CSE 4308/5360: Artificial Intelligence
Fall 2022

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: **Monday / Wednesday: 12:30 PM – 1:30 PM**
- Location: My office (ERB 553) or via TEAMS chat room (Link in Canvas)

If you are unable to meet during this time, please email instructor to setup an alternate meeting time.

Course Information

Section Information
- CSE 5360 001
- CSE 4308 001 / CSE 5360 005
- CSE 4308 003 / CSE 5360 003
- CSE 4308 004 / CSE 5360 004
- CSE 5360 006

Time and Place of Class Meetings
Class meetings for all sections will be On Campus
- **CSE 5360 001**: NH 203 – **Monday/Wednesday 2:30 PM – 3:50 PM**
- **CSE 4308 001 / CSE 5360 005**: NH 203 – **Monday/Wednesday 4:00 PM – 5:20 PM**
- **CSE 4308 003 / CSE 5360 003**: NH 202 – **Monday/Wednesday 7:00 PM – 8:20 PM**
- **CSE 4308 004 / CSE 5360 004**: COBA 149 – **Tuesday/Thursday 3:30 PM – 4:50 PM**
- **CSE 5360 006**: NH 229 – **Tuesday/Thursday 7:00 PM – 8:20 PM**

Course Webpage
- Course slides, programming assignment problem statements, and sample exam material will be posted on: http://crystal.uta.edu/~gopikrishnav/classes/2022/fall/4308_5360/
- Videos, Submission Links for programming assignments, and 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: $82.70 - $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
There will be several programming assignments in this course. If you find yourself in an emergency and cannot deliver the assignments on time, immediately inform the instructor. The work done for the assignment must be your individual work. Any external resources or code segments you want to use must first be cleared with 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 to official UTA policy**.
The assignments must be coded in base versions of C, C++, Python, Java. Alternatively, they 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). If any partial code is provided as part of the assignment, it will generally be only provided in a limited number of languages. However, you are under no obligation or requirement to use it. Additional details will be announced in class.
All assignments are required. No assignments will be dropped from your final score (unless in case of a documented emergency)
All submissions must be submitted via Canvas. No other methods of submission are accepted under any circumstances.

Late Submission policy for Assignments
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 assignment max points per hour late**. Note that the link to submit the assignment 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 and the course webpage. **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 Quizzes and the Final Examination

There will be five non-cumulative quizzes spread out throughout the course. All quizzes will have equal weight. No quiz scores will be dropped. The quizzes will be held on campus as in-person quizzes barring any new developments in the COVID-19 pandemic. If the university requires quizzes and exams to be moved online, then they will be held online via the Lockdown browser with Respondus monitoring system. The quizzes are closed book/closed notes. However, quiz relevant formulae and algorithms will be provided with the question paper. No other material is allowed during the quiz. Students may also need a non-programmable standard or scientific calculator.

There will be one Final Exam held during finals week that covers all testable material discussed in class during the semester. The exact date, time and location of the Exam will be determined by the university and posted here. 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 the quizzes or from other sources and will have to be submitted along with your exam (more details will be given in class). Students will also need a non-programmable standard or scientific calculator. No other material is allowed during the exam. **Presence of unauthorized material in your notes or in any other form will be treated as cheating and penalized as such**.

For both quizzes and the Final, 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 quizzes, or the exam has to be individual work. **Violations of this will not be tolerated and result in severe penalties for all parties involved, in strict compliance to official UTA policy**.

Quiz and Exam Absence policy

Absence from quizzes 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. In case of excused absence, a makeup quiz covering the same material will be setup and conducted by the instructor at a date before the last day of finals week. **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 quiz.** The dates for all the quizzes are subject to change. Any changes will be announced in class atleast a week in advance.

Absence from the final exam 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 the end of Finals Week. In case of excused absence, the student will be given a grade of Incomplete (I). A makeup final will be setup and conducted by the instructor at a date at some point in Spring 2023 and the grade updated based on the score from that exam. The exact date, time and location of the Exam will be determined by the university and posted here. Students are expected to be available till the last day of finals week. No accommodations/makeup exams will be provided if the student will miss the Final exam due to being unavailable before the last day of finals week due to travel plans.

Description of Lectures
The course will be following a partially flipped classroom model. Videos covering the material to be discussed in class will be provided the week before the start of the class. During the lecture session we will be discussing the concepts and methods covered in the video in more detail along with more examples and collaborative problem-solving sessions. Students are expected to view the video before the lecture so that they can follow along with the material being discussed in class and participate in the problem-solving sessions.

Viewing statistics form the videos along with attendance for the lectures and participation during the problem-solving sessions will be part of your final grade.

Academic Dishonesty Policy
If you are caught colluding or copying in the assignments, quizzes, or the final exam the following consequences will be applied.

Per offence:
- You will be given a score of 0 points for that assignment, quiz, or exam.
- 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 program in C, C++, Python or Java for their programming assignments. If any part of their assignment involves written work, they will also 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 video material posted by the instructor to prepare for the lecture sessions, 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 quizzes or the final exam 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 quizzes and in your final exam.

Material	Contribution to Final score
Average Quiz Score	40 %
Average Assignment Score	20 %
Class Participation Score	5 %
Final Exam	35 %

The quizzes and assignments averages will be calculated with each quiz or assignment contributing equally to the average:

$$Score_{avg} = \frac{\sum_n \left(\frac{Score}{Score_{max}} * 100 \right)}{n}$$

The class participation score will be based on viewing statistics of the class lectures, student participation in the problem-solving sessions and class attendance.

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 Quizzes and Assignments, 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, quizzes or exams will be provided for the purpose of bumping up your grade under any circumstances**.

Grade Grievances

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

Course Schedule (For Sections with Lectures on Monday/Wednesday)

Week	Date	Lec.	Topic
1	8/22/2022	1	Course Details, Overview
	8/24/2022	2	Agents, Solving Problems with search
2	8/29/2022	3	Uninformed Search, Informed Search
	8/31/2022	4	Informed Search (Contd.)
3	9/5/2022		Labor Day - NO CLASS
	9/7/2022		QUIZ 1
4	9/12/2022	5	Game Playing
	9/14/2022	6	Game Playing (Contd.), Constraint Satisfaction Problems
5	9/19/2022	7	Constraint Satisfaction Problems (Contd.)
	9/21/2022	8	Knowledge and Logic Reasoning
6	9/26/2022	9	Knowledge and Logic Reasoning (Contd.)
	9/28/2022		QUIZ 2
7	10/3/2022	10	First Order Logic
	10/5/2022	11	Planning
8	10/10/2022	12	Contingency Planning, Online Replanning
	10/12/2022	13	Probability
9	10/17/2022	14	Prior and Posterior Probabilities
	10/19/2022		QUIZ 3
10	10/24/2022	15	Bayesian Networks
	10/26/2022	16	Bayesian Networks (Contd.)
11	10/31/2022	17	Learning
	11/2/2022	18	Decision Trees
12	11/7/2022	19	Decision Trees (Contd.)
	11/9/2022		QUIZ 4
13	11/14/2022	20	Real World Decision Trees, Bayesian Classifiers
	11/16/2022	21	Bayesian Classifiers (contd.), Probability Estimations
14	11/21/2022	22	Nearest Neighbor Classifiers
	11/23/2022		Thanksgiving Holidays - NO CLASS
15	11/28/2022	23	Intro to Neural Networks, Backpropagation learning
	11/30/2022		QUIZ 5
16	12/5/2022		Final Exam Review Session
	12/7/2022		Student Study Day - NO CLASS
17	12/12/2022		FINAL EXAM - Check MyMav for exact Date & Time
	12/14/2022		FINAL EXAM - Check MyMav for exact Date & Time

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 quizzes will be held at the regular class timing in the same location as lectures. The Final Exam location, date and time is subject to change by the University. Please visit: https://www.uta.edu/records/calendars/final-exams.php to get the updated date, time, and location information (unless otherwise mentioned, location is the same as lectures). Students should be prepared to be available till the end of Finals Week in case of any changes to Final Exam scheduling.

Course Schedule (For Sections with Lectures on Tuesday/Thursday)

Week	Date	Lec.	Topic
1	8/23/2022	1	Course Details, Overview
	8/25/2022	2	Agents, Solving Problems with search
2	8/30/2022	3	Uninformed Search, Informed Search
	9/1/2022	4	Informed Search (Contd.)
3	9/6/2022	5	Game Playing
	9/8/2022		QUIZ 1
4	9/13/2022	6	Game Playing (Contd.), Constraint Satisfaction Problems
	9/15/2022	7	Constraint Satisfaction Problems (Contd.)
5	9/20/2022	8	Knowledge and Logic Reasoning
	9/22/2022	9	Knowledge and Logic Reasoning (Contd.)
6	9/27/2022	10	First Order Logic
	9/29/2022		QUIZ 2
7	10/4/2022	11	Planning
	10/6/2022	12	Contingency Planning, Online Replanning
8	10/11/2022	13	Probability
	10/13/2022	14	Prior and Posterior Probabilities
9	10/18/2022	15	Bayesian Networks
	10/20/2022		QUIZ 3
10	10/25/2022	16	Bayesian Networks (Contd.)
	10/27/2022	17	Learning
11	11/1/2022	18	Decision Trees
	11/3/2022	19	Decision Trees (Contd.)
12	11/8/2022	20	Real World Decision Trees, Bayesian Classifiers
	11/10/2022		QUIZ 4
13	11/15/2022	21	Bayesian Classifiers (contd.), Probability Estimations
	11/17/2022	22	Nearest Neighbor Classifiers
14	11/22/2022	23	Intro to Neural Networks, Backpropagation learning
	11/24/2022		Thanksgiving Holidays - NO CLASS
15	11/29/2022		Final Exam Review Session 1
	12/1/2022		QUIZ 5
16	12/6/2022		Final Exam Review Session 2
	12/8/2022		FINAL EXAM - Check MyMav for exact Date & Time
17	12/13/2022		FINAL EXAM - Check MyMav for exact Date & Time

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 quizzes will be held at the regular class timing in the same location as lectures. The Final Exam location, date and time is subject to change by the University. Please visit: https://www.uta.edu/records/calendars/final-exams.php to get the updated date, time, and location information (unless otherwise mentioned, location is the same as lectures). Students should be prepared to be available till the end of Finals Week in case of any changes to Final Exam scheduling.

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 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 all lectures. Attendance will be taken during every lecture and will be part of your final grade (as part of class participation). They are also encouraged to actively participate during problem-solving and Q and A sessions. 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. 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

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:

- COBA [149](#)
- NH [202](#)
- NH [203](#)
- NH [229](#)

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). 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) 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

#######