



TEXAS A&M UNIVERSITY  
**SAN ANTONIO**

CSCI 5337:001, **Application Programming**, Spring 2025, CRN: 24470  
Department of Computing and Cyber Security, College of Arts and Science  
**Course Syllabus**

<b>Class Modality:</b>	<b>On-Campus</b>
<b>Class Meeting Time and Place:</b>	M 4:00 PM – 6:45 PM, STEM 125
<b>Class Duration:</b>	01/21 - 05/13
<b>Instructor:</b>	Dr. GB. Tony Liang Office: STEM 211G Tel: 210-784-2373 E-Mail: <a href="mailto:gliang@tamusa.edu">gliang@tamusa.edu</a> Students' emails will receive a reply within two business days.
<b>Course Website:</b>	<a href="https://tamusa.blackboard.com/">https://tamusa.blackboard.com/</a>
<b>Office Hours:</b>	M/W 9:30 AM – 11:00 AM M 2:00 PM – 4:00 PM or by appointment. Please reserve your office appointment using the link below: <a href="https://outlook.office365.com/owa/calendar/Gd2eae9aebbcd487c954bae3cc27e7168@tamusa.edu/bookings/">https://outlook.office365.com/owa/calendar/Gd2eae9aebbcd487c954bae3cc27e7168@tamusa.edu/bookings/</a> Please email your instructor to set up an appointment if you wish to meet your instructor outside of the hour hours.

**Catalog Course Description:** The course covers intermediate to high-level programming topics with intensive hands-on programming exercises and assignments. Programming topics may include (but are not limited to) applications in cyber security, networks, parallel/multi-threading, system programming, data analytics, and machine learning. The instructor determines the programming language. **Students with conditional admission will be required to complete CSCI 5337 at A&M-SA in the first semester of admission and get a grade of “B” or better to be permitted to continue in the program.**

**Prerequisites:** N/A

**Course Objectives:** The objectives of the course include introducing high-level programming languages (Python) and its intermediate to high-level topics in machine learning/AI. The students will also explore multiple hands-on projects throughout the semester.

**Student Learning Outcomes:** After successfully completing this course, students can apply supervised/unsupervised machine learning development for data and tasks in the real world using Python and its popular libraries. Specifically, students will be able to:

1. build and train supervised machine learning models and ensemble methods;
2. use unsupervised learning techniques, such as clustering and anomaly detection;
3. build and train a neural network;
4. build recommender systems and deep reinforcement learning models.

## Course Materials:

- **Recommended Textbooks**
  - P. Hall, J. Curtis, and P. Pandey. *Python in a Nutshell: A Desktop Quick Reference*, O'Reilly Media, 2023. ISBN: 978-1098113551.
  - S. Raschka, Y. Liu, and M. Vahid. *Machine Learning with PyTorch and Scikit-Learn*. Packt Publishing, 2022. [ISBI: 978-1801819312]
  - P. Xiao. *Artificial Intelligence Programming with Python: From Zero to Hero*. John Wiley & Sons, Inc., 2023. [ISBN: 978-1119820864]
  - I. Goodfellow, Y. Bengio, and A. Courville. *Deep Learning*, MIT Press, 2016. ISBN: 9780262035613. Free Access online: <https://www.deeplearningbook.org>
- **Blackboard:** Connect to <http://tamusa.blackboard.com>.
  - You will have lecture notes and other supplementary materials in Blackboard.
- **Software:** [Python](#) and/or [Google Colab](#) (Free)
- **Hardware:** A laptop or a desktop computer suitable for common programming.

**Time Expectation for coursework:** You are expected to spend 6-8 hours per week on the course. Based on the background and other factors, some students may require more time. Time spent may be longer when assignments/exams are due.

**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	60%
Mid-term Exam	15%
Final/Term Project	25%
<b>Total</b>	<b>100%</b>

- The final letter grades will be assigned as follows:
  - A = 90-100%; B = 80-89%; C = 70-79%; F < 70%.
  - This course requires a minimum grade of B for satisfactory completion.

## Examinations:

- There will be a mandatory mid-term exam and a mandatory final project. Being absent/non-submitted to an exam will result in a grade of zero for that exam and may result in a failing grade in the course.
- The mid-term exam will be project-based. A question will be given to students on or before the exam date. Students must implement a solution and write a report within 48-72 hours.

## Assignments:

- The course will have several assignments and projects (individual/team of two).
- Individual assignment statements and due dates will be posted through Blackboard.
- For the programming assignments/projects, a clear representation of the program code and logic, including comments, is necessary. Considerable points will be taken off for not following these requirements.

## Make-up and Late Assignment/Exam policy:

- All assignments will have a clearly indicated due date. Late assignments will be penalized 10% per school day.
- No make-up will be generally accepted for any missed assignments/exams. However, make-ups may be accepted/administered only in extraordinary circumstances, such as an excused official university

activity, a severe illness, or a dire emergency, with comprehensive documentation before or within a few days of the missed assignments/exams.

**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 is intensive and challenging, and students are expected to master the materials presented in class.
- **Class participation is required.** Absences for more than a third of the class meetings will result in a letter grade reduction.

**Spring 2025 CSCI 5337:001 Class Schedule**

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

Week	Date		Chapter and Topic	Notes
Week 1	Jan 21	Jan 25	Course Introduction, Python Review	Assignment I
Week 2	Jan 26	Feb 01	Introduction to Machine Learning	Assignment II
Week 3	Feb 02	Feb 08		Census Date (Feb 5)
Week 4	Feb 09	Feb 15	Introduction to Deep Learning	Assignment III
Week 5	Feb 16	Feb 22		
Week 6	Feb 23	Mar 01	Mid-Term Exam	
Week 7	Mar 02	Mar 08	Term-Project Proposal	Online (synchronous) class due to instructor's conference travel
Week 8	Mar 09	Mar 15	Spring Break (No Class)	
Week 9	Mar 16	Mar 22	Face Detection/Recognition	Assignment IV
Week 10	Mar 23	Mar 29	Object Detection/Segmentation	Assignment V
Week 11	Mar 30	Apr 05	Natural Language Processing	
Week 12	Apr 06	Apr 12	Project Week	Project Update I
Week 13	Apr 13	Apr 19	Data Analysis	
Week 14	Apr 20	Apr 26	Project Week	Project Update II
Week 15	Apr 27	May 03	Advance AI Computing	
Week 16	May 04	May 06	Term -Project Presentation	Last day of class: May 05 University Study Day: May 06–No Class
Final Exam Week: May 07–13			Project Code & Write-up Due by May 07	

**Class conduct and civility code:** Everyone in class is expected to follow all rules in the student handbook, as well as a common courtesy during classroom lectures and discussions in class and online, including the following:

1. Attendance may be taken by an appropriate method by the instructor.
2. It is the student's responsibility to obtain and be able to use the required materials and software for this class.

3. Students must retain copies of all assignments and graded work for verification purposes and provide them to the instructor if necessary. Keep copies of all computer files and e-mails until the final grade is received.
4. Talking while the instructor is lecturing is highly 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 unrelated to the class is disruptive. All cell phones and gadgets should be turned OFF.
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's e-mail messages and voice messages within two business days (Monday-Friday).
8. All assignment submissions must be uploaded as instructed by the due date and time. The submission window may close or be marked late, even if it is late by one second.

Anyone violating these policies may be subject to disciplinary action.

**ABET Assessment:** The Department of Computing and Cyber Security is planning to apply for ABET accreditation for its BS in Computer Science program, for which this course is a core course. As part of that process, students will be assessed on program-level outcomes based on course outcomes from this course, and hence students must follow the necessary rigor to ensure mastery of the above course outcomes.

**COVID-19:** If you have COVID-19 symptoms, had exposure to COVID-19, and/or are confirmed to have COVID-19, refrain from coming to campus and self-report in the online COVID-19 Reporting Portal found at: [https://redcap.link/TAMUS\\_COVID\\_PORTAL](https://redcap.link/TAMUS_COVID_PORTAL) for further guidance.

**University Email Policy and Course Communications:** All correspondence between professors and students must occur via tamusa email accounts. You must have your Jaguar email account ready and working. If it is not working, contact the help desk at 210-784-4357.

**Academic Accommodations for Persons with Disabilities:** The Americans with Disabilities Act Amendments Act (ADAAA) of 2008 and the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights protection for persons with disabilities. Title II of the ADAAA 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 diagnosed disability that may require accommodation, please contact Disability Support Services (DSS) for the coordination of services. DSS is located at the Main Campus on the 2nd floor of the Central Academic Building in suite 210. The phone number for DSS is (210) 784-1335, and the email is [dssupport@tamusa.edu](mailto:dssupport@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, reaching out to students to highlight services offered. You can contact the Academic Learning Center by emailing [tutoring@tamusa.tamus.edu](mailto:tutoring@tamusa.tamus.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 a time when personal stressors interfere with your academic performance and/or negatively impact your daily functioning. If you or someone you know is experiencing life stressors, emotional difficulties, or mental health concerns at A&M-SA, please contact the Office of Student Counseling & Wellness Services (SC & WS) located in Modular C Room 166 (Rear entrance) or call 210-784-1331 between the hours of 8:00 AM and 5:00 PM. All mental health services provided by SC & WS are free, confidential (as the law allows), and are not part of a student's academic or university record. SC&WS provides brief individual, couples, and group therapy, crisis intervention, consultation, case management, and prevention services. For more information, please visit [www.tamusa.edu/studentcounseling](http://www.tamusa.edu/studentcounseling).

In a crisis, please walk-in to the SC & WS services between 8:00 AM and 5:00 PM to be seen by a licensed clinician. After hours, please contact UPD at 911 or text "HOME" to 741-741 24/7/365 to connect with a trained crisis counselor. The National Suicide Prevention hotline also offers a 24/7/365 hotline at 1-800-273-8255.

**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: <http://www.tamusa.edu/riskmanagement/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.

**Jaguar Writing Center:** The Jaguar Writing Center provides writing assistance to graduate and undergraduate students in all three colleges. Writing tutors work with students to develop reading skills, prepare oral presentations, and plan, draft, and revise their written assignments. Students can make individual or group appointments with a writing tutor. The Writing Center is in the Central Academic Building, Suite 208. Appointments can also be made through JagWire under the services tab.

**Meeting Basic Needs:** Any student who has difficulty affording groceries or accessing sufficient food to eat every day or who lacks a safe and stable place to live and believes this may affect their performance in the course is urged to contact the Dean of Students ([DOS@tamusa.edu](mailto:DOS@tamusa.edu)) for support. Furthermore, please notify the professor if you are comfortable doing so. This will enable them to provide any resources they may possess.

**Military Affairs:** If possible, veterans and active-duty military personnel are welcomed and encouraged to communicate in advance 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@tamusa.edu](mailto:military@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 traditions. Under the policy, students are provided an opportunity to make up any examination, study, or work requirements that may be missed due to 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 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 to discuss ways to create an inclusive environment in this course and across the A&M-San Antonio community.

**Drop Policy:** You may drop the course with an automatic grade of W on or before the date listed in the academic calendar at [www.tamusa.edu](http://www.tamusa.edu). The last date to drop a course or withdraw from the University is also indicated in the academic calendar on the university website ([www.tamusa.edu](http://www.tamusa.edu)). If you wish to drop the class, you must submit the necessary paperwork to the proper authority. Students dropping a course are subject to all conditions listed in the university catalog.

**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 exceeding the maximum allowed by SB 1231 will be treated as "F" grades and 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, based on race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, or veteran status. Individuals who believe they have experienced harassment or discrimination prohibited by this statement are encouraged to contact the appropriate offices within their respective units.

**Students' Rights and Responsibilities:** The following statement of students' rights and responsibilities is intended to reflect the philosophical base upon which University Student Rules are built. This philosophy acknowledges the existence of both rights and responsibilities, which is inherent to an



individual not only as a student at Texas A&M University-San Antonio but also as a citizen of this country.

#### *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 administrative rule 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, based on race, color, national or ethnic origin, religion, sex, disability, age, sexual orientation, or veteran status in accordance with applicable federal and state laws.
3. A student has the right to personal privacy except as otherwise provided by law; students and University authorities alike will observe this.
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 University officials.
2. A student has the responsibility to be fully acquainted with the published University Student Rules and to comply with them, as well as federal, state, and local laws.
3. A student is responsible for recognizing that student actions reflect upon the individuals involved and the entire University community.
4. A student has the responsibility to maintain a level of behavior that is consistent in supporting the institution's learning environment and to recognize the University's obligation to provide an environment for learning.

**Violations of Academic Conduct (Section 14.5 Student Handbook):** As members of an academic community, students at Texas A&M University-San Antonio are expected to exhibit a high level of honesty and integrity in their pursuit of higher education, be mature, be self-directed, and be able to manage their own affairs. Students unwilling to abide by these basic expectations will face academic and/or disciplinary sanctions. Students are expected to share in the responsibility and authority with faculty and staff to challenge and make known acts that violate the Texas A&M University-San Antonio Code of Conduct. For more information, please visit the Office of Student Rights & Responsibilities website: <http://bit.ly/TAMUSAStudentRR>.

Students engaging in an act that violates academic integrity standards will face academic and/or disciplinary sanctions. Academic misconduct is any act or attempt that gives the student an unfair advantage. Additionally, any behavior specifically prohibited by a faculty member in the course syllabus or class discussion may be considered academic misconduct. Academic misconduct includes but is not limited to, cheating, plagiarism, multiple submissions, collusion, lying, and bribery. For more information, refer to the Student Code of Conduct, Article III: Conduct Rules and Regulations. Texas A&M University-San Antonio faculty has the discretion to impose grade penalties as deemed necessary.

Faculty members are required to report such serious breaches of academic honesty to their chair, their dean, and the Office of Student Rights and Responsibilities. In cases of academic misconduct, students may be subject not only to grade sanctions in courses but to disciplinary action. Grade sanctions may be imposed only by faculty members, but suspension or expulsion may be imposed only by the Vice President for Student Affairs. If a student wishes to appeal the decision of suspension or expulsion due to violations of academic misconduct, they must initiate their appeal as outlined within the Student Code

of Conduct. Extenuating circumstances may cause the University to deviate from the defined time frames.

All student term papers and other written assignments are subject to analysis by anti-plagiarism software. Posting of any class work given to students, solutions, or discussion on publicly accessible forums or on social media is not permissible.

Considering the potential consequences of academic misconduct, it is obviously in students' best interests to avoid even the appearance of such behavior. If a student is unclear whether a specific act might constitute academic misconduct, she/he should contact the instructor to assess the situation.

**Key Dates for Spring 2025 Semester**

The complete academic calendar is available online:

<https://www.tamusa.edu/academics/academic-calendar/index.html>