

Texas A&M University-Central Texas



CIS 5388 – 110, CRN 11295 – Artificial Intelligence for Cyber Security

Spring 2021
Texas A&M University-Central Texas

COURSE DATES, MODALITY, AND LOCATION

Jan 19, 2021 - May 14, 2021

This is an independent study course that will be completed through face to face and online interactions. Assignment & Project submissions can be emailed to the professor or uploaded in canvas

Course Access

Please send all course related email correspondence through Canvas Inbox Tool. Please use TAMUCT email only when Canvas is not available. I check email several times a day during the week and at least once during the weekends. I will respond within 24 hours and within 48 hours on Saturday through Sunday. Please do not hesitate to stop by my office during the scheduled office hours or contact me via phone / Canvas Conversations Tool or TAMUCT email, if there are any personal problems or challenges that are hindering your regular progress in the course.

INSTRUCTOR AND CONTACT INFORMATION

Instructor: Dr. Anitha Chennamaneni
Office: Texas A&M University Central Texas FH 323
Phone: (254) 519-5463
TAMUCT Email: anitha.chennamaneni@tamuct.edu
Preferred Email: Course Canvas Site, Inbox tool.

Alternate (if Canvas is down): anitha.chennamaneni@tamuct.edu

Office Hours: [Monday](#) 11 am – 1 pm
Wednesday 11 am - 1 pm
[Other days and times by appointment only](#)

Student-instructor interaction: Please send all course related email correspondence through Canvas Inbox Tool. Please use TAMUCT email only when Canvas is not available. I check email several times a day during the week and at least once during the weekends. I will respond within 24 hours and within 48 hours on Saturday through Sunday. Please do not hesitate to stop by my office during the scheduled office hours or contact me via phone / Canvas Conversations Tool or *TAMUCT email*, if there are any personal problems or challenges that are hindering your regular progress in the course.

WARRIOR SHIELD - Emergency Warning System for Texas A&M University-Central Texas
Warrior Shield is an emergency notification service that gives Texas A&M University-Central Texas the ability to communicate health and safety emergency information quickly via email, text message, and social media. All students are automatically enrolled in Warrior Shield through their myCT email account.

Connect to Warrior Shield by [911Cellular](https://portal.publicsafetycloud.net/Account/Login) [<https://portal.publicsafetycloud.net/Account/Login>] to change where you receive your alerts or to opt out. By staying enrolled in Warrior Shield, university officials can quickly pass on safety-related information, regardless of your location

COVID-19 SAFETY MEASURES

To promote public safety and protect students, faculty, and staff during the coronavirus pandemic, Texas A&M University-Central Texas has adopted policies and practices to minimize virus transmission. All members of the university community are expected to adhere to these measures to ensure their own safety and the safety of others. Students must observe the following practices while participating in face-to-face courses, course-related activities (office hours, help sessions, transitioning to and between classes, study spaces, academic services, etc.) and co-curricular programs:

- **Self-monitoring**—Students should follow CDC recommendations for self-monitoring. Students who have a fever or exhibit symptoms of COVID-19 should participate in class remotely and should not participate in face-to-face instruction. Students required to quarantine must participate in courses and course-related activities remotely and must not attend face-to-face course activities. Students should notify their instructors of the quarantine requirement. Students under quarantine are expected to participate in courses and complete graded work unless they have symptoms that are too severe to participate in course activities.
- **Face Coverings**— Face coverings must be worn inside of buildings and within 50 feet of building entrances on the A&M-Central Texas Campus. This includes lobbies, restrooms, hallways, elevators, classrooms, laboratories, conference rooms, break rooms, non-

private office spaces, and other shared spaces. Face coverings are also required in outdoor spaces where physical distancing is not maintained. The university will evaluate exceptions to this requirement on a case by case basis. Students can request an exception through the Office of Access and Inclusion in Student Affairs.

- If a student refuses to wear a face covering, the instructor should ask the student to leave and join the class remotely. If the student does not leave the class, the faculty member should report that student to the Office of Student Conduct. Additionally, the faculty member may choose to teach that day's class remotely for all students.
- Physical Distancing—Physical distancing must be maintained between students, instructors, and others in the course and course-related activities.
- Classroom Ingress/Egress—Students must follow marked pathways for entering and exiting classrooms and other teaching spaces. Leave classrooms promptly after course activities have concluded. Do not congregate in hallways and maintain 6-foot physical distancing when waiting to enter classrooms and other instructional spaces.
- The university will notify students in the event that the COVID-19 situation necessitates changes to the course schedule or modality.

COURSE INFORMATION

Course Overview and Description

Study selected topics (Artificial Intelligence for Cybersecurity) in CIS and perform research within the student's area of interest as directed by the responsible professor. May be repeated as topics vary for a maximum of 6 semester hours. Prerequisite(s): Varies with topic.

Course Objectives

To ensure students have an understanding of the many areas of Artificial Intelligence applications for Cyber Security.

Student Learning Outcomes:

- Explain the core concepts of Artificial Intelligence (AI) and Cybersecurity
- Learn Python and other Libraries for AI and Cybersecurity
- Explore various AI and Deep Learning techniques
- Use AI in Cybersecurity
- Detect Cybersecurity Threats with AI & Deep Learning

- Evaluate the effectiveness of alternate AI solutions for cybersecurity with appropriate analytics metrics

Required Textbook

Required Text:

Hands-On Artificial Intelligence for Cybersecurity: Implement smart AI systems for preventing cyber-attacks and detecting threats and network anomalies Paperback – August 2, 2019 by Alessandro Parisi

Recommended Text:

Deep Learning with TensorFlow 2 and Keras: Regression, ConvNets, GANs, RNNs, NLP, and more with TensorFlow 2 and the Keras API, 2nd Edition by Antonio Gulli, Amita Kapoor, Sujit Pal

Note: A student of this institution is not under any obligation to purchase a textbook from a university-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

- **Supplementary Material:** The course textbook will be supplemented with other materials including oral presentations, industry articles, videos, research paper readings, case studies, power point presentations etc.
- **On-Line References TBA**

Current publications - The campus library contains numerous books and periodicals relating to Computer Science. The student should take advantage of this resource by visiting the library.

COURSE REQUIREMENTS

- **Project:** There will be two research projects involving use of AI and deep learning techniques to detect cyber-threats. Project details will be communicated in a separate document and discussed during online or face to face meetings
- **Research paper:** Each student is required to write a major paper on a topic from this course that is of interest to you. Topics must be approved by the professor by the end of fourth week. This paper must be 12 to 15 pages in length (type written and double spaced, 12 point font with 1 inch margins) excluding bibliography, table of contents, graphics, tabular or illustrative material. References should include current sources and must conform to APA style. The paper is expected to meet graduate-level standards and be suitable for publication in a professional journal. You should research at least 20 external references such as academic journal /conference papers, trade journals, short videos and relevant websites for your paper. At least 12 of these references must be

from peer reviewed journals or conferences only. Use of Wikipedia or the class text as a reference will cause a serious loss of points. References must include the published journal / conference name and information, NOT a URL where paper was found.

Week	Week of:	Topic
1	01/19/2021	Chapter 1 & Assigned Readings
2	01/25/2021	Chapter 2 & Assigned Readings
3	02/01/2021	Chapter 3 & Assigned Readings
4	02/08/2021	Chapter 4 & Assigned Readings
5	02/15/2021	Chapter 5 & Assigned Readings
6	02/22/2021	Chapter 6 & Assigned Readings
7	03/01/2021	Chapter 7 & Assigned Readings
8	03/08/2021	Chapter 8 & Assigned Readings
	03/15/2021	Spring Break
9	03/22/2021	Chapter 9 & Assigned Readings Project 1 Due
10	03/29/2021	Project 10 & Assigned Readings
11	04/05/2021	Assigned Readings
12	04/12/2021	Assigned Readings
13	04/19/2021	Assigned Readings
14	04/26/2021	Assigned Readings
15	05/03/2021	Assigned Readings Project 2 Due
16	05/10/2021	Research Paper Due

Grading Criteria Rubric and Conversion

Assignment	Points	Percent	My Grade
Project 1	40 points	40%	
Project 2	40 points	40%	
Research Paper	20 points	20%	
Total	1000 points	100%	

89.5-100%	895-1000 points	A
79.5-89.4%	795-894 points	B
69.5-79.4%	695-794 points	C
59.5-69.4%	595-694 points	D
0-59.4%	0-594 points	F

Posting of Grades:

All student grades will be posted in the Canvas Grade book and students should monitor their grading status through this tool. Grades for weekly assignments, discussions, quizzes and exams will be posted within 7 days following the due date.

CALENDAR**Complete Course Outline**

The instructor reserves the right to make changes to this syllabus. Any changes that effect grades or grading will be made in writing.

Important University Dates:

<https://www.tamuct.edu/registrar/academic-calendar.html>

Date	Activity
01/19/2021	Classes Begin for Spring Semester
01/21/2021	Deadline for Add, Drop, and Late Registration for 16- and First 8-Week Classes
01/26/2021	Deadline to Drop First 8-Week Classes with No Record
02/03/2021	Deadline to Drop 16-Week Classes with No Record
02/26/2021	Deadline to Drop First 8-Week Classes with a Quit (Q) or Withdraw (W)
03/12/2021	Classes end for 1st 8-Weeks Session
03/15/2021	Spring Break (No Classes - Administrative Offices Open)

03/16/2021	Spring Break (No Classes - Administrative Offices Open)
03/17/2021	Spring Break (No Classes - Administrative Offices Open)
03/18/2021	Spring Break (No Classes - Administrative Offices Open)
03/19/2021	Spring Break (No Classes - Administrative Offices Open)
03/22/2021	Class Schedule Published for Summer Semester
03/22/2021	Add, Drop, and Late Registration Begins for Second 8-Week Classes
03/22/2021	Classes Begin for Second 8-Week Session
03/24/2021	Deadline for Add, Drop, and Late Registration for Second 8-Week Classes
03/26/2021	Deadline for Spring Graduation Application for Ceremony Participation
03/29/2021	Deadline to Drop Second 8-Week Classes with No Record
04/01/2021	Deadline for GRE/GMAT Scores to Graduate School Office
04/05/2021	Registration Opens for Summer Semester
04/16/2021	Deadline for Final Committee-Edited Theses with Committee Approval Signatures
04/30/2021	Deadline to drop Second 8-week Classes with a Quit (Q) or Withdraw (W).
05/14/2021	Deadline to Withdraw from the University for 16- and Second 8-Week Classes
05/14/2021	Spring Semester Ends
05/14/2021	Deadline for Applications for Tuition Rebate for Spring Graduation (5pm)
05/14/2021	Deadline for Spring Degree Conferral Applications to the Registrar's Office
05/15/2021	Spring Commencement Ceremony Bell County Expo 7 pm

TECHNOLOGY REQUIREMENTS AND SUPPORT

Technology Requirements

Technology Requirements

This course will use the A&M-Central Texas Instructure Canvas learning management system. **We strongly recommend the latest versions of Chrome or Firefox browsers. Canvas no longer supports any version of Internet Explorer.**

Logon to A&M-Central Texas Canvas [<https://tamuct.instructure.com/>] or access Canvas through the TAMUCT Online link in myCT [<https://tamuct.onecampus.com/>]. You will log in through our Microsoft portal.

Username: Your MyCT email address. Password: Your MyCT password

Canvas Support

Use the Canvas Help link, located at the bottom of the left-hand menu, for issues with Canvas. You can select “Chat with Canvas Support,” submit a support request through “Report a Problem,” or call the Canvas support line: 1-844-757-0953.

For issues related to course content and requirements, contact Dr. Anitha Chennamaneni

Online Proctored Testing

A&M-Central Texas uses Proctorio for online identity verification and proctored testing. This service is provided at no direct cost to students. If the course requires identity verification or proctored testing, the technology requirements are: Any computer meeting the minimum computing requirements, plus web camera, speaker, and microphone (or headset). Proctorio also requires the Chrome web browser with their custom plug in.

Other Technology Support

For log-in problems, students should contact Help Desk Central
24 hours a day, 7 days a week

Email: helpdesk@tamu.edu

Phone: (254) 519-5466

[Web Chat](http://hdc.tamu.edu): [http://hdc.tamu.edu]

Please let the support technician know you are an A&M-Central Texas student

UNIVERSITY RESOURCES, PROCEDURES AND GUIDELINES

Drop Policy

If you discover that you need to drop this class, you must complete the [Drop Request](#) Dynamic Form through Warrior Web.

[<https://dynamicforms.ngwebsolutions.com/casAuthentication.ashx?InstID=eaed95b9-f2be-45f3-a37d-46928168bc10&targetUrl=https%3A%2F%2Fdynamicforms.ngwebsolutions.com%2Fsubmit%2FForm%2Fstart%2F53b8369e-0502-4f36-be43-f02a4202f612>].

Faculty cannot drop students; this is always the responsibility of the student. The Registrar’s Office will provide a deadline on the Academic Calendar for which the form must be completed. Once you submit the completed form to the Registrar’s Office, you must go into Warrior Web and confirm that you are no longer enrolled. If you still show as enrolled, FOLLOW-UP with the Registrar’s Office immediately. You are to attend class until the procedure is complete to avoid penalty for absence. Should you miss the drop deadline or fail to follow the procedure, you will receive an F in the course, which may affect your financial aid and/or VA educational benefits.

Academic Integrity

Texas A&M University -Central Texas values the integrity of the academic enterprise and strives for the highest standards of academic conduct. A&M-Central Texas expects its students, faculty, and staff to support the adherence to high standards of personal and scholarly conduct to preserve the honor and integrity of the creative community. Academic integrity is defined as a commitment to honesty, trust, fairness, respect, and responsibility. Any deviation by students from this expectation may result in a failing grade for the assignment and potentially a failing grade for the course. Academic misconduct is any act that improperly affects a true and honest evaluation of a student's academic performance and includes, but is not limited to, working with others in an unauthorized manner, cheating on an examination or other academic work, plagiarism and improper citation of sources, using another student's work, collusion, and the abuse of resource materials. All academic misconduct concerns will be referred to the university's Office of Student Conduct. Ignorance of the university's standards and expectations is never an excuse to act with a lack of integrity. When in doubt on collaboration, citation, or any issue, please contact your instructor before taking a course of action.

For more [information regarding the Student Conduct process](https://www.tamuct.edu/student-affairs/student-conduct.html),
[<https://www.tamuct.edu/student-affairs/student-conduct.html>].

If you know of potential honor violations by other students, you may [submit a report](https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0),
[https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=0].

Academic Accommodations

At Texas A&M University-Central Texas, we value an inclusive learning environment where every student has an equal chance to succeed and has the right to a barrier-free education. The Office of Access and Inclusion is responsible for ensuring that students with a disability receive equal access to the university's programs, services and activities. If you believe you have a disability requiring reasonable accommodations please contact the Office of Access and Inclusion, WH-212; or call (254) 501-5836. Any information you provide is private and confidential and will be treated as such.

For more information please visit our [Access & Inclusion](https://tamuct.instructure.com/courses/717) Canvas page (log-in required)
[<https://tamuct.instructure.com/courses/717>]

Important information for Pregnant and/or Parenting Students.

Texas A&M University-Central Texas supports students who are pregnant and/or parenting. In accordance with requirements of Title IX and related guidance from US Department of Education's Office of Civil Rights, the Dean of Student Affairs' Office can assist students who are pregnant and/or parenting in seeking accommodations related to pregnancy and/or parenting. Students should seek out assistance as early in the pregnancy as possible. For more

information, please visit [Student Affairs](https://www.tamuct.edu/student-affairs/index.html) [https://www.tamuct.edu/student-affairs/index.html]. Students may also contact the institution's Title IX Coordinator. If you would like to read more about these [requirements and guidelines](http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf) online, please visit the website [http://www2.ed.gov/about/offices/list/ocr/docs/pregnancy.pdf].

Title IX of the Education Amendments Act of 1972 prohibits discrimination on the basis of sex and gender—including pregnancy, parenting, and all related conditions. A&M-Central Texas is able to provide flexible and individualized reasonable accommodation to pregnant and parenting students. All pregnant and parenting students should contact the Associate Dean in the Division of Student Affairs at (254) 501-5909 to seek out assistance. Students may also contact the University's Title IX Coordinator.

Tutoring

Tutoring is available to all A&M-Central Texas students, on a remote online basis. Visit the Academic Support Community in Canvas to view schedules and contact information. Subjects tutored on campus include Accounting, Advanced Math, Biology, Finance, Statistics, Mathematics, and Study Skills. Student success coaching is available online upon request.

If you have a question regarding tutor schedules, need to schedule a tutoring session, are interested in becoming a tutor, success coaching, or have any other question, contact Academic Support Programs at (254) 501-5836, visit the Office of Student Success at 212F Warrior Hall, or by emailing studentsuccess@tamuct.edu.

Chat live with a tutor 24/7 for almost any subject from on your computer! Tutor.com is an online tutoring platform that enables A&M-Central Texas students to log in and receive online tutoring support at no additional cost. This tool provides tutoring in over 40 subject areas except writing support. Access Tutor.com through Canvas.

The University Writing Center

The University Writing Center (UWC) at Texas A&M University–Central Texas (TAMUCT) is a free service open to all TAMUCT students. For the Spring 2021 semester, all services will be online as a result of the COVID-19 pandemic. The hours of operation are from 10:00 a.m.-5:00 p.m. Monday thru Thursday with satellite hours Monday thru Thursday from 6:00-9:00 p.m. The UWC is also offering hours from 12:00-3:00 p.m. on Saturdays.

Tutors are prepared to help writers of all levels and abilities at any stage of the writing process. By providing a practice audience for students' ideas and writing, our tutors highlight the ways in which they read and interpret students' texts, offering guidance and support throughout the various stages of the writing process. While tutors will not write, edit, or grade papers, they will assist students in developing more effective composing practices. Whether

you need help brainstorming ideas, organizing an essay, proofreading, understanding proper citation practices, or just want a quiet place to work, the UWC is here to help!

Students may arrange a one-to-one session with a trained and experienced writing tutor by making an appointment via [WCOonline](https://tamuct.mywconline.com/) [https://tamuct.mywconline.com/]. In addition, you can email Dr. Bruce Bowles Jr. at bruce.bowles@tamuct.edu if you have any questions about the UWC and/or need any assistance with scheduling.

University Library

The University Library provides many services in support of research across campus and at a distance. We offer over 200 electronic databases containing approximately 250,000 eBooks and 82,000 journals, in addition to the 85,000 items in our print collection, which can be mailed to students who live more than 50 miles from campus. Research guides for each subject taught at A&M-Central Texas are available through our website to help students navigate these resources. On campus, the library offers technology including cameras, laptops, microphones, webcams, and digital sound recorders.

Research assistance from a librarian is also available 24 hours a day through our online chat service, and at the reference desk when the library is open. Research sessions can be scheduled for more comprehensive assistance, and may take place on Skype or in-person at the library. Assistance may cover many topics, including how to find articles in peer-reviewed journals, how to cite resources, and how to piece together research for written assignments.

Our 27,000-square-foot facility on the A&M-Central Texas main campus includes student lounges, private study rooms, group work spaces, computer labs, family areas suitable for all ages, and many other features. Services such as interlibrary loan, TexShare, binding, and laminating are available. The library frequently offers workshops, tours, readings, and other events. For more information, please visit our [Library website](http://tamuct.libguides.com/index) [http://tamuct.libguides.com/index].

For Spring 2021, all reference service will be conducted virtually. Please go to our [Library website](http://tamuct.libguides.com/index) [http://tamuct.libguides.com/index] to access our virtual reference help and our current hours.

A Note about Sexual Violence at A&M-Central Texas

Sexual violence is a serious safety, social justice, and public health issue. The university offers support for anyone struggling with these issues. University faculty are mandated reporters, so if someone discloses that they were sexually assaulted (or a victim of Domestic/Dating Violence or Stalking) while a student at TAMUCT, faculty members are required to inform the Title IX Office. If you want to discuss any of these issues confidentially, you can do so through Student Counseling (254-501-5955) located on the second floor of Warrior Hall (207L).

Sexual violence can occur on our campus because predators often feel emboldened, and victims often feel silenced or shamed. It is incumbent on ALL of us to find ways to actively create environments that tell predators we don't agree with their behaviors and tell survivors we will support them. Your actions matter. Don't be a bystander; be an agent of change. For additional information on campus policy and resources visit the [Title IX webpage](https://www.tamuct.edu/departments/compliance/titleix.php) [<https://www.tamuct.edu/departments/compliance/titleix.php>].

Behavioral Intervention

Texas A&M University-Central Texas cares about the safety, health, and well-being of its students, faculty, staff, and community. If you are aware of individuals for whom you have a concern, who are exhibiting behaviors that pose a threat to safety, or individuals causing a significant disruption to our community, please make a referral to the Behavioral Intervention Team. You can complete the referral online [https://cm.maxient.com/reportingform.php?TAMUCentralTexas&layout_id=2].

Anonymous referrals are accepted. Please see the [Behavioral Intervention Team](https://www.tamuct.edu/student-affairs/bat.html) website for more information [<https://www.tamuct.edu/student-affairs/bat.html>]. If a person's behavior poses an imminent threat to you or another, contact 911 or A&M-Central Texas University Police at 254-501-5800.

Instructor Policies

The instructor reserves the right to make changes to this syllabus during the course of the semester for the benefit of the students. Any changes that effect grades or grading will be made in writing.

Instructor reserves the right to supplement the material presented in the text with additional material including handouts, oral presentations, industry articles, videos, research paper readings, case studies, power point presentations etc. for the benefit of the students

All work is submitted through Canvas and due on the specified due date/time. Work turned in after due date is considered *late*. 5 points will be deducted for each day the assignment is late. Special circumstances need to be discussed with me ahead of time when possible. Missed assignments, projects, and examinations will receive a grade of zero. Any work not submitted in the proper format is rejected and receives no credit.

Incidents of violations of academic integrity, such as plagiarism or turning in the work of others as your own work, will result in a cap on the maximum number of points that can be earned in this class. The cap will be 600 points resulting in a best case grade of "D" for the class. Students

whose assignment contains plagiarized information i.e., failing to cite and reference the information source in properly applying APA formatting to citations and references, copying and /or using content from unauthorized sources etc. will receive a 0 for the assignment and possibly a referral to Student Affairs.

At all times in the class, please observe proper rules of netiquette in your oral and written communication and conduct yourself in a professional manner

The Operation of the Online Course and Being an Online Student. Online learning requires students to be very self-disciplined and demands regular and consistent participation in the class. Please read the document posted on Canvas on what makes a successful online student. Be sure you understand and are prepared to comply with all required class assignments and deadlines. If you are not able to comply, for any reason, you must contact me immediately.

Copyright Notice.

Students should assume that all course material is copyrighted by the respective author(s). Reproduction of course material is prohibited without consent by the author and/or course instructor. Violation of copyright is against the law and Texas A&M University-Central Texas' Code of Academic Honesty. All alleged violations will be reported to the Office of Student Conduct.