CS 5903: Perspectives on Computing
Instructors: Drs. Song Fang and Anindya Maiti
Fall 2025

Overview

Computing has become central to almost every human endeavor. This course provides a comprehensive overview of computing principles, pathways, practices, and research in computer science for students starting their graduate work in OU CS. Students in the course will discover an academic home as members of a cohort, learn about the procedures and policies of graduate school, and lay out their graduate program of study. We will learn about classic work in computing and current research in the broad topical areas of systems, theory, artificial intelligence & machine learning, and people & data. We will also learn about academic and scientific integrity, ethics and social implications, and professional practices in computing, as well as gain experience with key research skills and technical tools. Individual writing work will focus on self-assessment and reflection on program and career plans, and also development of professional skills of literature reviewing and peer reviewing. Writing and presentations will center on the discussion of the broader context of computing and case studies in the four topical areas. Our main goal is to lay a solid foundation for you to succeed as a CS graduate student and a future computing professional.

General Information

Course Description: A broad survey of principles, pathways, practices, and research in computer science. Topics include foundations and current computing research on systems (security and privacy), theory, artificial intelligence & machine learning, and people & data; ethics, integrity, social implications, and professional practices in computing; and essential skills and tools for computing research and practice.

Prerequisites: Graduate standing and permission of the school.

Learning Outcomes:

- During the semester, students will have: multiple research paper summaries; in-class presentation(s); one semester project.
- Develop an understanding of the principles of computing.
- Develop insights into initiating graduate work in OU CS.

Format: Traditional In-Person / Lecture

Place: Gallogly Hall 0127
Days: MWF
Time: 1:00 –1:50 pm

Instructor: Song Fang
Office: Devon Energy Hall 232
Email: songf@ou.edu
Phone: 405.325.3536 (OU or Canvas email strongly preferred)
Office Hours: W 2:00-3:00 pm, and by appointment.

Co-Instructor: Anindya Maiti
Office: Devon Energy Hall 460
Email: am@ou.edu
Phone: 405.325. 4951 (OU or Canvas email strongly preferred)
Office Hours: W 11 am-12 pm, and by appointment.

Class Home Page: Canvas

Class Schedule: Refer to the File/Schedule folder in Canvas for the current version of the schedule. The schedule may change occasionally due to campus closures or other unforeseen circumstances. (The first version of the schedule is also attached at the end of this syllabus.)

Materials

Required Textbook: There is no textbook required for this course. Links to all readings will be provided.

Software Resources:
- *Code Editors:* Emacs, Vim, Sublime, BBEdit (macOS)
- *Integrated Development Environments:* Eclipse, IntelliJ IDEA, Visual Code Studio, XCode
- *Build Tools:* Make, Ant, Maven, Gradle
- *Bibliography Managers:* Mendeley, Zotero, BibDesk (macOS)
- *Document Typesetting*: LaTeX, Overleaf, MiKTeX, MacTeX (macOS)
- *Command Line:* Shells, Command Prompt (Windows), PowerShell (Windows), Terminal (macOS)
- *Data Wrangling:* OpenRefine

Evaluation (Assignments, Assessment, and Grades)

In this course, you will be laying a foundation for success in your graduate work. **It is essential that you attend class consistently and participate actively.** What you get out of this course will depend on what you put into it. The contributions to your grade are as follows:

- Individual assignments (paper summary and peer review writeup): 35%
- Semester Project: 40%, consisting of the following main components
  - Lightning talk regarding the idea/topic
  - Project progress report
  - Final project submission (including codes, readme file, project report, and poster)
- In-class research paper presentation: 15%
- In-class participation: 10% *(based on attendance and participation quality/quantity in class)*

Due Dates: All assignments will be posted, collected, and returned through Canvas. Unless otherwise specified in writing, all assignments are due at the **exact** due date and time stated in Canvas (and at the top of each assignment's instructions), regardless of whether you hand them in electronically in Canvas, or physically on paper or otherwise (if allowed).

Policies on Late Assignments: Homework, paper summaries, project deadlines will be hard. For each day a submission is late - up to a maximum of 2 days, the grade is reduced 20%. For example, if you submit a 90%-correct assignment 2 days late, your overall assignment score will be 50%.

Grade Summary: We will store all of your grades in the Canvas grade book. It is your responsibility to verify that the grades on Canvas are correct. If an error is found, bring the graded item to us and we will correct the online entry.

Grade Questions: To maintain fairness in grading, we prefer that any disagreement be brought to us within a week of the item being returned.

Final Exam: Each student will present and demo their project results.

Letter Grades: Your weighted total score for the course will be converted into a letter grade using a scale no higher than a "straight scale" (90+=A, 80–89=B, 70–79=C, 60–69=D, below 60=F). The scale may be lowered at the end of the semester at our discretion.

Borderline Grades: Borderline final grades will be decided by your in-class participation. This means that being an active participant in class can push you over a grade boundary.

Course Policies

The following set of rules will help keep us all on the same page all semester and help to ensure fair treatment for all students.

Academic Integrity: Cheating is strictly prohibited at OU because it devalues the degree you are working hard to get. As a member of the OU community, it is your responsibility to protect your educational investment by knowing and following the rules. For specific definitions on what constitutes cheating, review the *Student's Guide to Academic Integrity* at https://www.ou.edu/integrity/students.

All work submitted for an individual grade (or group grade), such as a homework or project assignment, should be the work of that single individual (or group), not their friends, a tutor, or other form of outside help. Should you see someone else engaging in such disallowed behavior, we encourage you to report it to the instructor or directly to the Office of Academic Integrity Programs. That student is devaluing not only their degree, but yours, too. Be aware that it is our professional obligation to report academic misconduct, which we will not hesitate to do. Sanctions for academic misconduct can include expulsion from the University and an F in this course, so don't cheat. It's simply not worth it.

Generative AI Policy: I hope that this course aids you in a creative exploration of Generative AI tools and how they can be used to assist you in accomplishing the goals of this course. In this course, you:

- May use any free Generative AI tools, including those provided to you by the university, such as Copilot and AI tools with Adobe Creative Cloud (available in campus computer labs). This will allow everyone in the course to have the same access to Generative AI.
- Are expected to cite your usage of Generative AI, including any direct quotes or paraphrasing of ideas/content generated by AI, per our class's citation guidelines.
- Must provide a statement at the end of the assignment about your Generative AI usage. This statement should be created without the use of Generative AI and should be your own reflection. This statement must include: the platform(s) and prompt(s) you used, a summary of how Generative AI helped you achieve the learning objectives of the course associated with this assignment, and what additional work you did to verify the output, and to make the work your own.

To implement this policy, we will have ongoing discussions in class about effective use of Generative AI and how you are using it. You'll be asked to reflect frequently about AI usage both in-class and as part of your assignment submission (see assignment instructions for specifics), where you may also be asked to share your prompts, screenshots of your chats with Generative AI tools, and how you used Generative AI to prepare you to, by the end of the semester, independently (without the use of Generative AI) achieve the learning objectives of this course.

If you have any questions about this policy, please talk with me.

Consequences for Violating the Generative AI Usage Policy: Deviating from the acknowledgement, citation, and reflection guidelines described here may be considered a violation of the academic integrity policy of this course. Per our usage policy, you will be responsible for accuracy, including appropriately citing and summarizing any

articles you find through AI research tools, and thus must read the material you are citing. Submitting data or research that is not real (a risk when overly relying on Generative AI) may result in an academic integrity violation for falsifying information. Additionally, there may be times, such as in-class quizzes, midterms, or finals, where Generative AI usage is prohibited. Any use of AI in those cases will be considered a violation of the academic integrity policy.

My Use of Generative AI: I will model appropriate Generative AI usage by clearly disclosing when I use it and why. Expected use cases include: revising quiz or exam questions and responses (with my oversight), drafting case studies or educational games to help connect our course topics to the real-world, using my notes and previous PowerPoints to improve the structure of my lectures so that they are clearer to you all as students, graphic design, revising assignment instructions and rubrics to improve clarity for students, receiving feedback on how I communicate with students, and using AI research tools to find current articles to update our course readings. I will never use Generative AI to grade your work.

Course Web Page: Access the Canvas website using your 4+4 (first four letters of your last name followed by the last four digits of your student number) and your standard OU password. If you have general difficulty with Canvas, please read the online OU IT documentation or call them at 325-HELP. All handouts and assignments will be made available in Canvas. You should check the site regularly. When we update the site with something important, we will post an announcement telling you what has been added and where it is located. You are responsible for things posted on the site after a 24 hour delay or the end of the first following class meeting, whichever occurs first.

Course Announcements: Announcements will be posted in Canvas. It is your responsibility to:

- Set up Canvas to receive notification of course announcements, class and group forum messages, and updates to course content including posting of assignments.
- Make sure that your contact info in Canvas includes an email address that you read regularly. We will send out at least one class-wide message during the first week of class. If you do not receive this message, it is your responsibility to get the problem resolved immediately.
- Have your email program set up properly so that replying to your email will work correctly the first time. You can send email to yourself and reply to yourself to test this.

If you need assistance in accomplishing any of these tasks, contact OU IT.

Course Communications: The *General Discussion* in Canvas should be the primary method of communication outside of class. This allows everyone in the class to benefit from the answer to your question. If you email us a question of general interest, we may post your question and our answer to the discussion. Matters of personal interest should be directed to email instead of to the discussion, e.g. informing us of an extended personal illness.

Classroom Conduct: Disruptions of class are not permitted. No electronic devices may be used during class except to take notes or as a direct part of class exercises. Examples of disruptive behavior include:

- Allowing a cell phone or other device to make audible sound.
- Browsing, listening to music, or playing computer games, regardless of whether they are visible or audible to other class members. (Such activities disrupt YOUR ability to pay attention and participate.)
- Exhibiting erratic or irrational behavior.
- Behavior that distracts the class from the subject matter or discussion.
- Making physical or verbal threats to a faculty member, teaching assistant, or class member.
- Refusal to comply with faculty direction.

In the case of disruptive behavior, we may ask that you leave the classroom and may charge you with a violation of the Student Rights and Responsibilities Code.

Project Code: Your project code and write ups must be written exclusively by you or your group. *Use of any downloaded code or code taken from a book (whether documented or undocumented) is considered academic misconduct and will be treated as such.* Exceptions to this policy (such as a course project that builds on an existing open-source project) may be granted but you **MUST** obtain approval from us first.

Generated Materials: All materials submitted or presented as a part of an assignment must be human generated exclusively by you or your group. Except for materials either included with or explicitly required by the assignment instructions, *use of any automatically generated text, images, code, or other materials (such as from GPT or DALL-E) is considered academic misconduct and will be treated as such.*

Exceptions to this policy (such as a course project that builds on an artificial intelligence image generation algorithm) may be granted but you **MUST** obtain approval from us first.

Evaluating the Course: The College of Engineering utilizes student ratings as one of the bases for evaluating the teaching effectiveness of each of its instructors. The results of these forms are important data used in the process of awarding tenure, making promotions, and giving salary increases. In addition, the instructors use these forms to improve their own teaching effectiveness. The original request for the use of these forms came from students, and it is students who eventually benefit most from their use.

Please take this task seriously and respond as honestly and precisely as possible, both to the machine-scored items and to the open-ended questions.

Incompletes: The grade of *I* is intended for the rare circumstance when a student who has been successful in a course has an unexpected event occur shortly before the end of the course. We will not consider giving a student a grade of *I* unless all three of the following conditions have been met: (1) it is within two weeks of the end of the semester; (2) the student has a grade of *C* or better in the class; (3) the reason that the student cannot complete the class is properly documented and compelling.

Class Schedule

(These will be adjusted based on the actual progress in a semester.)

Week	Data	Topics	Readings	Activities
1 (Dr. Fang)	Aug 25, M	Welcome to OU CS!	Syllabus	meet & greet
	Aug 27, W	Graduate School Orientation!	(Grad College site)	overall+resources
	Aug 29, F	CS Graduate Program Pathways	(CS reqs site)	overall+resources
2 (Dr. Maiti)	Sep 1, M	**Labor Day - No Class**		
	Sep 3, W	Context – Academic and Scientific Integrity		lecture->discussion
	Sep 5, F	Contemplating a Career Pathway		sketch program plan
3 (Dr. Fang)	Sep 8, M	Systems - The Big Picture	Systems Paper #1	lecture->discussion
	Sep 10, W	Systems - The Classics		lecture->discussion
	Sep 12, F	Systems - Research at OU		faculty presentation
4 (Dr. Maiti)	Sep 15, M	Skills - Overview	Skills Guidance Docs	overview+exercises
	Sep 17, W	Skills – Things You Take Away		overview+exercises
	Sep 19, F	Skills – Giving Back		

5 (Dr. Fang)	Sep 22, M	Project Analysis	Systems Paper #2	lecture->discussion
	Sep 24, W	Project Discussion		lecture->discussion
	Sep 26, F	Systems - Case Study		faculty presentation
6 (Dr. Maiti)	Sep 29, M	Theory – Intro	Theory Paper #1	faculty presentation
	Oct 1, W	Theory – The Bigger Picture		lecture->discussion
	Oct 3, F	Theory – Classics		lecture->discussion
7 (Dr. Fang)	Oct 6, M	Cyber-Physical Systems (CPS)	Systems Paper #3	lecture->discussion
	Oct 8, W	Internet of Things (IoT)		lecture->discussion
	Oct 10, F	**2025 Fall Student Holiday (OU v Texas) - No Class**		
8 (Dr. Maiti)	Oct 13, M	AI/ML – The Big Picture	AI/ML Paper #1	lecture->discussion
	Oct 15, W	AI/ML – Classics		lecture->discussion
	Oct 17, F	AI/ML – Research at OU		faculty presentation
9 (Dr. Fang)	Oct 20, M	People & Data - The Big Picture	P & D Paper #1	lecture->discussion
	Oct 22, W	People & Data - The Classics		lecture->discussion
	Oct 24, F	P & D - Research at OU		faculty presentation
10 (Dr. Maiti)	Oct 27, M	Tools - Intro	Tool Overview Docs	overview+exercises
	Oct 29, W	Tools – For Development		overview+exercises
	Oct 31, F	Tools – For Research		overview+exercises
11 (Dr. Fang)	Nov 3, M	People & Data – Research at OU	P & D Paper #2	lecture->discussion
	Nov 5, W	People & Data – Case Study		lecture->discussion
	Nov 7, F	Planning Your Academic Program		faculty presentation
12 (Dr. Maiti)	Nov 10, M	Tools – Cloud Computing	Tool Overview Docs	overview+exercises
	Nov 12, W	Tools – Command Line		overview+exercises
	Nov 14, F	Tools – Data Wrangling		overview+exercises
13 (Dr. Fang/Maiti)	Nov 16, M	Smart Home Systems	P & D Paper #3	lecture->discussion
	Nov 18, W	Virtual Reality		lecture->discussion
	Nov 20, F	Autonomous Driving		lecture->discussion
14 (Dr. Fang/Maiti)	Nov 24, M	Emerging Topics		lecture->discussion
	Nov 26, W	**Thanksgiving - No Class**		
	Nov 28, F			
15 (Dr. Fang/Maiti)	Dec 1, M	Project Demo		student presentation
	Dec 3, W	Project Demo		student presentation
	Dec 5, F	Project Demo		student presentation
16 (Dr. Fang/Maiti)	Dec 8, M	Project Demo		student presentation
	Dec 10, W	Project Demo		student presentation
	Dec 12, F	Project Demo		student presentation

University Policies

Mental Health Support Services

Support is available for any student experiencing mental health issues that are impacting their academic success. Students can either been seen at the University Counseling Center (UCC) located on the second floor of Goddard Health Center or receive 24/7/365 crisis support from a licensed mental health provider through TimelyCare. To schedule an appointment or receive more information about mental health resources at OU please call the UCC at 405-325-2911 or visit University Counseling Center. The UCC is located at 620 Elm Ave., Room 201, Norman, OK 73019.

Copyright Syllabus Statement for In-Person or Online Courses

Sessions of this course may be recorded or live-streamed. These recordings are the intellectual property of the individual instructors and may not be shared or reproduced without the explicit, written consent of the faculty member. In addition, privacy rights of others such as students, guest lecturers, and providers of copyrighted material displayed in the recording may be of concern. Students may not share any course recordings with individuals not enrolled in the class, or upload them to any other online environment.

Title IX Resources and Reporting Requirement

The University of Oklahoma faculty are committed to creating a safe learning environment for all members of our community, free from sex-based discrimination, including sexual harassment, domestic and dating violence, sexual assault, and stalking, in accordance with Title IX. There are resources available to those impacted, including: speaking with someone confidentially about your options, medical attention, counseling, reporting, academic support, and safety plans. If you have (or someone you know has) experienced any form of sex-based discrimination or violence and wish to speak with someone confidentially, please contact OU Advocates (available 24/7 at 405-615-0013) or University Counseling Center (M-F 8 a.m. to 5 p.m. at 405-325-2911).

Because the University of Oklahoma is committed to the safety of you and other students, and because of our Title IX obligations, I, as well as other faculty, Graduate Assistants, and Teaching Assistants, are mandatory reporters. This means that we are obligated to report sex-based violence that has been disclosed to us to the Institutional Equity Office. This means that we are obligated to report sex-based violence that has been disclosed to us to the Institutional Equity Office. This includes disclosures that occur in: class discussion, writing assignments, discussion boards, emails and during Student/Office Hours. You may also choose to report directly to the Institutional Equity Office. After a report is filed, the Title IX Coordinator will reach out to provide resources, support, and information and the reported information will remain private. For more information regarding the University's Title IX Grievance procedures, reporting, or support measures, please visit Institutional Equity Office at 405-325-3546.

Adjustments for Pregnancy and Related Issues

Should you need modifications or adjustments to your course requirements because of pregnancy or a pregnancy-related condition, please request modifications via the Institutional Equity Office website or call the Institutional Equity Office at 405/325-3546 as soon as possible. Also, see the Institutional Equity Office FAQ on Pregnant and Parenting Students' Rights for answers to commonly asked questions.

Reasonable Accommodation Policy

The University of Oklahoma (OU) is committed to the goal of achieving equal educational opportunity and full educational participation for students with disabilities. If you have already established reasonable accommodations with the Accessibility and Disability Resource Center (ADRC), please log into iAdvise to request your semester accommodations as soon as possible and contact me privately, so that we have adequate time to arrange your approved academic accommodations.

If you have not yet established services through ADRC, but have a documented disability and require accommodations, please complete ADRC's pre-registration form to begin the registration process. ADRC facilitates the interactive process that establishes reasonable accommodations for students at OU. For more information on ADRC registration procedures, please review their website. You may also contact them at (405)325-3852 or adrc@ou.edu, or visit www.ou.edu/adrc for more information.

Note: disabilities may include, but are not limited to, mental health, chronic health, physical, vision, hearing, learning and attention disabilities, pregnancy-related. ADRC can also support students experiencing temporary medical conditions.

Religious Observance

It is the policy of the University to excuse the absences of students that result from religious observances and to reschedule examinations and additional required classwork that may fall on religious holidays, without penalty. [See Faculty Handbook 3.15.2]

Final Exam Preparation Period

Pre-finals week will be defined as the seven calendar days before the first day of finals. Faculty may cover new course material throughout this week. For specific provisions of the policy please refer to OU's Final Exam Preparation Period policy.

Emergency Protocol

During an emergency, there are official university procedures that will maximize your safety.

Severe Weather: If you receive an OU Alert to seek refuge or hear a tornado siren that signals severe weather.

1. Look for severe weather refuge location maps located inside most OU buildings near the entrances.
2. Seek refuge inside a building. Do not leave one building to seek shelter in another building that you deem safer. If outside, get into the nearest building.
3. Go to the building's severe weather refuge location. If you do not know where that is, go to the lowest level possible and seek refuge in an innermost room. Avoid outside doors and windows.
4. Get in, Get Down, Cover Up
5. Wait for official notice to resume normal activities.

Additional Weather Safety Information is available through the Department of Campus Safety.

The University of Oklahoma Active Threat Guidance

The University of Oklahoma embraces a Run, Hide, Fight strategy for active threats on campus. This strategy is well known, widely accepted, and proven to save lives. To receive emergency campus alerts, be sure to update your contact information and preferences in the account settings section at one.ou.edu.

RUN: Running away from the threat is usually the best option. If it is safe to run, run as far away from the threat as possible. Call 911 when you are in a safe location and let them know from which OU campus you're calling from and location of active threat.

HIDE: If running is not practical, the next best option is to hide. Lock and barricade all doors; turn of all lights; turn down your phone's volume; search for improvised weapons; hide behind solid objects and walls; and hide yourself completely and stay quiet. Remain in place until law enforcement arrives. Be patient and remain hidden.

FIGHT: If you are unable to run or hide, the last best option is to fight. Have one or more improvised weapons with you and be prepared to attack. Attack them when they are least expecting it and hit them where it hurts most: the face (specifically eyes, nose, and ears), the throat, the diaphragm (solar plexus), and the groin.

Please save OUPD's contact information in your phone.

NORMAN campus: *For non-emergencies call (405) 325-1717. For emergencies call (405) 325-1911 or dial 911.*

TULSA campus: *For non-emergencies call (918) 660-3900. For emergencies call (918) 660-3333 or dial 911.*

Fire Alarm/General Emergency

If you receive an OU Alert that there is danger inside or near the building, or the fire alarm inside the building activates:

1. *LEAVE* the building. Do not use the elevators.
2. *KNOW* at least two building exits
3. *ASSIST* those that may need help
4. *PROCEED* to the emergency assembly area
5. *ONCE safely outside, NOTIFY first responders of anyone that may still be inside building due to mobility issues.*
6. *WAIT* for official notice before attempting to re-enter the building.

OU Fire Safety on Campus