

Advanced Information Assurance COSC 6379
Department of Computing Sciences
Fall 2021

A. COURSE INFORMATION

Course number/section: COSC 6379/001
Class meeting time: Monday – Wednesday 5:30-6:45 PM
Class location: CI 108
Course Website: shorturl.at/gjpvB

B. INSTRUCTOR INFORMATION

Instructor: Carlos Rubio-Medrano, Ph.D.
Office location: Center of Instruction 339
Office hours: Mondays, 2:30-5:30 PM, Wednesdays, 3:30-5:30 PM
Telephone: N/A
e-mail: carlos.rubiomedrano@tamucc.edu
Appointments: Please send an email to instructor to request for an appointment.

C. COURSE DESCRIPTION

This course encompasses a broad range of topics involving information security, communications security, network security, risk analysis, operational security, health information privacy, criminal justice digital forensics, homeland security, the human element and social engineering, and applicable national and international laws. An in-depth information assurance capstone project or research paper will be required of each student to satisfy the information assurance graduate option requirements.

This course will provide students with a basic and comprehensive understanding of the problems of *information assurance* (IA) and the solutions to these problems, especially the security of information on computers and networks. This course will focus on the IA technology as well as IA policy, management, legal, and ethical aspects.

D. PREREQUISITES AND COREQUISITES

Prerequisites

COSC 6375 Information Assurance

Corequisites

None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)

None.

Optional Textbook(s) or Other References

All required information for the course will be provided in the lectures. However, I highly recommend these textbooks for those wanting to gain a deeper understanding of the principles we will discuss:

Introduction to Computer Security.
Matt Bishop
ISBN: 0321247442

Supplies

None.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT

Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course's student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Understand the current threats and risks involving modern cyber-infrastructures.
2. Understand and implement confidentiality and integrity techniques via access control and cryptography.
3. Understand modern techniques for secure distributed storage via blockchains.
4. Understand and implement techniques for the correct authentication of remote users.
5. Dissect and exploit vulnerabilities in existing software products.
6. Understand and implement cyber defenses for modern online e-commerce websites.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

We will resort to two major instructional methods: 1) in-class lectures provided by the instructor; and, 2) graded homework assignments provided by the instructor as well. Students are required to attend all lectures. Following the University's policy for the Fall 2021 semester, lectures will not be recorded. However, a pre-recorded lecture may be distributed via Blackboard when the instructor is unable to deliver class during regular times.

Homework assignments will have a moderate-to-advanced level of challenge, and may require students to invest a considerable time on them. Also, assignments include students developing/acquiring additional skills useful in the Computer Science field, e.g., learning a

new programming language or a development platform. Students are expected to investigate on their own when needed, and may request assistance from the Instructor or TA on additional learning materials when appropriate.

H. MAJOR COURSE REQUIREMENTS AND GRADING

We will have both a midterm as well as a final exam. Students will be required to answer open questions regarding the lectures provided by the instructor as well as coding problems based on the homework assignments. **The complexity of the exams will be commensurate with the level of complexity observed during lectures and assignments.**

All homework assignments will include coding and **will be graded based on correctness of the solution, level of effort, and on-time submission.** You will be given precise instructions on what programming languages will be allowed, and how to run and submit your programs so the instructor and/or the TA can compile them, test them, and properly assess a grade. Failing to comply with such instructions will result in a deduction to your assignment grade up to 15/100 points. Not-compiling or runtime-failing code will receive partial credit only, never to exceed 40/100 points.

ACTIVITY	% of FINAL GRADE
Exams	60
Quizzes	0
Homework	40
Presentations	0
Lab Reports	0
Papers	0
Other activities . . .	0

I. COURSE CONTENT/SCHEDULE

DATE (BY DAY OR WEEK)	<u>TOPIC</u>	SLIDES	ASSIGNMENTS
Aug 23, 25	1-Overview, 2- Introduction	1, 2	
Aug 30, Sep 1	2-Introduction, 3-Access Control	2,3	
Sep 6	<i>Labor Day - No Classes</i>		
Sep 8, 13, 15	3-Access Control	3	
Sep 20, 22	4-Cryptography	4	
Sep 27, 29	4-Cryptography	4	Assignment 1
Oct 4, 6, 11	5-Authentication	5	
Oct 13	Midterm Exam	2-5	
Oct 18, 20	6-Phishing	6	
Oct 25, 27	7-Web Security	7	Assignment 2
Nov 1, 3	7-Web Security	7	
Friday, Nov 5	<i>Last Day to Drop Class</i>		
Nov 8, 10	8-Blockchain, 9-App Security	8,9	
Nov 15, 17, 22	9-App Security	9	Assignment 3
Nov 24	<i>Reading Day – No Class</i>		
Nov 29	10-Privacy	10	
Tuesday, Nov 30	<i>Last Day to Withdraw from University</i>		
Dec 1	10-Privacy, Final Review	10	Assignment 4
Monday, Dec 6 4:30 – 7:00 PM	Final Exam	1-10	

Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Attendance/Tardiness

Students are expected to attend all classes.

Late Work and Make-up Exams

Late Work may be submitted with a penalty to be determined by the instructor. Make-up Exams will be only administered under extraordinary circumstances. **You are given the dates and times of exams in advance, so please plan ahead to avoid missing an exam.**

Extra Credit

Opportunities for Extra Credit may be given at the sole discretion of the instructor.

Cell Phone Use

Not allowed at all times.

Laptop Use

Allowed only when an in-class exercised or exam is administered.

Food in Class

Not allowed at all times.

Missed Exam

Only in extraordinary circumstances make up exams will be authorized. Please contact the instructor beforehand in case you may miss an exam.

Participation

All students are expected to fully participate in the course.

Student Safety Trainings

Required safety trainings and/or lab safety seminars must be successfully completed once every academic year, normally in the Fall. Students will be required to take the course from Blackboard in either the first lecture or first lab to complete their training assignments and show the certificate of completion before the end of the class or lab. Students who are still covered by having taken the safety training earlier should show their certificate of completion. For students unable to attend first day of class/lab (or still registering for the class), a reasonable completion date will be flagged in Starfish. A possible grade penalty can be enforced for non-completion.

Others

Academic dishonesty cases will be penalized with a grade of ZERO in the assignment or exam (either midterm or final) in which they are detected by the instructor, regardless of the severity of the case. Students found in two or more cases of academic dishonesty in the semester will automatically receive a final grade of E and will be reported to the University authorities for further processing.

K. COLLEGE AND UNIVERSITY POLICIES

Campus Emergencies*

At TAMU-CC, your safety is a top concern. We actively prepare for natural disasters or human-caused incidents with the ultimate goal of maintaining a safe and secure campus.

- For any emergency, dial the University Police Department (UPD) at **361-825-4444** or dial 911. It's a good idea to have the UPD emergency number (and non-emergency number 361-825-4242) saved in your cell phone.
- There are nearly 200 classroom telephones throughout campus. If you feel threatened or need help and don't have a cell phone, dial 4444 (emergency) or 4242 (non-emergency) to be connected to UPD.
- If we hear a fire alarm, we will immediately evacuate the building and proceed to _____(location).
 - Proceed to the nearest building exit or evacuation stairway. Do not use the elevator. Persons who need help navigating stairs should proceed to a marked Area of Rescue Assistance, if possible.
 - Persons with disabilities should speak with their faculty about how to best assist them in case of an emergency.
 - Review the evacuation route (see specific Building Emergency Plan).
- TAMU-CC employs the Code Blue Emergency Notification System, an alert system which connects the campus community during emergency situations.
 - The notifications include emails, text and pre-recorded messages, as appropriate.
 - Code Blue emergencies may include severe weather warnings, threats, school closures, delays, evacuations and other incidents which disrupt regular campus activities.
 - Students can update personal contact information anytime at <https://emergency.tamucc.edu/contactform/>
- Shelter in Place via Code Blue.
 - "Shelter-in-place" means to take immediate shelter where you are and may be implemented for severe weather, hazardous material spills, active shooters or other dangerous situations.
 - If there is a shelter in place for a **tornado warning**, our preferred location is the bottom floor of this building, away from windows and doors.
- Active Threat Protocol. There are three things you could do that make a difference if there is an active threat: Run, Hide, and/or Fight. For more information about the Run, Hide, Fight protocol, including what to do when law enforcement arrives, visit <http://safety.tamucc.edu/ems/activethreat.html>

For the *Quick Campus Guide to Campus Emergencies* (including a list of Areas of Rescue Assistance and additional protocols on assisting persons with physical disabilities, hurricanes, bomb threats, animal bites, crime reporting, elevator entrapment, etc.), visit <https://safety.tamucc.edu/uploads/Site/finalbooklet.pdf>

- **Academic Integrity (University)**

University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one's own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**

Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**

Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high-quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you 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.

- **Deadline for Dropping a Course with a Grade of W (University)**

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. ***Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course.*** Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (<http://www.tamucc.edu/academics/calendar/>) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**

As stated in University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading,

may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is required to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C0.03, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at

http://academicaffairs.tamucc.edu/rules_procedures/assets/13.02.99.c0.03_student_grade_appeals.pdf). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

Also, please refrain from directly asking the instructor for a grade improvement without any reasonable, logical, and founded motivation at any moment of the semester, a.k.a., *Grade Begging*. **All requests of this sort will be immediately rejected without further discussion.**

- **Disability Services**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

<http://disabilityservices.tamucc.edu/>

- **Civil Rights Complaints**

Texas A&M University-Corpus Christi is committed to fostering a culture of caring and respect that is free from discrimination, relationship violence and sexual misconduct, and ensuring that all affected students have access to services. For information on reporting Civil Rights complaints, options and support resources (including pregnancy support accommodations) or university policies and procedures, please contact the University Title IX Coordinator, Sam Ramirez (Samuel.ramirez@tamucc.edu) or Deputy Title IX Coordinator, Rosie Ruiz (Rosie.Ruiz@tamucc.edu) x5826, or visit website at [Title IX/Sexual Assault/Pregnancy](#).

Limits to Confidentiality. Essays, journals, and other materials submitted for this class are generally considered confidential pursuant to the University's student record policies. However, students should be aware that University employees, including

instructors, are not able to maintain confidentiality when it conflicts with their responsibility to report alleged or suspected civil rights discrimination that is observed by or made known to an employee in the course and scope of their employment. As the instructor, I must report allegations of civil rights discrimination, including sexual assault, relationship violence, stalking, or sexual harassment to the Title IX Coordinator if you share it with me.

These reports will trigger contact with you from the Civil Rights/Title IX Compliance office who will inform you of your options and resources regarding the incident that you have shared. If you would like to talk about these incidents in a **confidential** setting, you are encouraged to make an appointment with counselors in the [University Counseling Center](#).

- **Statement of Academic Continuity**

In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

L. OTHER INFORMATION

- **Academic Advising**

The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

GENERAL DISCLAIMER

I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.