

Midwestern State University
Department of Computer Science
Spring - 2022

Course Information

Course syllabus: Artificial Intelligence
Course number: CMPS 4233.
Course Section: 201.
Class Days: Tuesday and Thursday
Class Time: 9:30 am to 10:50 pm
Classroom: Bolin 320.

Instructor Information

Instructor's Name: Doctor Eduardo Colmenares.
Instructor's office: Bolin Hall, office 126C.
Instructor's email: eduardo.colmenares@msutexas.edu

Office Hours

All office hours will be virtual via zoom.

Mondays 9:00 am to 11:00 am
Tuesdays 3:30 pm to 4:30 pm
Wednesdays 9:00 am to 11:00 am

ZOOM information

[Zoom Link](#)

Course Description

This course provides a strong introduction to multiple topics of relevance in the area of Artificial Intelligence. Concepts to be presented will map well into Machine Learning, Deep Learning and Data Science. The student will become familiar with python programming (numpy), and concepts such as gradient descent, forward and back-propagation, neuron, layer, batch, virtual environments among many others. Once these concepts have been mastered the student will be able to not only use but also understand what the function calls from different AI Frameworks such as Tensorflow & Keras are doing.

Textbook (not required)

Material from multiple books, articles will be used by your instructor. Class material will be extracted from up to date, relevant and friendly open source resources.

Required Software

Initially: Jupyter notebook, Anaconda python (python 3 not 2), Keras, Tensorflow, scipy, numpy. As the semester progresses your instructor will let you know if additional software is needed.

Required Hardware:

A regular traditional computer with camera. No android devices, No chrome books. You do not have to buy a laptop, but you will need to bring a laptop to class, from time to time.

Evaluation Process

The final grade for this course will be based on participation, projects and exams. A description is provided below:

- You will have two tests (T1 and T2), plus one final exam (FE). T1 and T2 are worth 15 percent each, the final exam is worth 15 percent.
- You will have a Final project in which you will apply many of the learned concepts. This project is worth 12 percent.
- The next category is participation. This will count for 10 percent of your final grade. Please be aware that this category includes in-class-activities (ICAs) and quizzes. Below you will find additional information about this category.
 - Assignments given in class, also known as in-class-activities (ICAs) will be unannounced in nature.
 - Quizzes will be non-pop-up quizzes.
 - No makeup participation assignments are given.
 - Arriving late, leaving early to class voids the right to take a quiz or in class activity if it already started or it is about to start. This will be enforced.
- Attendance will be a component of your grade, more details below.

Evaluation Process Summary Table

Category	Percentage
Test 1	15%
Test 2	15%
Final Exam	15%
Homework	28%
Participation (Quizzes)	10%
Attendance	5%
Project	12%

Grading Policy

90 to 100 points is an A.

80 to 89.99 points is a B.

70 to 79.99 points is a C.

60 to 69.99 points is a D.

0 to 59.99 points is an F.

Required Hardware

- Regular traditional PC/Mac. Chromebooks are NOT allowed since they do not work really well with D2L.
- At home printer and paper

Attendance

- Attendance is a component of the course grade (FIVE percent). Each student will begin with 100 points for their attendance grade. For each additional unexcused absence 33.33 points will be subtracted from the attendance grade.
- Your instructor will go over the class roster at the beginning of class and will call the students by name, if the student is not present at that time, an absence will be given and not removed after arrival. Arriving late will be considered unexcused absence. The Attendance grade is 100% under the student's control.

- After five (4) unexcused absences the student will be dropped from the class (To be enforced).
- Additional class attendance related MSU Policies apply.

Tests

Tests are comprehensive in nature. No make-up exams will be given, except for the following cases:

- Properly documented Surgery, Medical Emergency, Death in the family, Presentation at a Conference, some others as determined by the instructor.
- If you miss an exam, the make-up exam you need to notify the instructor and demonstrate with the proper official documentation (signatures, seals, contact information) that an emergency that you could not circumvent existed. This documentation must be presented not later than 24 hours after the test.
 - a. Students who miss an exam due to University business should notify the instructor in advance, and present the sponsoring university member's written justification.
 - b. If your instructor cannot verify or validate the given documentation, then it will consider invalid and no make-up exam will be given.

If you do miss an exam and your case fall in one of the categories above this means that you have a properly documented case. Your instructor will proceed to assign a temporary grade of zero, which will be substituted for your excused test grade (Final Exam). However, this substitution can only be performed once during the semester. Exams are uniquely composed for each term.

Final Exam

- There is no make-up final exam. The final exam will take place in our regular classroom (unless decide otherwise by the University). It is the student's responsibility to keep track of the designated date, time. A complete list of all MSU exams (by time) can be found at [Final Exam Schedule](#).
- The date of our final exam is Tuesday, May the 9th from 8:00 am to 10:00 am.
- There is no make up for the final exam.

No Procrastination Policy

Students are strongly encouraged to contact the instructor during office hours to clarify questions associated with lectures, exams, assignments, presentations, quizzes, homework, etc. Questions are more than welcome from the moment the assignments, projects, quizzes, exams are either released or announced, however, all questions stop the day before the assignment, exam, quiz, presentation is due. This rule is designed to promote responsible time management and personal organization.

Late Policy & Deadlines

- Submitted work is due when specified, as specified (format) by the instructor. It is in the student's best interest to keep track of all deadlines.
- The instructor is not required to remind students of ANY date and/or deadline associated with tests, homework, reports, project assignment, etc.
- **Late assignments WILL NOT BE ACCEPTED. This rule will be enforced**

- **What does it mean to be late?** Answer: for example, if your assignment is due today at 8:00 am and you attempt to deliver your report by 8:00:01 am (1 second late) then it will be considered late. There will not be exemptions of any kind.
- **Assignments MUST be submitted to the corresponding Dropbox via D2L before it closes (deadline).** If the Dropbox has closed and you cannot upload your assignment to it, then you are late and your assignment will not be accepted.
- Students will have more than enough time to complete their assignment on time.
- Internet outage, computer problems, car problems, work, and several others are NOT a valid excuse for a late delivery.
- Very Important: Before you submit any file, take your time and double OR triple check that
 - a. You are uploading the correct and ALL necessary files
 - b. Your work is correct at the best of your abilities
 - c. Failure to fulfill (a) and (b) ON TIME, WILL NOT excuse you from a bad grade.

Please let your instructor know if you are going to miss a class for academically related extracurricular activities. If this is the case you must present the sponsoring university member's written justification before your absence occurs.

Additional Grade Policy

Once the grades, have been either returned to the students, or published via D2L, the student will have one week to examine them and check for inconsistencies, errors, etc. After the one week window of opportunity all grades will become PERMANENT and WILL NOT change. It is not only the student's responsibility to check the accuracy of his/her grades, but also in his/her best interest to do it. This rule DOES NOT apply to the final exam because the final is exam triple checked by the instructor before publishing the grade.

Academic Misconduct Policy & Procedures

Cheating, collusion, and plagiarism (the act of using source material of other persons, devices, AI Generators, either published or unpublished, without following the accepted techniques of crediting, or the submission for credit of work not the individual's to whom credit is given). The Department of Computer Science has adopted the following policy related to cheating (academic misconduct). The policy will be applied to all instances of cheating on assignments and exams as determined by the instructor of the course. (See below for link to MSU definitions.)

- 1st instance of cheating in a course: The student will be assigned a non-replaceable grade of zero for the assignment, project or exam. *If the final grade in the course, does not result in a one letter grade reduction, the student will receive a one letter grade reduction in course.*
- 2nd instance of cheating in a course: The student will receive a grade of F in course & immediately be removed from course.
- All instances of cheating will be reported to the Department Chair and, in the case of graduate students, to the Department Graduate Coordinator.

Note: Letting a student look at your work is collusion and is academic misconduct!

See Also: [MSU Student Handbook](https://msutexas.edu/student-life/assets/files/handbook.pdf): Appendix E: Academic Misconduct Policy & Procedures
<https://msutexas.edu/student-life/assets/files/handbook.pdf>.

Policy on Testing Process

The Department of Computer Science has adopted the following policy related to testing.

- a) All bags, purses, electronics (turned off), books, etc. will be placed in the front of the room during exams, or in an area designated by the instructor.
- b) Unless otherwise announced by the instructor, nothing is allowed on the desk but pen/pencil/eraser and test papers.
- c) You are not allowed to leave the classroom. Please take this seriously and into consideration before any test and the final. Prepare yourself to be in the classroom during the entire exam.
- d) If you decide to leave the classroom during a test and/or the final exam, your exam will be collected, and you will not be allowed to continue.

Classroom Civility

All violations of classroom civility will be reported to the Dean of Students.

Students are expected to assist in maintaining a classroom environment that is conducive to learning. In order to ensure that all students gain from time spent in class, students are prohibited from engaging in any form of distraction, e.g. leaving the room for extended periods of time, reading newspapers (or other articles), working on other courses, and using cell-phones or laptops for calls or messages. If you indulge in any such inappropriate behavior (without explicit consent of the instructor), you will (at the very least) be asked to leave the classroom. [MSU Dean of Students Website](#).

Student with Disabilities

Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from disability support office during the instructor's office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Disability Support Office has been provided. For additional information you may contact the Disability Support Office in Clark Student Center 168 - Phone: (940) 397-4140.

[Disability Support Services](#).

Dean of Students

The Dean of Students can assist in notifying the campus community of student illnesses, immediate family deaths and/or student death. Generally, in cases of student illness or immediate family deaths, the notification to the appropriate campus community members occur when a student is absent from class for four consecutive days with appropriate verification. It is the student's responsibility for missed class assignments and/or course work during their absence. [MSU Dean of Students Website](#).

RECORDING OF CLASS LECTURES

Permission must be requested in writing & obtained from the instructor before recording of class lectures. If permission is granted, the recording may only be used by the student making the recording. Recordings may NOT be posted on any internet source without written permission of the instructor. Failure to adhere to the policy may result in removal from the course with a grade of F or other appropriate punishment.

University's Campus Carry

Senate Bill 11 passed by the 84th Texas Legislature allows licensed handgun holders to carry concealed handguns on campus, effective August 1, 2016. Areas excluded from concealed

carry are appropriately marked, in accordance with state law. For more information regarding campus carry, please refer to the University's webpage at [Campus Carry](#).

Additional COVID 19 and Monkey pox Policy

In order to protect your wellbeing and the one of those that you care about, the following preventive measurements will take place:

- a) Office hours will be virtual via ZOOM. Check your syllabus for detailed office hours.
- b) Your instructor will not touch any computer or USB Drive. NO Exemptions.
- c) If at some point you need/want me to look at your programming assignment or class project, you can do it by sharing your desk via ZOOM (Virtually) during office hours.
- d) Questions associated with ADVISING, degree plans, etc., will be addressed (Virtually-ZOOM) during office hours.

Covid Precautions

I encourage all those who wish to wear a mask to do so. Any vulnerable or unvaccinated person should wear an N95 or equivalent, if they want to protect themselves from others. I will also meet with students via Zoom by appointment. Covid vaccinations are provided free of charge – and may be obtained on campus on designated vaccine clinic days or by appointment at the Vinson Health Center, or by local pharmacies.

Research and Creative Activity Opportunities at MSU

Enhancing Undergraduate Research Endeavors and Creative Activities (EURECA) is a program that provides opportunities for undergraduates to engage in high-quality research and creative activities with faculty. EURECA provides incentives and funding through a system that supports faculty and students engaged in collaborative research and creative works. For more information contact the Office of Undergraduate Research at (940) 397-6274 or by email at eureca@msutexas.edu or better yet, stop by the UGR office located in the atrium of the Clark Student Center, room 161. Information and resources are also available at [Eureca's website](#)

Undergraduate Research Opportunities and Summer Workshop (UGROW)

Like EURECA, UGROW provides opportunities for students to conduct research with faculty. However, the research occurs in the summer. For five weeks UGROW students experience the authenticity of scientific research as well as research and creative activities in art, music, theater education, business, health and social sciences, English, history, etc. in a highly interdisciplinary environment. Students work on projects of their choice and present their findings at the end of program and the MSU Undergraduate Research and Creative Activity Forum. Faculty members will introduce their research ideas February 13th, 2019, at 5:00 p.m., Comanche Suites, Clark Student Center. A break-out session with individual faculty members will follow. If you have any questions, contact the Office of Undergraduate Research at (940) 397-6274 or by email at eureca@msutexas.edu. More information and resources are available at [ugrow's website](#)

Council on Undergraduate Research

To support undergraduate research and creative activities, Midwestern State University holds an enhanced institutional membership with the Council on Undergraduate Research (CUR). This institutional membership includes unlimited memberships for any interested faculty, staff,

and students. Students find information on benefits and resources at [the council for undergraduate research website](#) and sign up at no cost at [this website](#).

I would like to personally invite you to become a member of CUR so that you benefit from all the opportunities CUR offers to you.

CUR Undergraduate Resources Webpage contains:

- Research Opportunities;
- Presentation Opportunities;
- Undergraduate Research Journals;
- CUR-Sponsored Student Events;
- The Registry of Undergraduate Researchers;
- And more!

ScholarBridge

Midwestern State University is excited to announce a new resource designed to address a commonly expressed student need—the creation of a centralized searchable database of faculty research interests and opportunities. We have entered into a partnership with [ScholarBridge](#), is a website designed to help students participate in undergraduate research and creative activities. I strongly encourage you to join ScholarBridge at your earliest convenience.

Laptop Policy

For this class, you are not required to buy a laptop. However, if the instructor announces an ICH (In Class Homework) or ICA (In Class Activity), you are responsible for:

- a. Bringing a laptop with all necessary programs properly installed, configured and tested.
- b. Bringing the laptop's charger: If you do not bring your charger and cannot complete the assignment(s) because your battery died, then your grade will not be a good one.
- c. Make sure that you have a fully working and in-classroom tested Wi-Fi capabilities. If you cannot submit your homework because your Wi-Fi does not work, then your grade will not be a good one.

Excusing Late Work

Any document used to excuse the late delivery of an assignment MUST be presented no longer than one week from the corresponding missed deadline. Valid excuses (Surgery, Medical Emergency, Death in the family, and Presentation at a Conference). Failure to fulfill this requirement will make null the excuse, leading to a permanent grade of zero in the corresponding assignment.

Tentative Agenda

The following is an aggressive and overoptimistic agenda, the instructor reserves the right to add, remove, reorder topics as he considered convenient towards the benefit of the class. The instructor may spend more time than initially thought in some of the sections in order to provide a strong foundation in those concepts. By the end of the semester you will have a very good understanding of several of the following categories and multiple non mentioned subcategories.

1. Syllabus
2. Python programming
3. Important Python libraries (numpy, more)

4. Virtual environments
 - a. Definition
 - b. Purpose
 - c. Creation
 - d. Activation
 - e. Deletion.
5. Neural Networks and Deep Learning
6. Hyperparameter tuning, Regularization and Optimization
7. Structuring Machine Learning Projects
8. Convolutional Neural Networks