

EAE 6900-023: Artificial Intelligence for Games

Spring 2019

Thursdays / 06:00PM to 09:00PM (MT)

M LI (Marriott Library), Room 1009

3 Credit Hours

Prerequisites. "C-" or better in EAE 6310 OR Permission of the Instructor.

This class does not meet a General Education Requirement.

COURSE ORGANIZATION

Instructor

Rogelio E. Cardona-Rivera (Pronouns: he/him or they/them)

Phone: +1 385 350-2770

Email: rogelio@eae.utah.edu

Office: MEB #3450 and Building 72 #214

Office Hours: By appointment.

I generally have my office door open when I'm around, so please feel free to stop by any time; however, just because I'm in my office doesn't mean I'm available to meet and I reserve the right to ask you to schedule an appointment.

Teaching Assistant

Name TBD

Phone: TBD

Email: TBD

Office: TBD

Office Hours: TBD

Course Website

TBD

It is the student's responsibility to check their official email address and the Canvas website at least once daily. Failure to do so does not excuse missed deadlines.

Communication Plan

We will be using the Canvas website. The discussion forum is the preferred medium for interacting with the instructor and the teaching assistant (as opposed to emailing directly). If the question is personal (for example, a discussion about a grade on an assignment) then you should not hesitate to use the instructor's email. For any other questions, you should use the class mailing forum. The reasoning behind this is the following:

- This gives you access to a much larger pool of potential help (if someone gives you bad advice I will respond and clarify).
- This helps others who might be having the same problem or will run into the problem in the future (similarly, this helps me by not having to answer the same question multiple times).

COURSE INFORMATION

Description. In this course we will examine both traditional and modern artificial intelligence (AI) techniques that are used in the design of computer games. We will look at techniques for game playing as well as the design of AI agents tasked with creating targeted experiences for players. The course will begin with a discussion of AI in general, as well as common algorithms, data structures, and representations. From there, we will cover topics in character movement, pathfinding, decision making, strategy, tactics, and learning — all within the context of computer game design.

Overview. There is a vast array of artificial intelligence techniques available for the design of computer games. This course conceptually groups them into two broad categories: Traditional and Modern. Traditional techniques are ones that most game AI engineers are expected to intuitively know and are themselves classified into two types: Character AI (encompassing animation, physics, movement, and decision making) and Group AI (encompassing group dynamics, behavior, and strategy). Modern techniques are ones that are receiving a lot of attention in the modern games industry. While there is no systematic classification of modern techniques, I have selected classes of techniques that students, practitioners, and academics are actively interested in. These are: Procedural Content Generation, Player Modeling, Interactive Storytelling, and Learning. We will also cover select cases from the industry that I feel are landmark developments in the field.

Text. This class is designed around the following textbook:

- Millington, Ian, and John Funge. *Artificial Intelligence for Games* (2nd Ed.). CRC Press, 2009.

The above textbook is suggested, but is not required. I have found it to be a useful reference book to own. In addition, other texts that will be referenced in this class are:

- Yannakakis, Georgios N., and Julian Togelius. *Artificial Intelligence and Games*. Springer, 2018
- Mark, D. "Behavioral Mathematics for Game AI. Charles River Media." (2009).

Other Course Materials. Details of all work will be posted on the course website. There will be no handouts or slides available; students are ***strongly*** encouraged to come to class.

Course Objectives. In this course, I will cover:

1. Traditional artificial intelligence techniques within computer game design and development, which focus on non-player character movement and behavior.
2. Modern artificial intelligence techniques within computer game design and development of interest to students, practitioners, and academics.
3. How to evaluate computer game artificial intelligence techniques in terms of runtime performance and overall effect to the player's experience.
4. Important and developing industry cases for the development of artificial intelligence techniques in computer games.

Learning Outcomes. At the end of this course, you will be able to:

1. Develop software code for a range of artificial intelligence techniques used in traditional and modern computer games.
2. Describe the performance of artificial intelligence techniques used in traditional and modern computer games.
3. Choose, develop, explain, and defend the use of particular artificial intelligence techniques for solving particular game design problems.
4. Evaluate the relative benefits and drawbacks of different artificial intelligence techniques that can be used to solve computer game design problems.
5. Identify and examine state-of-the-art artificial intelligence techniques from the industry and academia to solve computer game design problems.

Evaluation Methods and Criteria. This class is designed as a multiplayer role-playing game.¹ Class time will be divided between completing quests (reading reflections, presentations) and crafting (assignments, project). There will be no bosses (examinations).

You begin on the first day of class as a Level One *Pupil* with 0 experience points (XP). Level Twelve is the highest level you can achieve. Your level will be determined by XP on a 2000 XP scale. Your XP maxes out at 2000, but there is more than 2000 XP available to earn in this game. You earn XP by completing tasks (quests and crafting). The tasks vary in amount of possible XP you can possibly earn. Note that merely attempting a task is not a guarantee of XP. This is because XP is not a reward, it is a measure of your mastery; you must exhibit mastery to have your XP reflect it.

- Assignments (up to 1200XP) — There will be three multi-week homework assignments, or mini-projects, related to the lecture material; with each, you can earn up to 400XP. These assignments will require you to implement and/or evaluate some of the algorithms or techniques we are covering during course lectures and will result in increasingly sophisticated AI implementations. These assignments are one way of assessing Learning Outcomes 1, 2, and 4. More details of the assignments can be found on the course website.
- Term Project (up to 600XP) — There will be a semester-long group project on a topic of your choosing (approved by the instructor). The project is an 8-week student-directed inquiry, with which you can earn up to 600XP. The goal of the project is to explore a game AI technique within a working game. A successful project will likely bring together one or more of the techniques we discuss in class to produce a designed experience. You should also devise a method to evaluate the performance of your technique. By default, the group project will consist of building software that implements an AI technique for an EAE Masters Thesis game. However, your choice of game and AI technique is completely up to you and your teammate(s). Bear in mind that your AI technique should enable something interesting to occur in the game that didn't already occur before your implementation. This group project is one way of assessing Learning Outcome 3 and 4. More details of the group project will be found on the course website.
- Game AI Competition Bots (up to 600XP) — Every year, Game AI researchers host a variety of Game AI competitions to advance the state-of-the-art in their respective subfields. You

¹ Adapted from: Sheldon, Lee. The multiplayer classroom: Designing coursework as a game. Cengage Learning, 2011.

may “enter” into a competition — in other words, develop an AI system capable of competing as well as a writeup of your system — and earn up to 600XP. There are several competitions that are well-known, which I recommend:

- ▶ The General Video Game AI Competition
<http://www.gvgai.net/index.php>
- ▶ The Mario AI Competition: Level Generation Track
<http://www.marioai.org/LevelGeneration>
- ▶ The Multi-Agent Reinforcement Learning in Minecraft (MARLO) Competition
<https://www.crowdai.org/challenges/marlo-2018>

If you are interested in pursuing this, you must let the instructor know no later than the 9th week of the semester (before leaving for Spring Break) via a letter of intent. This competition is one way of assessing Learning Outcomes 3, 4, and 5. More details of the Game AI Competition Bots will be found on the course website.

- Reading Reflections (up to 300XP) — During the course of the semester, you may turn in 10 critical reading reflections showing deep understanding of state-of-the-art artificial intelligence techniques from the industry and academia to solve computer game design problems; with each, you can up to 30XP. This reflection can take many forms: a one-page paper (600-700 words approximately), a YouTube video of approximately 7 (edited!) minutes, a 2-page comic, an infographic, an interpretive dance...or anything else you can think of, so long as it shows a clear connection to and understanding of the state-of-the-art techniques. These reflections are one way of assessing Learning Outcome 5. More details of the reading reflections can be found on the course website.
- GDC AI Summit Review (up to 200XP) — The Game Developer’s Conference (GDC) offers two days of Summits: in-depth, focused, full-day gatherings of professionals centered on discussing specific aspects of game design and development. The AI Summit focuses on key AI architectures and issues within successful commercial games. In the week after GDC, you may sign up to give a 25-minute talk that covers your in-depth experience at this year’s AI Summit, for which you can earn up to 200XP. Because we have a finite amount of time, there are six slots, assigned first-come first-served. Students selected to present will be expected to lead a discussion of their experience. This review is one way of assessing Learning Outcome 5. More details of the GDC AI Summit Review will be found on the course website.

Tasks also vary in type. There are three types.² These types do not affect your standing in class and are primarily for your own understanding of the kind of task you are pursuing.

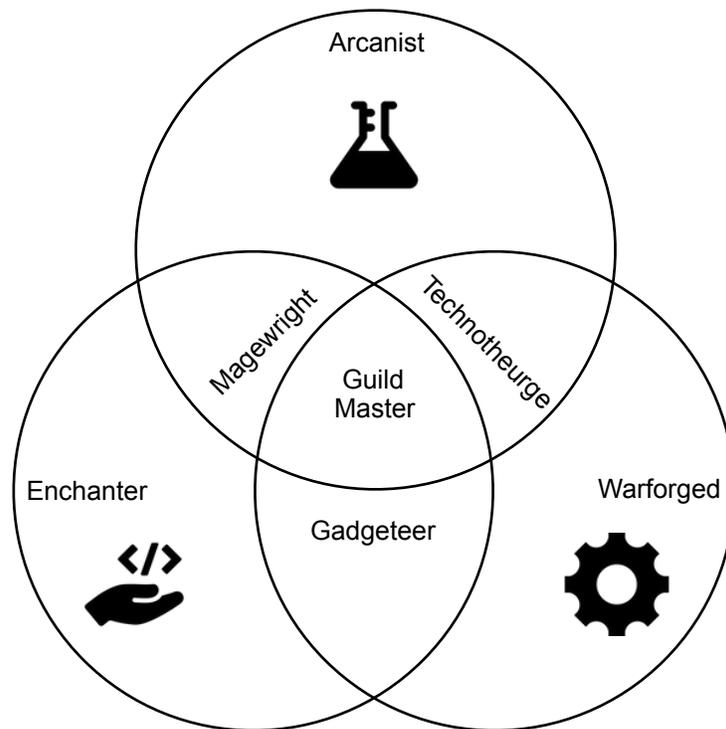
<p>Programming</p> 	<p>Engineering</p> 	<p>Research</p> 
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² programming (icon) by Adrien Coquet; Beaker (icon) by shashank singh; cog (icon) by lastspark from the Noun Project

Programming	Engineering	Research
<p>The process of designing and building an executable computer program for accomplishing a specific computing task. Programming involves tasks such as analysis, generating algorithms, profiling algorithms' accuracy and resource consumption, and the implementation of algorithms in a chosen programming language (referred to as "coding").</p>	<p>The creative application of science, mathematical methods, and empirical evidence to the innovation, design, construction, operation, and maintenance of structures, machines, materials, devices, systems, processes, and organizations to fulfill objectives and requirements while considering the limitations imposed by practicality, regulation, safety, and cost.</p>	<p>Creative and systematic work undertaken to increase the stock of knowledge, including knowledge of humans, culture and society, and the use of this stock of knowledge to devise new applications. It is used to establish or confirm facts, reaffirm the results of previous work, solve new or existing problems, support theorems, or develop new theories.</p>

Of all the available XP you can earn, I have tried to ensure as close a balance between available Programming, Engineering, and Research task XP. While all types of XP are equally valid (for your letter grade) and important (for your career), the distribution of your XP will determine what class (type of professional) you evolve into. Classes are only available when you get to 1400XP.

What kind of Game AI mastery do you want to pursue?



At 1400 XP (Level 5) and above, you may earn your class:

- Enchanter
 - ▶ 600XP in Programming
- Warforged
 - ▶ 600XP in Engineering

Syllabus v.1

- Arcanist
 - ▶ 600XP in Research

At 1600 XP (Level 8) and above, you may earn your specialization:

- Technotheurge
 - ▶ Warforged + 350XP in Research **or** Arcanist + 350XP in Engineering
- Gadgeteer
 - ▶ Warforged + 350XP in Programming **or** Enchanter + 350XP in Engineering
- Magewright
 - ▶ Arcanist + 350XP in Programming **or** Enchanter + 350XP in Research

At 1800 XP (Level 11) and above, you may earn the title:

- Guild Master
 - ▶ 600XP in Programming + 600XP in Engineering + 600XP in Research

Grade Scale. This course uses the XP curve outlined below (adapted from the standard grading scale for the University of Utah). I will not strive for game balancing (in other words, grade on a curve), at least not in the traditional sense. This means that it is possible for everyone in the class to get to level 12.

Level	XP	Letter Grade	Grade Points	Explanation
12	1860	A	4.0	Excellent performance, superior achievement
11	1800	A-	3.7	
10	1740	B+	3.3	Good performance, substantial achievement
9	1660	B	3.0	
8	1600	B-	2.7	
7	1540	C+	2.3	Standard performance and achievement
6	1460	C	2.0	
5	1400	C-	1.7	
4	1340	D+	1.3	Substandard performance, marginal achievement
3	1260	D	1.0	
2	1200	D-	0.7	
1	0	F	0.0	Unsatisfactory performance and achievement

Teaching and Learning Methods. This course will primarily be lecture-based, with in-class discussions around material, assignments, and projects and out-of-class assignments, projects, and reflections. Lectures are used because a great deal of the algorithmic techniques for game AI are fairly standardized and I believe the best approach to learning them is to first engage with them in a traditional lecture and then pursue their implementations via assignments. Lectures will not use computer slides, and will instead rely on me writing on the whiteboard the concepts that are relevant for discussion. In-class discussions allow us as a class to identify problem areas; for example, if the entire class struggles on a particular assignment I will definitely take that into account during grading and subsequent lectures. Assignments, projects, and reflections are meant for you to engage deeply with course material to evidence mastery of the concepts you must learn for applying artificial intelligence techniques to the design of games.

I recognize students as essential co-creators of their education, and therefore design instructional material to empower them to create, reflect, and imagine. My teaching philosophy is thus engineering-based: I seek to engage you via a hands-on approach to education, focused on creating artifacts that concretizes ideas and exposes new ambiguities that arise from the need to be computationally precise.

Schedule

The schedule is subject to change pending student interests and background. The official schedule will be kept on the course webpage, and will be updated periodically to reflect changes as the semester progresses. It is the student's responsibility to check the schedule regularly for changes. The instructor will communicate any changes in deadlines to students in a timely manner via email and/or announcements in class.

Week	Date	Topics	Due
<i>Introduction to the Course</i>			
1	1/10/19	Syllabus Discussion Introduction: Roles of AI in Game design, Models of Game AI, Complexity Movement: Kinematics, Steering Behaviors	
<i>Classic Techniques: Character AI</i>			
2	1/17/19	Movement: Coordinated Behaviors Pathfinding: Navmeshes	Reading Reflection 1
3	1/24/19	Pathfinding: Graphs, Search, Motion Planning	Reading Reflection 2
4	1/31/19	Decision Making: Decision Trees, State Machines, Behavior Trees, Fuzzy Logic	Assignment 1; Reading Reflection 3

Syllabus v.1

5	2/7/19	Decision Making: Goal-Oriented Behavior, Rule-based Systems, Action Execution	Informal Project Proposal; Reading Reflection 4
<i>Classic Techniques: Group AI</i>			
6	2/14/19	Decision Making/Strategy: Blackboard, Waypoint Tactics, Tactical Analyses	Reading Reflection 5
7	2/21/19	Decision Making/Strategy: Game Theory, Minimizing, Utility Theory	Formal Project Proposal; Reading Reflection 6
<i>Modern Techniques and Case Studies</i>			
8	2/28/19	Learning: Decision Tree Learning, Naive Bayes, Reinforcement Learning, Artificial Neural Networks	Assignment 2; Reading Reflection 7
9	3/7/19	Artificial Stupidity, Intelligent Mistakes, Games: Halo: Combat Evolved, F.E.A.R., Left4Dead, Alien: Isolation	Reading Reflection 8; Game AI Competition Letter of Intent
10	3/14/19	Spring Break (No Class)	
11	3/21/19	Instructor out on travel for GDC (No Class)	
12	3/28/19	GDC AI Summit Review	GDC AI Summit Review Presentation; Project Progress Report
13	4/4/19	Interactive Storytelling: Automatic Camera Control, Procedural Narrative Generation	Assignment 3; Reading Reflection 9
14	4/11/19	Procedural Content Generation: PCG Mechanics-Dynamics-Aesthetics, Perlin Noise, WaveFunctionCollapse	Reading Reflection 10
15	4/18/19	Player Modeling: Model-based v. Model-free Approaches	Game AI Competition Software and Report
<i>The End Game: Class Project Presentations</i>			
Final	TBD	Game AI Project Presentations	Project Software, Report, and Presentation

COURSE POLICIES

In the sections that follow, you will find the policies that govern the structure of this course. The policies are specified at three different levels: Class and Classroom Policies, College Policies, and University Policies. For some policies, I will make reference to specific sections of the University of Utah's Regulations (<https://regulations.utah.edu/academics/>) that I want to emphasize. You should interpret this as an indication that special attention will be paid to that specific portion of the policy. However, you are still required to abide by the entire policy in question.

Class and Classroom Policies

Attendance and Punctuality. Attendance at class sessions is not required; however, absences that are unexcused according to the University of Utah's Excused Absence Policy (Policy 6-100III-O; <https://regulations.utah.edu/academics/6-100.php>) and that result in late assignments or missed announcements may negatively affect students' grades. Documented medical excuses or other excused absences will not adversely affect grades. Conference travel or other scholarly duties discussed well in advance of a missed session may be excused at the discretion of the instructor. While regular attendance of lectures is not required, it is ***strongly*** encouraged. If you decide to attend class, *please* be punctual. Entering the classroom late disrupts everyone engaged in classroom activities.

Participation Policy. Active participation in class activities and discussions is expected and ***strongly*** encouraged but not explicitly evaluated. My assessment of your participation is *highly subjective* and thus will never hurt your grade, but it may help your grade: In cases where I feel that you have actually been a better student than your Level would indicate — as evidenced by your participation in class — I may (at my discretion) choose to give you a better letter grade than you would have otherwise received. Below, you will find my rubric for assessing participation, reproduced from the Eberly Center for Teaching Excellence's at Carnegie Mellon University (www.cmu.edu/teaching/assessment/):

	Exemplary	Proficient	Developing	Unacceptable
Frequency of Participation in Class	Student initiates contributions more than once in each recitation.	Student initiates contribution once in each recitation.	Student initiates contribution at least in half of the recitations.	Student does not initiate contribution & needs instructor to solicit input.
Quality of Comments	Comments always insightful & constructive; uses appropriate terminology. Comments balanced between general impressions, opinions & specific, thoughtful criticisms or contributions.	Comments mostly insightful & constructive; mostly uses appropriate terminology. Occasionally comments are too general or not relevant to the discussion.	Comments are sometimes constructive, with occasional signs of insight. Student does not use appropriate terminology; comments not always relevant to the discussion.	Comments are uninformative, lacking in appropriate terminology. Heavy reliance on opinion & personal taste; for example: - "I love it" - "I hate it" - "It's bad"

	Exemplary	Proficient	Developing	Unacceptable
Listening Skills	Student listens attentively when others present materials, perspectives, as indicated by comments that build on others' remarks. In other words: student hears what others say & contributes to the dialogue.	Student is mostly attentive when others present ideas, materials, as indicated by comments that reflect & build on others' remarks. Occasionally needs encouragement or reminder from instructors of focus of comment.	Student is often inattentive and needs reminder of focus of class. Occasionally makes disruptive comments while others are speaking.	Does not listen to others; regularly talks while others speak or does not pay attention while others speak; detracts from discussion; sleeps.

Food and Drink Policy. You are welcome to bring food and drink into the class insofar it is not disruptive to the rest of the class. It is my responsibility to maintain a climate conducive to thinking and learning. You are required to clean up after yourself.

Electronic Devices in Class Policy. By default, laptop use is prohibited. As indicated in a recent article by Scientific American, students are better off without a laptop in the classroom:

- Nonacademic Internet use was common among students who brought laptops to class and was inversely related to class performance. [Ravizza, Susan M., Mitchell G. Uitvlugt, and Kimberly M. Fenn. "Logged in and zoned out: How laptop internet use relates to classroom learning." *Psychological science* 28.2 (2017): 171-180.]
- Facebook and internet use increased when people were bored with an ongoing task. [Mark, Gloria, et al. "Bored Mondays and focused afternoons: the rhythm of attention and online activity in the workplace." *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2014.]
- Students reported that they texted in class as a result of boredom. [Clayson, Dennis E., and Debra A. Haley. "An introduction to multitasking and texting: Prevalence and impact on grades and GPA in marketing classes." *Journal of Marketing Education* 35.1 (2013): 26-40.]
- People perceive fun tasks as taking less time than dull tasks (and so it is possible that time spent enjoying social media or video sites is misperceived as short). [O'Brien, Edward H., Phyllis A. Anastasio, and Brad J. Bushman. "Time crawls when you're not having fun: Feeling entitled makes dull tasks drag on." *Personality and Social Psychology Bulletin* 37.10 (2011): 1287-1296.]
- Social networking sites can be addictive for some people. [Ryan T, Chester A, Reece J, Xenos S. The uses and abuses of Facebook: A review of Facebook addiction. *J Behav Addict.* 2014;3(3):133-48.]
- Multitasking laptop users also distract their classmates, as peers with a direct view of those laptops suffer academically. [Sana, Faria, Tina Weston, and Nicholas J. Cepeda. "Laptop

multitasking hinders classroom learning for both users and nearby peers." *Computers & Education* 62 (2013): 24-31.]

- Taking notes by hand is more effective than doing so with a laptop. [Mueller, Pam A., and Daniel M. Oppenheimer. "The pen is mightier than the keyboard: Advantages of longhand over laptop note taking." *Psychological science* 25.6 (2014): 1159-1168.]

Any and all other electronic devices are required to be off or silenced and stored away during the duration of the class session. There are only three exceptions to the default rule:

5. I've explicitly given permission to use laptops for some task. If I haven't but you think some task is laptop-suitable, ask. I may want you to think about it instead of blindly typing it in. When the task ends, you have to close your laptop (the screen must no longer be visible and you must cease typing).
6. You have some documentable reason that requires laptop use. If so, please discuss it with me beforehand. Also, in light of the rest of this document, I would appreciate your positioning yourself in class in a way that your laptop's screen will not distract others. Note that this does not mean you have to relegate yourself to the back; perhaps that isn't where you would like to sit! But closer to the ends of rows would help.
7. Emergencies.

Plagiarism Software Policy. I may elect to use a plagiarism detection service in this course, in which case you will be required to submit any/all work to such a service as part of your assignment. In the event that such a software detects plagiarism, all affected students will be required to submit to further evaluation at the discretion of the instructor. Students found in violation of the University's Student Code will be subject to consequences to the fullest extent of University Regulation.

Online Submissions Policy. You are responsible for submitting all assignments with the required naming convention, correct file extension, and using the software type and version required for the assignment.

Electronic or Equipment Failure Policy. It is your responsibility to maintain your computer and related equipment in order to participate in the course. Equipment failures will not be an acceptable excuse for late or absent assignments. Outages due to University of Utah equipment failures that prohibit you from submitting an assignment will be handled on a case-by-case basis in order to ensure that you are given an adequate amount of time to submit the assignment. Such outages will be considered only if officially reported through the University of Utah's Internet Technologies website, <https://it.utah.edu/help/> (at the *System Status* link, under the *Status/History* tabs).

Late Assignments / Missed Assignments Policy. Completed assignments should be turned in by the beginning of the class period on the date they are due. For assignments for which email or other electronic submission is requested, the submission should be completed before the start of the class period on the date they are due.

Every student has four 24 hour periods which they may allocate to late assignments throughout the semester at a cost of 20XP per fraction of 24 hour period. For example, a student who

submits the first assignment two days, three hours, and 27 minutes late (and receives 60XP off of their quest) only has one 24 hour period remaining for all subsequent assignments.

Once the allotment of four days has been used, there will be no more late submissions accepted and the student will obtain no XP in the respective assignment.

Accommodation Policy. Students are expected to take courses that will challenge them intellectually and personally. Students must understand and be able to articulate the ideas and theories that are important to the discourse within and among academic disciplines. Personal disagreement with these ideas and theories or their implications is not sufficient grounds for requesting an accommodation. Accommodations requested on such grounds will not be granted. The University recognizes that students' sincerely-held core beliefs may make it difficult for students to fulfill some requirements of some courses or majors. The University assumes no obligation to ensure that all students are able to complete any major. It is the student's obligation to determine, before the last day to drop courses without penalty, when course requirements conflict with the student's sincerely-held core beliefs. If there is such a conflict, the student should consider dropping the class. A student who finds this solution impracticable may request a content accommodation from the instructor. Though the University provides, through this policy, a process by which a student may make such a request, the policy does not oblige the instructor to grant the request, except in those cases when a denial would be arbitrary and capricious or illegal. This request must be made to the instructor in writing, and the student must deliver a copy of the request to the office of the department Chair or, in the case of a single-department college, to the office of the Dean. The student's request must articulate the burden the requirement would place on the student's beliefs.

The University of Utah's Accommodations Policy can be found here: Policy 6-100III-Q; <https://regulations.utah.edu/academics/6-100.php>. Students are responsible for being aware of the information contained therein.

Student Names & Personal Pronouns Statement. Class rosters are provided to the instructor with the student's legal name as well as "Preferred first name" (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise me of any name or pronoun changes (and update CIS) so I can help create a learning environment in which you, your name, and your pronoun will be respected. If you need assistance getting your preferred name on your UIDcard, please visit the LGBT Resource Center Room 409 in the Olpin Union Building, or email bpeacock@sa.utah.edu to schedule a time to drop by. The LGBT Resource Center hours are M-F 8am-5pm, and 8am-6pm on Tuesdays.

Faculty and Student Responsibilities. Students as well as faculty are entitled to academic freedom and autonomy in their intellectual pursuits and development. Teachers must therefore treat students with courtesy and respect. They must not require students to accept their personal beliefs or opinions and must strive in the classroom to maintain a climate conducive to thinking and learning. They must not misuse their position, authority, or relationship with students. Likewise, it is the faculty's responsibility to enforce responsible classroom behaviors, beginning with verbal warnings and progressing to dismissal from class and a failing grade. Students have the right to appeal such action to the Student Behavior Committee.

College of Engineering Policies

Semester Guidelines. The College of Engineering Semester Guidelines contain important dates regarding adding, dropping and withdrawing from classes as well as the College Policy regarding repeating courses. To consult the guidelines, go to: https://www.coe.utah.edu/wp-content/uploads/pdf/faculty/semester_guidelines.pdf. Students are responsible for being aware of the information contained therein.

University Policies

The Americans with Disabilities Act. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 801-581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

If you anticipate issues related to the format or requirements of this course, please meet with me. I would like us to discuss ways to ensure your full participation in the course.

Addressing Sexual Misconduct. Title IX makes it clear that violence and harassment based on sex and gender (which includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

Code of Conduct. Students are required to abide by the Code of Student Rights and Responsibilities (the "Student Code") for the University of Utah. The Student Code for the University of Utah can be found at: <http://regulations.utah.edu/academics/6-400.php>. Students are responsible for being aware of the information contained therein.

All students are expected to maintain professional behavior in the classroom setting, according to the Student Code (Policy 6-400), spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc.

Plagiarism means the intentional unacknowledged use or incorporation of any other person's work in, or as a basis for, one's own work offered for academic consideration or credit or for public presentation. Plagiarism includes, but is not limited to, representing as one's own, without attribution, any other individual's words, phrasing, ideas, sequence of ideas, information or any other mode or content of expression (Policy 6-400, Student Code).

University Resources

ASUU Tutoring Center. The ASUU Tutoring Center provides individual tutoring (\$7 per hour) and group tutoring sessions (\$4 per hour) for currently enrolled University of Utah students. Students can receive assistance for a wide range of subjects at a reasonable rate, thanks to the Associated Students of the University of Utah who help defray the cost of tutoring. Tutoring is very flexible. Depending on the availability of the tutor you select, appointments may be set for any time including evenings and weekends, and always at a location that is convenient for the tutor and student. For additional information call 801-581-5153 or visit the ASUU Tutoring Center in Rm. 330 SSB. <http://tutoringcenter.utah.edu>.

Center for Wellness & University Counseling Center. Personal concerns such as stress, anxiety, relationship difficulties, depression, cross-cultural differences, etc., can interfere with a student's ability to succeed and thrive at the University of Utah. For helpful resources contact the Center for Student Wellness - www.wellness.utah.edu; 801-581-7776; and the University Counseling Center: <http://counselingcenter.utah.edu>, 801-581-6826.

LGBT Resource Center. The University of Utah has an LGBT Resource Center on campus. They are located in Room 409 in the Oplin Union Building. Hours: M-F 8-5pm. You can visit their website to find more information about the support they can offer, a list of events through the center and links to additional resources: <http://lgbt.utah.edu/>. Please also let me know if there is any additional support you need in this class.

Office of Equity and Diversity. The University of Utah is deeply committed to enhancing the success of diverse faculty, students, and staff, as part of our broader goal to enrich the educational experiences and success of all members of our University community. We recognize that a diverse and inclusive University enriches the educational experiences of all students, and enhances our excellence as a world-class institution for 21st Century learners. The Office for Equity and Diversity is proud to lead the University's efforts to support the success and achievement of faculty, students, and staff who self-identify as African American, Latina/o or Chicana/o, Asian American, Pacific Islander, American Indian, members of the Lesbian, Gay, Bisexual, Transgender and Questioning community, and women in underrepresented fields. <http://diversity.utah.edu>, 801-581-7569.

Women's Resource Center. The Women's Resource Center (WRC) at the University of Utah serves as the central resource for educational and support services for women. Honoring the complexities of women's identities, the WRC facilitates choices and changes through programs, counseling, and training grounded in a commitment to advance social justice and equality. <http://womenscenter.utah.edu>

The Writing Center. If writing is difficult for you, if you're new to college and don't yet feel quite able to meet college writing expectations, or if you simply would like to improve your writing, I encourage you to visit the Writing Center: www.writingcenter.utah.edu. 801-587-9122.

Veterans Center. If you are a student veteran, I want you to know that the U of Utah has a Veterans Support Center on campus. They are located in Room 161 in the Olpin Union Building. Hours: M-F 8-5pm. Please visit their website for more information about what support they offer, a list of ongoing events and links to outside resources: <http://veteranscenter.utah.edu/>. Please also let me know if you need any additional support in this class for any reason.

NON-CONTRACT NOTE

This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.

ACKNOWLEDGEMENTS

This syllabus is based in part on prior syllabi developed by Dr. David L. Roberts, Dr. Ashley M. L. Brown, Dr. Mark Riedl, John-Paul Ownby, Lee Sheldon, Dr. Roger A. Altizer, and Dr. Shriram Krishnamurthi. Special thanks to Kenny Green for the design of the class system.