

CSE 4308/5360: Artificial Intelligence

Summer 2023

Instructor Information

Instructor

Vamsikrishna Gopikrishna, Ph.D.

Office Number

[ERB](#) 553

Email Address and TEAMS ID

vamsikrishna.gopikrishna@uta.edu

Website

<https://crystal.uta.edu/~gopikrishnav/>

Faculty Profile

<https://mentis.uta.edu/explore/profile/vamsikrishna-gopikrishna>

Office Hours

- Timings: **Friday: 2:00 PM – 4:00 PM**
- Location: In-Person in my office ([ERB](#) 553) or via TEAMS meeting (Note: Priority for In-Person students)

If you are unable to meet at these times, please email the instructor to set up an alternate meeting time.

Course Information

Section Information

- CSE 4308 001 / CSE 5360 001
- CSE 4308 002 / CSE 5360 002
- CSE 5360 003

Time and Place of Class Meetings

Class meetings for all sections will be On Campus

- **CSE 4308 001 / CSE 5360 001:** [NH](#) 110 – **Monday to Thursday 1:00 PM – 3:00 PM**
- **CSE 4308 002 / CSE 5360 002:** [NH](#) 110 – **Monday to Thursday 3:30 PM – 5:30 PM**
- **CSE 5360 003:** [NH](#) 203 – **Monday to Thursday 6:00 PM – 8:00 PM**

Course Webpage

- Course slides, programming assignment problem statements, and sample exam material will be posted on: http://crystal.uta.edu/~gopikrishnav/classes/2023/summer/4308_5360/
- Videos, Submission Links for programming assignments, and any other material will be posted on: [Canvas](#)

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

Required Textbooks and Other Course Materials

Slides of course content will be posted on the website. Recommended textbook: **Artificial Intelligence: A Modern Approach, 4th Edition by Stuart Russell, Peter Norvig**. Price: \$39.96 - \$206.75 at the UTA Bookstore (<https://www.bkstr.com/texasatarlingtonstore/product/artificial-intelligence-991236-1>). Note: 3rd or 2nd Edition is also acceptable.

Description of Assignments and Projects

There will be several written assignments and one programming project in this course. If you find yourself in an emergency and cannot deliver the work on time, immediately inform the instructor. The work done for the assignments/project must be your individual work. Any external resources or code segments you want to use must first be cleared by the instructor and cited appropriately in your work. **Violations of this will not be tolerated and result in severe penalties for all parties involved, in strict compliance with official UTA policy.**

The assignments must be either handwritten (and scanned as a pdf file) or typed and saved as a pdf file and submitted. All assignments are required. No assignments will be dropped from your final score (unless in case of a documented emergency)

The project must be coded in base versions of C, C++, Python, Java. Alternatively, it can be coded to run on the ACS machine omega (All students will have an account on the ACS machine omega). Note that Omega compatibility is not required (just provided as an option for students). Additional details will be announced in class.

All submissions must be submitted via [Canvas](#). No other method of submission accepted under any circumstances.

Late Submission policy for Assignments

The points each assignment and the project will be graded out of will be provided as part of its description. Assignments/project submitted late will be automatically penalized, at a rate of **5% of assignment max points per hour late**. Note that the link to submit the assignment/project will be removed **24 hours** after the due date. The submission due time (and the time the submission link will be available till) will be shown in [Canvas](#). **No submissions will be accepted after the link is no longer available.** 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 once you finish submitting it and make a resubmission ASAP in case of any errors. 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) and provide the documentation before the deadline for the assignment, one assignment will be excused from your final grade calculation.

Description of Examinations

There will be two Exams held that will test the students on all material discussed in class up to that point. (Note: The Exams are not cumulative). The exam is a closed book exam. The exam booklet will include all relevant formulae and algorithms. In addition, Students are allowed 1 sheet of **handwritten** notes they can use during the exam. These notes can contain whatever information the students feel might be useful during the exam but cannot contain solutions to problems discussed during the class or from other sources and will have to be submitted along with your exam (more details will be given in class). Students are also allowed to use a non-programmable standard or scientific calculator. No other material is allowed during the exam. **The presence of unauthorized material in your notes or in any other form will be treated as cheating and penalized as such.**

For both exams, please follow all instructions regarding what information needs to be provided in your answer booklet. Missing information will be penalized. These penalties will **not** be reverted under any circumstances. All work done during the assignments, or the exams has to be individual work. **Violations of this will not be tolerated and result in severe penalties for all parties involved, in strict compliance with official UTA policy.**

Exam Absence policy

Absence from the 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 before August 14th 2023. In case of excused absence, the student will be given a grade of Incomplete (I). A makeup final will be set up and conducted by the instructor at a date at some point in Fall of 2023 and the grade updated based on the score from that exam.

Description of Lectures and Supplementary materials

Lectures will be held in person in the assigned classroom at the scheduled time. Students are expected to attend the lectures. The lectures will be recorded and posted online via the Echo360 system for student review purposes (if supported). If in person lectures are not possible due to any reason, the instructor will inform the student as soon as possible. The lecture may be shifted to either synchronous online lecture (via TEAMS) or asynchronous online lecture (via video posted on Canvas). In addition to the lectures, the instructor may provide some supplementary videos to cover topics tangential to what was covered in class or cover certain topics in more detail. It is the student's responsibility to view this material when they are posted and use the lecture sessions or office hours to clarify any questions they may have.

Academic Dishonesty Policy

If you are caught colluding or copying in the assignments, exams, or the project the following consequences will be applied.

Per offence:

- You will be given a score of 0 points for that assignment, exam, or project.
- Your final grade will be reduced by 2 letter grades (Up to a minimum of F)
- An academic integrity violation form will be filed.
 - If you agree to sign the form
 - You will be placed on disciplinary probation for 1 year and a 7-year reportable disciplinary record being created.
 - Additional violations may result in increasing sanctions up to and including suspension or expulsion.
 - If you do not agree to sign the form
 - You will be temporarily given a grade of Incomplete (I)
 - The Office of Academic Integrity will conduct a formal investigation based on evidence provided.
 - Based on decision, Either the grade will be calculated with the penalty and with the consequences discussed above or grade will be calculated without penalties and no forms being filed.

This policy is not up for discussion/negotiation under any circumstances.

Technology Requirements

Students will need to be able to program in C, C++, Python or Java for their programming project. For their assignments, they will need to know how to scan and upload their handwritten text or typed text as PDF files.

They will need to be able to use Canvas to view any supplementary material provided by the instructor, submit assignments and to view lecture session recordings (for review purposes).

They are also strongly recommended to get used to TEAMS to get in touch with the instructor to clarify any questions they may have.

If due to the COVID-19 pandemic, any exams need to be moved online, students will have to use the Lockdown browser with the Respondus monitoring system for the exams in which case they will need a computer with a webcam and an internet connection to take their exam.

Grading Information

Grading

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

Material	Contribution to Final score
Policy Acknowledgement	5%
Average Assignment Score	20 %
Programming Project Score (%)	15 %
Exam 1	30 %
Exam 2	30 %

Note: Not completing policy acknowledgement form submission by its due date (Just before midnight on Census date) may result in students not being allowed to sit for the Exams.

The assignments average will be calculated as the mean of the percentage scores of each assignment:

$$Score_{avg} = \frac{\sum_{i=1}^n \frac{Score_i}{Score_{max}} * 100}{n}$$

Note: **All** assignment scores will be used in the calculation of its average.

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

Numerical Score	Grade
>= 85	A
>= 70 & < 85	B
>= 55 & < 70	C
>= 40 & < 55	D
Otherwise	F

For the Assignments, Exams, and the Project, if any tasks were graded incorrectly (a correct answer given less than full credit) or if there is a totaling error, please contact either the TA or the instructor ASAP. Any partial credit obtained for incorrect tasks is not up for discussion/negotiation.

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 assignments, or exams will be provided for the purpose of bumping up your grade under any circumstances.**

Grade Grievances

Any appeal for a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog.

Course Schedule

Week	Date	Topic	Take-Home Work
Week 1	7/10/2023	Course Overview, Agents	
	7/11/2023	Solving Problems by search	
	7/12/2023	Informed Search, Game Playing	
	7/13/2023	Alpha-Beta Pruning, Non-Deterministic Games	Assignment 1 Posted
Week 2	7/17/2023	Constraint Satisfaction Problems	Assignment 1 Due
	7/18/2023	Knowledge & Logic Reasoning, Inference by Enumeration	
	7/19/2023	Forward and Backward Chaining, Resolution	
	7/20/2023	First Order Logic, Unification, and Inference in FOL	Assignment 2 Posted
Week 3	7/24/2023	Planning	Assignment 2 Due
	7/25/2023	Conditional Planning and Replanning, EXAM 1 Review	
	7/26/2023	EXAM 1	Project Posted
	7/27/2023	EXAM 1 Discussion, Project Discussion, Probability	Assignment 3 Posted
Week 4	7/31/2023	Probability (contd.), Prior and Posterior Probabilities	Assignment 3 Due
	8/1/2023	Bayesian Networks	
	8/2/2023	Learning, Decision Trees	
	8/3/2023	Practical Issues with Decision Trees	Assignment 4 Posted
Week 5	8/7/2023	Bayesian Classifiers	Assignment 4 Due
	8/8/2023	Probability estimations, Nearest Neighbor Classifiers	
	8/9/2023	Neural Networks, Backpropagation Learning, EXAM 2 Review	Project Due
	8/10/2023	EXAM 2	

This schedule is tentative and subject to change at instructor's discretion. 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. The exams will be held at regular class times in the same location as lectures (unless otherwise determined by the university).

Institutional Information

UTA students are encouraged to review the below institutional policies and informational sections and reach out to the specific office with any questions. To view this institutional information, please visit the [Institutional Information](https://resources.uta.edu/provost/course-related-info/institutional-policies.php) page (<https://resources.uta.edu/provost/course-related-info/institutional-policies.php>) which includes the following policies among others:

- Drop Policy
- Disability Accommodations
- Title IX Policy
- Academic Integrity
- Student Feedback Survey
- Final Exam Schedule

Additional Information

Face Covering Policy

While the use of face coverings on campus is no longer mandatory, all students and instructional staff are strongly encouraged to wear face coverings while they are on campus. This is particularly true inside buildings and within classrooms and labs where social distancing is not possible due to limited space. If a student needs accommodation to ensure social distancing in the classroom due to being at high risk, they are encouraged to work directly with the Student Access and Resource Center to assist in these accommodations. If students need masks, they may obtain them at the Central Library, the E.H. Hereford University Center's front desk or in their department.

Attendance

Students are expected to attend the Lectures in person. While attendance is not required it is strongly recommended. While the lectures are recorded and posted online through Echo360 system, these are only provided for review purposes and not as a substitute for attending the lectures. If the student misses any of the lectures, it is the student's responsibility to look over the slides/videos/recordings to catch up with the rest of the class and clarify any questions they may have with the instructor.

At the University of Texas at Arlington, taking attendance is not required but attendance is a critical indicator of student success. Each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I will be following the attendance policy described above. However, while UT Arlington does not require instructors to take attendance in their courses, the U.S. Department of Education requires that the University have a mechanism in place to mark when Federal Student Aid recipients "begin attendance in a course." UT Arlington instructors will report when students begin attendance in a course as part of the final grading process. Specifically, when assigning a student, a grade of F, faculty report must the last date a student attended their class based on evidence such as a test, participation in a class project or presentation, or an engagement online via Canvas. This date is reported to the Department of Education for federal financial aid recipients.

Emergency Exit Procedures

Should we experience an emergency event that requires evacuation of the building, students should exit the room and move toward the nearest exit, which is given in the Evacuation Route Maps given below. When exiting the building during an emergency, do not take an elevator but use the stairwells instead. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Evacuation Route Maps: Available [Here](#).

Students should also be encouraged to subscribe to the MavAlert system that will send information in case of an emergency to their cell phones or email accounts. Anyone can subscribe at [Emergency Communication System](#).

Academic Success Center

The Academic Success Center (ASC) includes a variety of resources and services to help you maximize your learning and succeed as a student at the University of Texas at Arlington. ASC services include supplemental instruction, peer-led team learning, tutoring, mentoring and TRIO SSS. Academic Success Center services are provided at no additional cost to UTA students. For additional information visit: [Academic Success Center](#). To request disability accommodations for tutoring, please complete this [form](#).

The IDEAS Center (<https://www.uta.edu/ideas/>) (2nd Floor of Central Library) offers **FREE tutoring** and [mentoring](#) 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.

The English Writing Center (411LIBR)

The Writing Center offers **FREE** tutoring in 15-, 30-, 45-, and 60-minute face-to-face and online sessions to all UTA students on any phase of their UTA coursework. Register and make appointments online at the [Writing Center](https://uta.mywconline.com) (<https://uta.mywconline.com>). Classroom visits, workshops, and specialized services for graduate students and faculty are also available. Please see [Writing Center: OWL](#) for detailed information on all our programs and services.

The Library's 2nd floor [Academic Plaza](http://library.uta.edu/academic-plaza) (<http://library.uta.edu/academic-plaza>) offers students a central hub of support services, including IDEAS Center, University Advising Services, Transfer UTA and various college/school advising hours. Services are available during the [library's hours](#) of operation.

Librarian to Contact

Each academic unit has access to [Librarians by Academic Subject](#) that can assist students with research projects, tutorials on plagiarism and citation references as well as support with databases and course reserves.

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

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