement Anything submitted past the submission deadline will not be reviewed for approval in your portfolio to meet your degree requirements. You will have to repeat this process for another course and a project from that course.	November 25, 2024	Submission deadline by: December 23, 2024
Faculty Feedback for the Review: MCS Portfolio Project Report Inclusion Request Optional, degree-seeking learner degree requirement	December 23, 2024	January 13, 2024
Course Closes		January 27, 2024

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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).		
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Grades are due Monday, December 16, 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.

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Graded Discussion Prompts

A single-automatic late penalty of 100% late penalty is applied after the scheduled due date and time. The lowest, one (1), graded discussion prompt is automatically dropped from your grade.

- **Module 3 Graded Discussion Prompt**
- **Module 4 Graded Discussion Prompt**
- **Module 5 Graded Discussion Prompt**
- **Module 7 Graded Discussion Prompt**

Graded Quizzes

A daily late penalty of 10% is applied after the scheduled due date and time.

- **Module 2 Graded Quiz**
- **Module 3 Graded Quiz**
- **Module 4 Graded Quiz**
- **Module 5 Graded Quiz**
- **Module 6 Graded Quiz**
- **Module 7 Graded Quiz**

Assignment

There is no late penalty associated with the assignment; however, it is **required** to complete the projects correctly. The assignment is not counted toward your final grade in the class.

- **Learn to use a Genetic Algorithm Assignment**

Projects

A daily late penalty of 10% is applied after the scheduled due date and time.

- **Introduction to Graph Coloring Project**
- **Extensions to Balanced Colorings and Neutral Landscapes Project**

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- **Introduction to Negative Selection Project**
- **Anomaly Detection with Negative Selection Project**
- **Modeling Collective Behavior in Ants Project**
- **Ant Colony Optimization for Network Route Repair Project**

Exams

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

- **Final Exam**

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.

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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.

Overview videos, assignment videos, and project-related videos do not have PDF lecture slides because they are not lectures and have associated documents specific to them. The interview videos build context for the course and do **not** have PDF slides.

Playposit Interactions: Knowledge Checks

Playposit provides opportunities for interaction and reflection as you learn the course content. After 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

This course has required readings. Citations accompany topics and are often accessible through [ASU's Library](#), if not directly available in the course.

A reading 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 reading components, such as peer-reviewed journal articles, so you can plan your learning and quickly go back and review material as you prepare for your coursework.

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 and Project Discussion in Ed Discussion

Use Ed to discuss items relating to the course assignment 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 Discussion Prompts in Canvas

Modules 3, 4, 5, and 7 each include one (1) graded discussion prompt for a total of four (4) graded discussion prompts in the course. Each prompt provides a space for you to respond. After responding, you can see and comment on your peers' responses. Follow the directions in your course prior to posting.

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Review the grading criteria in the rubric directly in the course for how your responses will be assessed. Three (3) of the four (4) graded discussion prompts count toward your overall grade in the course. The lowest, one (1), graded discussion prompt is automatically dropped from your grade.

There are late penalties associated with the graded discussions. The graded discussion prompts are counted toward your final grade in the class.

Practice Quizzes

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

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

Graded Quizzes

Modules 2-7 each include one (1) graded quiz for a total of seven (7) graded quizzes in the course. Each graded quiz includes seven to fourteen (7-14) multiple choice questions with a single correct answer and multiple answer questions. You will be allowed one (1) attempt for each of these quizzes. A time limit is set to complete each graded quiz. Once you open a graded quiz, the timer will start and you are to complete the graded quiz in a single session.

Quiz Title	Time Limit
Module 2 Graded Quiz	Sixty (60) minutes
Module 3 Graded Quiz	Ninety (90) minutes
Module 4 Graded Quiz	Sixty (60) minutes
Module 5 Graded Quiz	Sixty (60) minutes
Module 6 Graded Quiz	Sixty (60) minutes
Module 7 Graded Quiz	Sixty (60) minutes

Graded quizzes in this course include feedback but do not include the correct answers. Read the Graded Quiz and Exam Policy for your course for more information.

There are late penalties associated with graded quizzes. All graded quizzes count toward your final grade in the class.

Assignment

This course includes one (1) individual assignment. 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 is no late penalty associated with the assignment; however, it is **required** to complete the projects correctly. The assignment is not counted toward your final grade in the class.

zyBooks

The assignment for this course will use zyBooks. You must complete and then submit your work in zyBooks. Carefully review submission directions outlined in the assignment overview document in order to correctly earn credit.

Individual Projects

This course includes six (6) individual projects. All project 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. Review the "Request for Faculty Review: MCS Portfolio Project Report Inclusion Request" section of this syllabus for what can be used from this course to potentially meet the degree portfolio requirement, which is optional and for degree-seeking learners only.

There are late penalties associated with the projects. These projects count toward your final grade in the class.

zyBooks

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

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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 project(s), 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(s). The Request for Faculty Review: MCS Portfolio Project Report Inclusion Request does not count toward your final grade in the class.

Address any three (3) of the six (6) projects in your Request for Faculty Review: MCS Portfolio Project Report Inclusion Request:

- Introduction to Graph Coloring Project
- Extensions to Balanced Colorings and Neutral Landscapes Project
- Introduction to Negative Selection Project
- Anomaly Detection with Negative Selection Project
- Modeling Collective Behavior in Ants Project
- Ant Colony Optimization for Network Route Repair Project

Proctored Exam

You have one (1) proctored exam. This consists of a final exam. The proctored exam does **not** include feedback. Read the Graded Quiz and Exam Policy for your course for more information.

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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 exam counts toward your final grade in the class.

Exam Details	Final Exam
Content Covered	Modules 1, 2, 3, 4, 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
Number of Questions	16 total questions (15 content questions + 1 academic integrity question)
Availability Start	Sunday, December 01, 2024 at 12:01 AM AZ Time
Availability End	Saturday, December 08, 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	Saturday, December 08, 2024 at 9:01 PM AZ Time

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the due date.	
Duration	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 exam 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 exam 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.

Final 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 exam 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 exam.
- 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.

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- 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 upholding ASU academic integrity.
- This is a closed resource exam. No resources are allowed.

Specific Allowances

- **Site URLs:** no
- **Open book:** no
- **Pre-written paper notes:** no
- **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:** no
- **Restroom breaks:** yes
- **Copy and Paste:** no
- **Hats:** yes
- **Headphones:** no
- **Take Exam in a Public Area:** no
- **Mobile Phone Use:** no

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- **Background Noise (Occasional sounds expected in the testing area):** yes

Course Grade Breakdown

Course Work	Quantity	Team or Individual	Points
Graded Discussions Three (3) of the four (4) graded discussion prompts count toward your overall grade in the course. The lowest, one (1), graded discussion prompt is automatically dropped from your grade.	3	Individual	30
Graded Quizzes	6	Individual	150
Projects*	6	Individual	600
Final Exam	1	Individual	220
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. Three (3) of the four (4) graded discussion prompts count toward your overall grade in the course. The lowest, one (1), graded discussion prompt is automatically dropped from your grade. 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.

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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.

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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

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.

Code of Conduct

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. The [Student Code of Conduct](#) is designed to promote this environment at Arizona State University.

The [Student Code of Conduct](#) sets forth the standards of conduct expected of students who choose to join the university community. Students who violate these standards will be subject to disciplinary sanctions in order to promote their own personal development, to protect the university community, and to maintain order and stability on campus.

Students are expected to follow the [ABOR Student Code of Conduct](#) and the ASU [Student Code of Conduct](#) at all times.

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Expected Behavior

Students are expected to follow the ASU [Student Code of Conduct](#) and 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.

Specific academic integrity announcements for this class are:

- Sharing code amongst peers is **not permitted**.
- Discussing intellectual content of projects is permitted.

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Use of Generative AI is Generally Permitted Within Guidelines

Artificial Intelligence (AI), including ChatGPT, are being used in workplaces all over the world to save time and improve outcomes by generating text, images, computer code, audio, or other media. Use of AI tools is generally welcome and even encouraged in this class with attribution aligned with disciplinary guidelines. AI tools might be employed to brainstorm, draft, edit, revise, etc. I will provide examples of [how to properly cite use](#). Any submitted course assignment not explicitly identified as having used generative AI will be assumed to be your original work. Using AI tools to generate content without proper attribution 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

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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.

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](#)).

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- 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 Creators



Stephanie Forrest, Ph.D.

Stephanie Forrest is Professor of Computer Science in the School of Computing and Augmented Intelligence (SCAI) at Arizona State University, where she also directs the Biodesign CSE 598 Syllabus Fall B 2022 Center for Biocomputation, Security and Society. Prior to joining ASU in 2017, she was at the University of New Mexico where she served as Dept. Chair 2006-2011. She is a member of the Santa Fe Institute External Faculty, where she has also served as co-Chair of its Science Board and Interim VP for Academic Affairs. In 2013-2014 she served at the U.S. Dept. of State as a Senior Science Advisor for cyber policy. She was educated at St. John's College (B.A.) and the University of Michigan (M.S. and Ph.D. in Computer Science).

Her interdisciplinary research focuses on the intersection of biology and computation, including bio-inspired computing, biological modeling, and complex systems. In computer science, she focuses on bio-inspired applications in cybersecurity and software engineering. Her research has developed pioneering cybersecurity methods and a new method for automatically repairing software bugs. Her

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biological modeling work focuses on living systems that consist of large evolving populations, particularly, the immune system and several different evolutionary systems.

Some of her awards include: The 2020 Test of Time Award from the IEEE Security and Privacy Symposium; The 2019 Ten Year Most Influential Paper Award from the International Conference on Software Engineering, the Santa Fe Institute Stanislaw Ulam Memorial Lectures (2013), the ACM/AAAI Allen Newell Award (2011), and the NSF Presidential Young Investigator Award (1991). She is a Fellow of the IEEE.

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