

**CSE 4308, 5360: Artificial Intelligence
Spring 2021**

Instructor: [Vamsikrishna Gopikrishna](#)

Section Information: CSE 4308-001; CSE 5360-001; CSE 4308-002; CSE 5360-002; CSE 4308-003; CSE 5360-003; CSE 4308-900; CSE 5360-900

Email Address: vamsikrishna.gopikrishna@uta.edu [NOTE: All email regarding the course **must** contain CSE4308-001, CSE5360-001, CSE4308-002, CSE5360-002, CSE4308-003, CSE5360-003, CSE4308-900, CSE5360-900 at the beginning of the subject line **and** must be sent to the above email address or through canvas messaging or they **may not** be answered]

Office Hours:

- **Office Location:** Due to the COVID-19 pandemic In-person office hours will not be held. Office hours are going to be online through Microsoft TEAMS. The link to the meeting will be in the announcements section on Canvas.
- **Time:**
 - **CSE 4308** (All Sections): Monday, Wednesday – 2:00 PM to 3:30 PM
 - **CSE 5360** (All Sections): Monday, Wednesday – 3:30 PM to 5:00 PM
- If you cannot meet me during this time, you can also message me directly through TEAMS or post a message in the TEAMS group for your class.

Time and Place of Class Meetings:

- **Location:** Due to the COVID-19 pandemic in-person lectures will not be held. Classes will be held online through Canvas conferences. Please go to the conferences tab of the courses canvas page to access the lecture.
- **Exam Location:** Sections 001, 002 and 003 will have an in-person exam (they will be given the option of taking the exam online if they choose to). In-person exam location will be provided in class. Section 900 will have all exams online.
- **Time:**
 - **CSE 4308 001:** Tuesday, Thursday – 2:00 PM to 3:20 PM
 - **CSE 5360 001 / 900:** Tuesday, Thursday – 3:30 PM to 4:50 PM
 - **CSE 4308 002 / 900, CSE 5360 002:** Tuesday, Thursday – 7:00 PM to 8:20 PM
 - **CSE 4308 003, CSE 5360 003:** Tuesday, Thursday – 12:30 PM to 1:50 PM

Web Page: http://crystal.uta.edu/~gopikrishnav/classes/2020/spring/4308_5360/. Too Long? Just go to <http://crystal.uta.edu/~gopikrishnav/> and follow the links.

Description of Course Content:

This course introduces the basic philosophies and techniques of Artificial Intelligence. AI techniques have become an essential element in modern computer software and are thus essential for a successful career and advanced studies in computer science. Topics covered in this course include search algorithms (such as breadth-first, depth-first, A*), game-playing algorithms (such as Minimax), knowledge and logic reasoning, planning methods, probabilistic reasoning and machine learning.

Student Learning Outcomes: Students successfully completing this course will be able to apply a variety of techniques for the design of efficient algorithms for complex problems.

<p>Emergency Phone Numbers: In case of an on-campus emergency, call the UT Arlington Police Department at 817-272-3003 (non-campus phone), 2-3003 (campus phone). You may also dial 911. Non-emergency number 817-272-3381.</p>
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Required Textbooks and Other Course Materials: Slides of course content will be posted on the website. Recommended textbook: **Artificial Intelligence: A Modern Approach, 3rd Edition by Stuart Russell, Peter Norvig.** (2nd Edition is also acceptable)

Descriptions of major assignments and examinations:

There will be several assignments with programming and written tasks in this course. If you find yourself in an emergency and cannot deliver homework on time, immediately inform the instructor. Also, while working with other persons on non-graded example problems from the textbook is a good way to help you develop your understanding and insight into the techniques of problem solving, homework solutions must be your work only. Violations of this will not be tolerated and result in severe penalties for all parties involved, in strict compliance to official UTA policy.

Programming tasks in assignments must be in base versions of C, C++, Python, Java or must run on the ACS machine omega (All students will have an account on the ACS machine omega). Omega compatibility is not required (just recommended). If partial code is provided, however, it will generally be only provided in a limited number of languages. Additional details will be announced in class. All homework submissions (written and programming) must be submitted via [Canvas](#). No other methods of submission are accepted.

ABET Assessment (Only for CSE 4308 students): Your solution to certain tasks in some assignments will be assessed for the purpose of ABET accreditation. The rubric used for the assessment is attached to the end of the syllabus. The tasks used for the assessment will be indicated in each assignment. Samples of some student work will also be drawn for the purposes of the assessment.

Late submission policy: The points each assignment graded out of will be provided as part of its description. Assignments submitted late will be automatically penalized, at a rate of **5% of max points per hour late. Note that for some assignments, Late submissions may not be accepted** (will be announced in class). The submission due time (and the time the link will be available till) will be shown in canvas. Exceptions will only be made for documented emergencies, in strict adherence to UTA policy. Computer/Network crashes, Submission of Incomplete files, Submission of Incorrect Files, Submitting at Incorrect Link are **NOT** acceptable excuses for late submissions. **No exceptions will be made.** To avoid problems with such crashes and last-minute problems, students are encouraged to submit as early as possible. They are also advised to ensure that their file was uploaded correctly before submitting it. You can always revise your submission till the deadline. If you are unable to work on/submit an assignment due to a valid documented reason (illness, critical family emergencies, military service obligations, observance of major religious holidays, and certain university service commitments) one makeup assignment may be provided that will be due during finals week.

There is no Final Exam. There will be three exams in this course. All exams will have equal weight. No exam scores will be dropped. For the Hybrid students, the exams will be held on campus as **in-person exams**. Students will be required to wear a face covering and follow the classroom use procedures outlined by the university (available on the course webpage and on canvas) to be allowed to take their exam. Failure to follow the procedures will result in the student being asked to leave and being given a score of 0 for the exam. They also have the option to take the exam **online** through canvas using the Lockdown browser (with Respondus Monitor). **You will need a computer and a webcam to take the online exam** (a Laptop with integrated webcam will also work). **For the online only sections, all exams will be online.** All exams are open notes. These notes will have to be submitted along with your exam (more details will be given in class). Students are also allowed a non-programmable calculator.

Absence from exams may be excused, with appropriate documentation, for illness, critical family emergencies, military service obligations, observance of major religious holidays, and certain university service commitments. Requests for excused absence, and documentation for such absences, must be provided as soon as possible. If an online exam is disrupted due to a service outage, screenshots/ photographic evidence must be provided ASAP. In case of excused absence or outage, a makeup exam will be setup and conducted by the instructor. **Even if the reason for an absence/non-attendance is valid, a request for an excused absence/re-attempt will be rejected if provided later than the day of the exam.** The dates for all the exams are subject to change. Any changes will be announced in class atleast a week in advance. Students are expected to be available till the last day of finals week. No accommodations will be made if the student will miss an exam due to being unavailable before the last day of finals week.

Attendance: Students are expected to attend all online lectures. Attendance in the online lectures will be part of your final grade. Any material that the student missed will not be covered again in class. At random points during the lectures, I will conduct in class polls. The scores of these polls will be used as part of your final grade. Absence from classes may be excused, with appropriate documentation, for illness, critical family emergencies, military service obligations, observance of major religious holidays, and certain university service commitments. (Non BUPT students in the online only sections have any absences automatically excused, though attendance is still recommended). Documentation regarding any reasons for absence must be provided to the instructor by the end of the week of the missed lecture. If the student is unable to attend a class due to approved or personal reasons, it is the student's responsibility to use the slides/videos posted online or the lecture archives on canvas and the textbook to learn the content and to contact either the Instructor or the TA to clarify any doubts.

Grading Policy:

You will be assigned a numerical score based on your performance in your assignments and in your exams.

Material	Contribution to Final score
Assignments	30%
Exam 1	20%
Exam 2	20%
Exam 3	20%
Attendance	5%
In Class Polls	5%

This numeric score is converted to a letter grade according to the following rubric.

Numerical Score	Grade
≥ 85	A
$\geq 70 \ \& \ < 85$	B
$\geq 55 \ \& \ < 70$	C
$\geq 40 \ \& \ < 55$	D
Otherwise	F

Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels.

No makeup exams or assignments will be provided for the purpose of bumping up your grade under any circumstances.

Academic Integrity: Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington's tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code in their courses by having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents' Rule* 50101, §2.2, suspected violations of university's standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student's suspension or expulsion from the University. Additional information is available at <https://www.uta.edu/conduct/>. More information is available in the following library tutorials <http://libguides.uta.edu/copyright/plagiarism> and <http://library.uta.edu/plagiarism/>

If you are caught colluding or copying in the assignments (or exams):

- **First Offence:** You will be given a score of -50 points for that assignment (or exam) and an academic dishonesty report will be filed.
- **Second Offence:** You will be given a grade of F for the course and another academic dishonesty report will be filed.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: **The Office for Students with Disabilities, (OSD)** <http://www.uta.edu/disability/> or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability/. If you are a student who would have taken your exam in the **ARC** center, additional time will be provided during your exam (Please inform the instructor the week before the exam).

Counseling and Psychological Services (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems, and make positive changes in their lives.

Non-Discrimination Policy: The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.

Title IX Policy: The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Michelle Willbanks, Title IX Coordinator at (817) 272-4585 or titleix@uta.edu*

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, marked by the exit signs. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services for Undergraduate students: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to resources@uta.edu, or view the information at <http://www.uta.edu/studentsuccess/success-programs/programs/resource-hotline.php>

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>

Student Feedback Survey: At the end of each term, students enrolled in face-to-face and online classes categorized as “lecture,” “seminar,” or “laboratory” are directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback via the SFS database is aggregated with that of other students enrolled in the course. Students’ anonymity will be protected to the extent that the law allows. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are

posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit <http://www.uta.edu/sfs>.

The IDEAS Center (2nd Floor of Central Library) offers **FREE tutoring** to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. Students can drop in, or check the schedule of available peer tutors at www.uta.edu/IDEAS, or call (817) 272-6593

Course Schedule (Tentative):

Week	L.No2	Date	Topic
1	1	1/19/2021	Course Details, Overview
1	2	1/21/2021	Agents, Solving Problems with search
2	3	1/26/2021	Uninformed Search, Informed Search
2	4	1/28/2021	Informed Search (Contd.)
3	5	2/2/2021	Game Playing
3	6	2/4/2021	Game Playing (Contd.)
4	7	2/9/2021	Constraint Satisfaction Problem
4	8	2/11/2021	Constraint Satisfaction Problem (Contd.)
5	9	2/16/2021	Knowledge and Logic Reasoning
5		2/18/2021	EXAM 1 Review
6		2/23/2021	EXAM 1 - All Sections
6	10	2/25/2021	Knowledge and Logic Reasoning (Contd.), First Order Logic
7	11	3/2/2021	Planning
7	12	3/4/2021	Contingency Planning, Online Replanning
8	13	3/9/2021	Probability
8	14	3/11/2021	Prior and Posterior Probabilities
9		3/16/2021	SPRING VACATION - NO CLASS
9		3/18/2021	SPRING VACATION - NO CLASS
10	15	3/23/2021	Bayesian Networks
10	16	3/25/2021	Bayesian Networks (Contd.)
11	17	3/30/2021	Learning
11		4/1/2021	EXAM 2 Review
12		4/6/2021	EXAM 2 - All Sections
12	18	4/8/2021	Learning (Contd.)
13	19	4/13/2021	Decision Trees
13	20	4/15/2021	Decision Trees (Contd.), Real World Decision Trees
14	21	4/20/2021	Bayesian Classifiers
14	22	4/22/2021	Probability Estimations
15	23	4/27/2021	Neural Networks, Backpropagation Learning
15	24	4/29/2021	Backprop. Learning (Contd.)
16		5/4/2021	EXAM 3 Review, Final Q&A
16		5/6/2021	EXAM 3 - CSE 4308 003, CSE 5360 001/003/900
17		5/11/2021	EXAM 3 - CSE 4308 001/002/900, CSE 5360 002

This schedule is tentative and subject to change at instructor's discretion (This includes topics covered, the number and due dates of assignments). Changes will be announced in class. The instructor reserves the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.

EXAM 3 date, time and location is subject to change by the University. Students should be available till the last day of Finals Week.

Course Schedule Changes:

- Classes for 2/16 – 2/18 cancelled due to Weather.
- EXAM 1 Review moved to 2/25/2021
- EXAM 1 moved to 3/2/2021

Grading rubrics for ABET Assessment (CAC SO 1)

For CSE 4308 (Please look at assignment problem statements for tasks used for assessment):

	Excellent (5 pts) 85-100%	Good (4 pts) 70-85%	Satisfactory (3 pts) 55-70%	Poor (2 pts) 40-55%	Unacceptable (1 pt) 0-40%
Analyze a complex computing problem and to apply principles of computing and other relevant	Demonstrated understanding of the concepts and method described in class. (including how to use them to solve the problem) Accurate application of these methods to solve written problems. Accurate implementation of methods discussed in class for programming problems to solve the problem (some minor numerical or programming error will be tolerated)	A good understanding of the concepts described in class. For those problems where the student is told what method needs to be used, student is able to use it to solve the given problem. Only minor errors (if any) in solutions/programs given either due to miscalculation / programming error	A good understanding of the concepts described in class. When told what method needs to be used, student is able to use it to solve written problems without any issues. Has a lot more trouble translating some of the methods discussed in class to code. Some numerical errors in written solutions or programming errors in code.	Poor understanding of concepts discussed in class. Is unable to figure out correct method to use to solve a problem unless explicitly given as part of the problem. Significant errors in written solutions/ Nonfunctional or incorrect code for programming tasks.	Negligible understanding of the methods discussed in class and how to use them to solve the given problems. Significant errors in written tasks or missing solutions. Missing or non-functional code