

Computer Forensics COSC 6374
Department of Computer Sciences
Spring 2023

A. COURSE INFORMATION

Course number/section: COSC 6374/1
Class meeting time: TR 12:30 – 1:45 PM
Class location: Center for the Sciences 111
Course Website: Please check the course website on Blackboard.

B. INSTRUCTOR INFORMATION

Instructor: Carlos Rubio-Medrano
Office location: CI 339
Office hours: TR 2:00- 4:30 PM
Telephone: (361) 825-3436
e-mail: carlos.rubiomedrano@tamucc.edu
Appointments: Please send an email to instructor to arrange for an appointment.

C. COURSE DESCRIPTION

Catalog Course Description

This course will introduce students to the fundamentals of computer forensics and cyber-crime scene analysis. The various laws and regulations dealing with computer forensic analysis will be discussed. Students will be introduced to the emerging international standards for computer forensic analysis, as well as a formal methodology for conducting computer forensic investigations.

Extended Course Description

This course discusses identification, extraction, documentation, interpretation, and preservation of computer media for evidentiary purposes and/or root cause analysis.

D. PREREQUISITES AND COREQUISITES

Prerequisites

COSC 2437 - Data Structures.

Corequisites

None.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)

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:

- *Guide To Computer Forensics and Investigations* by Bill Nelson, Amelia Phillips, and Christopher Steuart ISBN: 1337568945. Whether you get the Standalone Book (paperback bound) or the Loose-leaf Version (essentially a 3-ring binder) is your preference.
- *File System Forensic Analysis* by Brian Carrier ISBN: 0321268172 An excellent resource if you want more detail about a variety of filesystems.

Optional Textbook(s) or Other References

- *Digital Evidence and Computer Crime*. Eoghan Casey, Academic Press. 2011.
- *Computer Forensics: Incident Response Essentials*. Warren G. Kruse II and Jay G. Heiser. Addison Wesley. 2002.
- *Incident Response*. E. Eugene Schultz and Russell Shumway. New Riders. 2002.

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. Discover digital evidence;
2. Responding to electronic incidents;
3. Track communications through networks;
4. Understand electronic media, crypto-literacy, data hiding, and system forensics;
5. Understand the role of forensics and in the digital environment.
6. Use and extend common tools used in Computer Forensics.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

We will resort to two major instructional methods: 1) in-class, recorded lectures provided by the Instructor; and, 2) graded homework assignments provided by the Instructor as well. Students are required to attend and/or watch all recorded lectures. 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
Homework	30
Attendance	10
TOTAL	100

I. COURSE CONTENT/SCHEDULE

WEEK	DATES	<u>TOPIC</u>	TOPICS	ASSIGNMENTS
1	Jan 17, 19	0 – Course Review, 1-Intro		
2	Jan 24, 26	1-Intro, 2-Evidence Acquisition		
3	Jan 31, Feb 2	2- Evidence Acquisition		Assignment 1
4	Feb 7, 9	3- Drives, Volumes and Files		
5	Feb 14, 16	3- Drives, Volumes and Files		
6	Feb 21, 23	4 – File Systems		
7	Feb 28, Mar 2	4 – File Systems		Assignment 2
8	Mar 7, 9	Midterm Exam	1-4	
9	<i>Mar 14, 16</i>	<i>Spring Break – No classes</i>		
10	Mar 21, 23	5 – Image Forensics		
11	Mar 28, 30	5 – Steganography		
12	Apr 4, 6	6 – Email Forensics		Assignment 3
13	<i>Apr 10</i>	<i>Last Day to Drop Class</i>		
13	Apr 11, 13	6 – Email Forensics		
14	Apr 18, 20	7-Mobile Forensics		
15	Apr 25, 27	8-Cloud and Web Forensics		
16	May 2	Course Review		Assignment 4
16	May 2	<i>Last Day to Withdraw from University</i>		
17	Th May 11 (11:00 AM)	Final Exam	1, 2, 3, 4, 5, 5- Steganography, 6, 7, 8	Same Classroom.

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 and/or watch the recording class sessions. Attendance won't be used to calculate your final grade for this course.

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 will be given the dates and times of exams way beforehand, so please plan ahead and 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 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

None.

K. COLLEGE AND UNIVERSITY POLICIES**COVID-19 Campus Safety Measures**

While the University does not require face coverings or vaccinations, we encourage every Islander to consider getting vaccinated, wear a face covering while indoors, and wash your hands frequently to aid in reducing the spread of COVID-19.

Anyone with COVID-19 [symptoms](#) should not report to campus. Students, faculty, and staff who test positive are required to report their test results to the University [Covid-19 Reporting Form](#).

Please use the below links for COVID-19 guidelines:

[**If You Test Positive, Regardless of Vaccination Status**](#)

[**If you are exposed to Someone with COVID-19**](#)

[**If you have Symptoms Regardless of Vaccination Status**](#)

Complete the COVID-19 [Self Reporting Form](#) and notify instructor.

More COVID-19 related information may be found on the university website at <https://www.tamucc.edu/campus-guide/covid-protocol.php>

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 _____ Anchor Plaza _____ (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.

- **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.