TEXAS A&M UNIVERSITY
SAN ANTONIO

CISA 4313:600, **Programming for Data Analytics**, Fall 2022, CRN: 11215
Department of Computing and Cyber Security, College of Business

Course Syllabus

Class Modality: Online
Class Meeting Time and Place: T R 3:30 PM- 04:45 PM, OLC-S
Class Duration: 08/18-12/17
Instructor: Dr. Mohammad Abdel-Rahman
Office: STEM 211 J
Tel: 210-784-2371
E-Mail: Mohammad.Abdel@tamusa.edu
Student emails will receive a reply within two business days.
Course Website: https://tamusa.blackboard.com/
Office Hours:

T	2:00- 3:00 pm (online)
R	12:00- 3:00 pm (in person)
W	3:00 pm - 7:00 pm (in person)

and by appointment.

Catalog Course Description: This course introduces students to a common scripting language used in data analytics. Students will explore the latest tools and techniques to help tackle the world of data acquisition and analysis. Students will review topics like scientific computing, data manipulation, machine learning, Textual Data Analysis, and Data Visualization. *Prerequisites:* CSCI 1337 and CSCI 1137.

Course Objectives: Students will learn about the latest Python tools and techniques to help tackle the world of data acquisition and analysis. Students will review topics like scientific computing with NumPy, data manipulation with Pandas, machine learning with scikit-learn, Textual Data Analysis with NLTK, and Data Visualization with matplotlib.

Student Learning Outcomes:
After successful completion of this course, students will be able to:

1. Apply scientific computing with NumPy.
2. Use Pandas to perform data manipulation.
3. Create machine learning models (supervised and unsupervised) using scikit-learn.
4. Create Textual Data Analysis applications with NLTK.
5. Create Data Visualization applications with matplotlib.

AACSB Assessment:
The College of Business is in the process of applying for AACSB accreditation. As part of that process, students will be assessed on program level outcomes based on course outcomes from various courses. The materials from this course may be used for assessing such program level outcomes, and hence students must follow the necessary rigor to ensure mastery and retention of the above course outcomes.

Required Materials:

- **Textbook:** *None*
- **Blackboard:** Connect to http://tamusa.blackboard.com. You will have lecture notes and other supplementary materials in Blackboard.
- **Software:** You will be required to use Anaconda Python 3 to solve the problem. Here is the link to install the software (https://www.anaconda.com/distribution/)
- **Computer Hardware:** In order to participate in online sessions, you will need a computer with an internet connection, a microphone and speakers/headphones. To complete the class work, you will need appropriate software installed on the computer.
- **Time:** You are expected to spend 4-8 hours per week for the course. Based on the background, some student may require more time. Time spent may be longer when assignment/exams are due.

Other Recommended / Reading Materials: Additional reading materials (if any) will be available on the course website as recommended by the instructor.

Course Requirements every student must fulfill in order to succeed in course:

1. Students should check the Course Calendar, Announcements, and Messages (e-mail) systems in Blackboard on a regular basis.
2. Students should keep current with all course assignments, quizzes, and examinations.
3. If the course uses remote proctoring for exams, students must schedule their exam early in the semester.
4. Students should ask questions and communicate with the instructor either in class, online, off-line or during office hours.
5. For all classwork, exams, quizzes etc., if a student is completing it off-campus, then they are responsible for availability of internet connectivity. Extensions will not be granted for lack of availability of internet connections.
6. Students should remember that online and hybrid courses assume greater responsibility and independent learning skills by the student for their own learning outcomes.
7. For online courses, students should keep current on class recordings, if not attending the live class (either in person or online).
8. For online synchronous courses, there will be online class sessions as indicated. Students are expected to attend the online session at the given time. If a student is unable to attend a session, instructor will make the recording of the session available for the student to view. All materials will be made available through Blackboard or through online links.

Grading Policy: The final course grade will be based on your performance on the quizzes, exams, assignments and class participation using the following weights:

Assignments	35%
MidTerm Exam	20%
Project	25%
(progress reports, final report/paper, presentation)	
Final Exam	20%
Total	100%

The project will include progress reports (***written reports), final report/paper and presentations***. Your final report/paper should include the following:

a- Introduction (Motivation, Problem definition and description)
b- Literature review
c- Data collection and description
d- Model description (the predictive model description)

e- Model evaluation and result interpretation
f- Appendix (e.g. technical details)/code should be submitted as a separate file
g- Use diagrams, figures, pseudo codes, tables if applicable.

The final letter grades will be assigned as follows: Above 90% ⇒ A; 80 – 89% ⇒ B; 70 – 79% ⇒ C; 60 – 69% ⇒ D; Below 60% ⇒ F.
This course has a requirement of a grade of C as a minimal grade for satisfactory completion of this course.

Examinations: There will be a mandatory final exam (as per university schedule). Being absent for an exam will result in a grade of zero for that exam and may result in a fail grade in the course. The exams will consist of conceptual multiple-choice questions, problem solving questions, and short essay questions. The exam materials will come from lecture notes, the text, and class discussions. Questions will emphasize understanding and applications of concepts and topics covered in class.

Proctored Exams: Examinations in this class may/will be administered using secure online testing services. Details regarding proctored test sign up and administration will be provided at least 2 weeks prior to the exam.

Assignments: There will be several assignments during the course. Individual assignment statements and due dates will be posted through Blackboard. For all assignment problems, ALL intermediate work of the problem solution steps MUST be shown. This includes the use of the formula, the values substituted in the formulas for problem solution, as well the intermediate steps of the arithmetic computation. The units of measurement are extremely important and MUST be shown at each stage of the computation. Considerable points will be taken off for not following these requirements.

Make up and Late Assignment/exam/policy:
Exams/quizzes: As a general rule, Late submission or make-ups will NOT be offered or accepted for any missed exams/quizzes. Late submissions or make-ups may be accepted/administered only in extra-ordinary circumstances such as an excused official university activity, a severe illness, or a dire emergency. However, you must provide comprehensive documentation either before or within a few days of the missed exam.

Assignments/project reports: late submissions will be offered or accepted for any missed assignment/project report given that there is ***2% points penalty*** per late day. However, in extra-ordinary circumstances such as an excused official university activity, a severe illness, or a dire emergency, no points will be deducted. However, you must provide comprehensive documentation either before or within a few days of the missed assignment.

Class conduct and civility code: Everyone in class is expected to follow all rules in the student handbook, as well as common courtesy during classroom lectures and discussions in class and online, including the following:
1. Attendance may be taken at the beginning or the end of the class.
2. It is the students' responsibility to obtain and be able to use the required materials and software for this class.

3. Student must retain copies of all assignments and graded work for verification purposes and provide it to the instructor, if necessary. Keep own copies of all computer files and e-mails till final grade is received.
4. Talking while the instructor is lecturing is extremely disruptive and discourteous to the instructor and other students.
5. Using computers or phones (except for a valid urgent need) during class for a purpose not related to class is disruptive. All cell phones and gadgets should be turned OFF and headphones removed.
6. For any questions about the exams and assignments, a student should contact the instructor, well in advance of the day they are due, so the instructor may have enough time to provide feedback.
7. All communications will be via e-mail communications to the Texas A&M University e-mail account, and students are expected to use their school provided email account. The instructor will reply to a student e-mail messages and voice messages within 24 hours during week days (Monday-Friday).
8. All assignment submissions must be uploaded to Blackboard by the due date and time. Submission window may close or marked late, even if late by one second.

Anyone violating these policies may be subject to disciplinary actions.

Class attendance and Participation: A vital part of every student's education is regular attendance of class meetings. Any absences tend to lower the quality of a student's work, and frequent or persistent absences may result in a failing grade. Students are responsible for the materials covered in class. The course covers a lot of material and most students find at least some parts of it difficult. Class participation is highly encouraged as it makes the class more interesting and enhances the learning experience. Students are strongly encouraged to ask questions, participate in class discussions and problem solving, and visit/contact the instructor during office hours in case of questions or concerns. Good attendance and participation will be rewarded when final grades are assigned.

The course is intensive and challenging and you are expected to master the materials presented in class. The structure of the class makes your individual study and preparation outside of class extremely important, and may vary considerably based on student background. However, a **minimum** of three hours of work outside the class is expected for every one hour of class period per week. Reading the assigned chapter(s) and having some familiarity with them before class will be very useful for understanding lectures.

Fall 2022 Class Schedule

The provisions and information set forth in the schedule below are intended to be informational and not contractual in nature. The instructor reserves the right to amend, alter, change, delete or modify the provisions of the schedule.

Week	***Chapter and Topic***
1	Syllabus, An Introduction to Data Analysis, Install Python
2, 3	Introduction to the Python World, The NumPy Library
4	The pandas Library—An Introduction
5	pandas: Reading and Writing Data
6	pandas in Depth: Data Manipulation
7	Machine Learning with scikit-learn

8,9,10	**Week 8: Midterm Exam** Machine Learning with scikit-learn
11,12,13	Textual Data Analysis with NLTK
14,15	Neural network
16 (Tuesday, **Dec 6th**)	Project presentation Wednesday **December 7 Last Day** of scheduled weekday classes
December 8-9	**Study Days** – Classes do NOT meet
December 12-17	**Final Exams** – As per University Schedule

COVID-19 protocol

Knowing your COVID-19 status can prevent you from spreading the virus to those around you by taking the necessary precaution of isolating or quarantining when appropriate.

- Please refrain from coming to campus if you are confirmed to have COVID-19 (by using a Rapid COVID-19 Test or completing a laboratory test) and ensure to self-report using the online COVID-19 Reporting Portal found at: https://redcap.link/TAMUS_COVID_PORTAL. Guidance will be provided on when to return to campus.
- Please refrain from coming to campus if you had an exposure to COVID-19 that resulted in close contact (you were within 6 feet of an individual positive for COVID-19 for an accumulated time of 15 minutes or greater over a 24-hour period) until you meet the return to campus criteria. Ensure to self-report using the online COVID-19 Reporting Portal found at: https://redcap.link/TAMUS_COVID_PORTAL and please complete the RETURN TO CAMPUS FORM found at: https://banner.tamusa.edu/ssomanager/c/SSB?pkg=zwtkjotf_jira.p_redirect?JotFormPage=220213195570044
- Please refrain from coming to campus if you have COVID-19 symptoms and consider testing immediately.

For additional guidance, please reference the Community.Safety.TOGETHER webpage at: https://www.tamusa.edu/community-safety-together/

Academic Accommodations for Persons with Disabilities

The Americans with Disabilities Act of 1990, as amended, and the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights protection for individuals with disabilities. Title II of the ADA and Section 504 of the Rehabilitation Act require that students with disabilities be guaranteed equal access to the learning environment through the provision of reasonable and appropriate accommodation of their disability. If you have a disability that may require accommodation, please contact Disability Support Services (DSS) for the coordination of services. The phone number for DSS is (210) 784-1335 and email is dss@tamusa.edu.

Academic Learning Center

All currently enrolled students at Texas A&M University-San Antonio can utilize the Academic Learning Center for subject-area tutoring. The Academic Learning Center is an appointment based center where appointments are made through the Navigate platform. Students access Navigate through Jagwire in the Student Services tab. The Center is active on campus outreaching to students to highlight services offered. You can contact the Academic Learning Center by emailing tutoring@tamusa.edu or calling (210)-784-1332. Appointments can also be made through JagWire under the services tab.

Counseling Resources

As a college student, there may be times when personal stress interferes with your academic performance and/or negatively impacts your daily functioning. If you or someone you know is experiencing life stressors, emotional difficulties, or mental health concerns at Texas A&M University – San Antonio, please contact the Student Counseling Center (SCC) located in Modular C, Room 166 (rear entrance) or call 210-784-1331 between the hours of 8:00AM and 5:00PM, Monday – Friday. After-hours crisis support is available by calling 210-784-1331 (select option "2"). Please contact UPD at 911 if harm to self or harm to others is imminent.

All mental health services provided by the SCC are free, confidential (as the law allows), and are not part of a student's academic or university record. SCC provides brief individual and group therapy, crisis intervention, consultation, case management, and prevention services. For more information, please visit www.tamusa.edu/studentcounseling

Emergency Preparedness

JagE Alert is Texas A&M University-San Antonio's mass notification. In the event of an emergency, such as inclement weather, students, staff and faculty, who are registered, will have the option to receive a text message, email and/or phone call with instructions and updates. To register or update your information visit: https://tamusa.bbcportal.com/

More information about Emergency Preparedness and the Emergency Response Guide can be found here: https://www.tamusa.edu/upd/index.html

Financial Aid and Verification of Attendance

According to the following federal regulation, 34 CFR 668.21: U.S. Department of Education (DoE) Title IV regulation, a student can only receive Title IV funds based on Title IV eligibility criteria which include class attendance. If Title IV funds are disbursed to ineligible students (including students who fail to begin attendance), the institution must return these funds to the U.S. DoE within 30 days of becoming aware that the student will not or has not begun attendance. Faculty will provide the Office of Financial Aid with an electronic notification if a student has not attended the first week of class. Any student receiving federal financial aid who does not attend the first week of class will have their aid terminated and returned to the DoE. Please note that any student who stops attending at any time during the semester may also need to return a portion of their federal aid.

Meeting Basic Needs

If you face challenges securing food, housing or other basic needs, you are not alone, and A&M- San Antonio can help during this time of crisis. We invite you to learn about the many resources available to support you by visiting the Dean of Student's website or by reaching out via dos@tamusa.edu. Additionally, it is not unusual for students to encounter temporary illness or injuries that may interfere with your academic success. Students may request temporary illness/disability assistance by reaching out to the Dean of Student's Office (210) 784-1354. If you are comfortable doing so, please notify the professor of any issues so that they may provide additional resources.

Military Affairs

Veterans and active-duty military personnel are welcomed and encouraged to communicate, in advance if possible, and in special circumstances (e.g., upcoming deployment, drill requirements, disability accommodations). You are also encouraged to visit the Patriots' Casa in-person room 202, or to contact the Office of Military Affairs with any questions at military.va@tamusa.edu, or (210)784-1397.

Religious Observances

Texas A&M University-San Antonio recognizes the diversity of faiths represented among the campus community and protects the rights of students, faculty, and staff to observe religious holidays according to their tradition. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to a religious observance provided they notify their instructors before the end of the second week of classes for regular session classes.

Respect for Diversity

We understand that our students represent diverse backgrounds and perspectives. When we are equity-minded, we are aware of differences and inequalities and are willing to discuss them so we can act to resolve them. The University is committed to building cultural competencies, or the attitudes, skills, and knowledge that enable individuals and organizations to acknowledge cultural differences and incorporate these differences in working with people from diverse cultures. Respecting and accepting people different than you is vital to your success in the class, on campus, and as a future professional in the global community. While working together to build this community we ask all members to:

- Share their unique experiences, values, and beliefs.
- Be open to the views of others.
- Honor the uniqueness of their colleagues.
- Value each other's opinions and communicate respectfully.
- Keep confidential discussions that the community has of a personal (or professional) nature.
- Use this opportunity together to discuss ways in which we can create an inclusive environment in this course and across the A&M-San Antonio community.

The Six-Drop Rule

Students are subject to the requirements of Senate Bill (SB) 1231 passed by the Texas Legislature in 2007. SB 1231 limits students to a maximum of six (6) non-punitive course drops (i.e., courses a student chooses to drop) during their undergraduate careers. A non-punitive drop does not affect the student's GPA. However, course drops that exceed the maximum allowed by SB 1231 will be treated as "F" grades and will impact the student's GPA.

Statement of Harassment and Discrimination

Texas A&M University-San Antonio is committed to the fundamental principles of academic freedom, equality of opportunity, and human dignity. To fulfill its multiple missions as an institution of higher learning, A&M-San Antonio encourages a climate that values and nurtures collegiality, diversity, pluralism, and the uniqueness of the individual within our state, nation, and world. All decisions and actions involving students and employees should be based on applicable law and individual merit. Texas A&M University-San Antonio, in accordance with applicable federal and state law, prohibits discrimination, including harassment, on the basis of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation, gender identity, or gender expression. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units.
Texas A&M University-San Antonio faculty are committed to helping create a safe learning environment for all students and for the university as a whole. If you have experienced any form of sex- or gender-based discrimination or harassment, including sexual assault, sexual harassment, domestic or dating violence, or stalking, know that help and support are available. A&M-San Antonio has staff members trained to support survivors in navigating campus life, accessing health and counseling

services, providing academic and housing accommodations, and more. The university strongly encourages all students to report any such incidents to the university. Please be aware that all A&M-San Antonio employees (other than those designated as confidential resources such as counselors and other healthcare providers) are required to report information about such discrimination and harassment to the university. This means that if you tell a faculty member about a situation of sexual harassment, sexual violence, or other related misconduct, the faculty member must share that information with the university's Title IX Coordinator. If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact the Student Counseling Center at (210) 784-1331, Modular C.

Students' Rights and Responsibilities

The purpose of the following statement is to enumerate the essential provisions for the student freedom and responsibility to learn at Texas A&M University-San Antonio. All students are required to follow all policies and regulations as set forth by The Texas A&M University System. This includes the A&M-San Antonio Student Code of Conduct.

Students' Rights

1. A student shall have the right to participate in a free exchange of ideas, and there shall be no university rule or procedure that in any way abridges the rights of freedom of speech, expression, petition and peaceful assembly as set forth in the U.S. Constitution.
2. Each student shall have the right to participate in all areas and activities of the university, free from any form of discrimination, including harassment, on the basis of race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, genetic information, veteran status, gender identity, or gender expression in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law, and this will be observed by students and University authorities alike.
4. Each student subject to disciplinary action arising from violations of university student rules shall be assured a fundamentally fair process.

Students' Responsibilities

1. A student has the responsibility to respect the rights and property of others, including other students, the faculty and the administration.
2. A student has the responsibility to be fully acquainted with the published University Student Rules found in the Student Handbook, Student Code of Conduct, on our website, University Catalog and students must comply with them and the laws of the land.
3. A student has the responsibility to recognize that student actions reflect upon the individuals involved and upon the entire university community.
4. A student has the responsibility to recognize the University's obligation to provide an environment for learning.
5. A student has the responsibility to check their university email for any updates or official university notification.
6. We expect that students will behave in a manner that is dignified, respectful, and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

Writing, Language, and Digital Composing Center

The Writing, Language, and Digital Composing Center supports graduate and undergraduate students in all three colleges as well as faculty and staff. Tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Our language tutors support students enrolled in Spanish courses and students composing in Spanish for any assignment. Our digital studio tutors support students working on digital projects such as eportfolios, class presentations, or other digital multimedia projects. Students can schedule appointments through JagWire under the Student Services tab. Click on "Writing, Language, and Digital Composing Center" to make your appointment. The Center offers face-to-face, synchronous online, and asynchronous digital appointments. More information about what services we offer, how to make an appointment, and how to access your appointment can be found on our website at https://bit.ly/WLDCCenter.

Key Dates for Fall 2022 Semester
The complete academic calendar is available online:
https://www.tamusa.edu/provost/documents/academic-calendar-2022-2023-05192022.pdf

August 18	Thursday	First class day
August 20	Saturday	Weekend classes begin
August 26	Friday	Last day to register
September 2	Friday	Drop for non-payment
September 2	Friday	Last day for students to apply for graduation this term
September 2	Friday	Deadline for this term's graduation applicants to complete Change of Name and/or Change of Major form(s) at the Welcome Center
September 2	Friday	Census Date
September 5	Monday	Labor Day Holiday
September 15	Thursday	20th class day
September 22	Thursday	Graduation Application Fee payment deadline
October 31	Monday	Title IV 60% of semester
November 9	Wednesday	Last day to drop with an automatic grade of "W"
November 23	Wednesday	Last day to withdraw from the university
November 24-November 26	Thursday-Saturday	Thanksgiving Holiday - No classes
December 7	Wednesday	Last day of scheduled classes for weekday classes
December 8-December 9	Thursday-Friday	Study days
December 10	Saturday	Last day of scheduled classes for weekend classes
December 12-December 17	Monday-Saturday	Final examinations
December 17	Saturday	End of term
December 20	Tuesday	All grades due by noon
TBD		Commencement
December 23	Friday	Grades available in JagWire
December 24-January 1	Saturday-Sunday	Winter Break