CSCE 5555 Computer Forensics

Catalog Description
Fundamentals of computer forensics and cyber-crime scene analysis, including laws, regulations, international standards and formal methodology for conducting computer forensic investigations. Topics include advanced computer forensic science capabilities such as target hardening and software, tools for data duplication, recovery and analysis, and development of pre-search or on-scene computer investigative techniques.

Instructor Contact
**Name:** Dr. Beddhu Murali
**Pronouns:** he/him/his
**Class Location/Time:** NTDP K150, MW 12:30 PM – 1:50 PM
**Office Location:** Discovery Park, NTDP E245N
**Phone Number:** (940) 369-8652
**In-Person Office Hours:** Room E245N, M2:00-4:00, TTh10:45-12:45, or by appointment
**Email:** beddhu.murali@unt.edu
**IA:** Meenasree Ananthavelu (Meenasree.Ananthavelu@unt.edu), Govind Naidu Pulakhandam (GovindNaidu.Pulakhandam@unt.edu)

Course Structure
This is an in-person, face-to-face course, where instruction is delivered fully on site, meeting in NTDP K150 on Mondays and Wednesdays from 12:30 PM – 1:50 PM. We will use participation assignments, homework assignments, lab projects, and a group investigation to reinforce and put the main ideas discussed in lectures into practice. An in-person midterm and final will assess both the theoretical and applied material for this course. Many assignments will require the use of a variety of computing resources. Access to these resources may be done on your own computer (using the UNT VPN) or on a computer in one of the designated security labs during scheduled lab times/office hours. Forensics software is also made available using the UNT Computer Science VMware vSphere VM Server. Since the computer forensics classes are large, these resources are shared among all students registered in the course, so it is vital that any work (such as screenshots) done on these computing resources be removed with the trash emptied after completing an assignment to ensure the integrity of your work.

Communication Expectations
This course will use the Canvas learning management system (LMS) to distribute course materials, communicate and collaborate online, post grades, and submit assignments. You are responsible for checking the Canvas course site regularly for class work and announcements. You may find the [Online Communication Tips](https://clear.unt.edu/online-communication-tips) helpful. Should you have any questions about the course or material in general, you may attend your instructor’s office hours or use your UNT e-mail address to e-mail your instructor directly at the e-mail address listed above with text CSCE 5575.001 (or your specific lab section) in the subject line. Every attempt will be made to answer e-mails within 24 hours, but if no reply is received within this time frame, please follow up with your instructor again to ensure a response.
For assistance with assignments or questions about grading of a particular assignment, you may also contact the TAs assigned to this either via e-mail or during their office hours. This information will be available on Canvas.

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, but typically about one week after the assignment was due. Grading disputes should first go to the TA that graded your assignment, but if a resolution cannot be reached between the student and the grader, then you should go to the instructor who will have the final say on the grade.

**Tentative Class Schedule (subject to change)**

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Material Covered</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>01/16 — 01/20</td>
<td>Intro/CH1</td>
<td>HW1</td>
</tr>
<tr>
<td>2</td>
<td>01/23 — 01/27</td>
<td>CH3</td>
<td>LAB1</td>
</tr>
<tr>
<td>3</td>
<td>01/30 — 02/03</td>
<td>CH4</td>
<td>HW2</td>
</tr>
<tr>
<td>4</td>
<td>02/06 — 02/10</td>
<td>CH4</td>
<td>LAB2</td>
</tr>
<tr>
<td>5</td>
<td>02/13 — 02/17</td>
<td>CH5</td>
<td>HW3</td>
</tr>
<tr>
<td>6</td>
<td>02/20 — 02/24</td>
<td>CH5</td>
<td>LAB3, Assess 1</td>
</tr>
<tr>
<td>7</td>
<td>02/27 — 03/03</td>
<td>CH7</td>
<td>LAB4</td>
</tr>
<tr>
<td>8</td>
<td>03/06 — 03/10</td>
<td>CH8</td>
<td>TBD</td>
</tr>
<tr>
<td>9</td>
<td>03/20 — 03/24</td>
<td>CH8</td>
<td>HW4</td>
</tr>
<tr>
<td>10</td>
<td>03/27 — 03/31</td>
<td>CH9</td>
<td>LAB5</td>
</tr>
<tr>
<td>11</td>
<td>04/03 — 04/07</td>
<td>CH9</td>
<td>HW5, Assess 2</td>
</tr>
<tr>
<td>12</td>
<td>04/10 — 04/14</td>
<td>CH10</td>
<td>LAB6</td>
</tr>
<tr>
<td>13</td>
<td>04/17 — 04/21</td>
<td>CH12</td>
<td>LAB7</td>
</tr>
<tr>
<td>14</td>
<td>04/24 — 04/28</td>
<td>CH13</td>
<td>HW6</td>
</tr>
<tr>
<td>15</td>
<td>05/01 — 05/05</td>
<td>TBD</td>
<td>Group Work</td>
</tr>
<tr>
<td>16</td>
<td>05/08 — 05/12</td>
<td>Final Exam</td>
<td>05/10 10:30 – 12:30</td>
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**Course Objectives**

Upon successful completion of this course, the student will be able to:

1. Demonstrate general knowledge and comprehension of computer forensics and computer investigations.
2. Describe and explain the Windows, Macintosh, and Unix/Linux operating systems data storage and methodologies.
3. Describe and explain the methods used for digital evidence control, processing crime and incident scenes, and data acquisition for computer forensic analysis.
4. Demonstrate knowledge and comprehension of basic tools and techniques used in the field of computer forensics sciences.
5. Describe and explain writing investigation reports and being an expert witness.
Course materials

Required Textbook

This course will make use of several computer forensics programs, available as freeware or shareware on the Internet, or through those accompanying the assigned textbook. A USB flash/jump drive is recommended for data storage and backup.

Grading

Your course grade will be a weighted average according to the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>5.0%</td>
</tr>
<tr>
<td>HW</td>
<td>20.0%</td>
</tr>
<tr>
<td>LAB</td>
<td>20.0%</td>
</tr>
<tr>
<td>Group Work</td>
<td>5.0%</td>
</tr>
<tr>
<td>Assessments 1 and 2 (15% each)</td>
<td>30.0%</td>
</tr>
<tr>
<td>Comprehensive Final Exam</td>
<td>20.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>


Please watch Canvas for weekly assignments and/or quizzes. All assignments and quizzes have a max score of 100 points. Late penalty is 15 points. For team projects, if any, you need to submit your own report written from your point of view highlighting your participation and contribution. Substantial overlap with other team members is allowed.

Grades will be posted on Canvas throughout the semester to provide an ongoing assessment of student progress, though final assessment will be measured using the weighted average above. Once a grade is posted on Canvas, students have two (2) weeks to dispute the grade, unless otherwise instructed. The proper channel for grade disputes is to first go to the original grader (i.e., the TA) in an attempt to resolve the issue. If, however, a resolution cannot be reached between the student and the grader, the student shall then go to the instructor who will have the final say on the grade.

Students are responsible for submitting the correct assignments (i.e., uploading the proper files) for each applicable assignment submission on Canvas. If you have any questions or concerns about your submission, please work with your instructor or TA to ensure the correct file(s) is/are submitted.

Welcome to UNT!
As members of the UNT community, we have all made a commitment to be part of an institution that respects and values the identities of the students and employees with whom we interact. UNT does not tolerate identity-based discrimination, harassment, and retaliation. UNT’s full Non-Discrimination Policy can be found in the UNT Policies section of the syllabus.

Course Student Activities
Participation Activities: These grades will be based on participation-type activities to demonstrate basic comprehension in theoretical and applied concepts. These activities may be given anytime during the
Homework: Homework will be assigned based on material from the lectures or textbook. These assignments are meant for you to become familiar with the course material and this practice will assist you in mastering the concepts on lab projects and exams.

Lab Projects: Students will complete several in-depth hands-on laboratory assignments intended to give a more thorough view of computer forensics using modern and established forensics tools in the field of cyber forensics.

Midterm Exam: The in-person midterm exam will be closed-book/closed notes and will cover both the theoretical and laboratory material in the course. The date of this exam will be posted on Canvas and announced in class at least one week prior to the date of the exam. A make-up exam will be given at the discretion of the instructor when a student misses an exam with an excused absence. Unexcused absences on the date of an exam may result in a grade of 0 for the missed exam, so every effort should be made to attend class on the day of a scheduled exam.

Group Investigation: Students will work in groups of up to 5 to complete a comprehensive forensics investigation near the end of the semester that will demonstrate applied mastery of material covered in class. Students must be present and contribute to the investigation with their group to receive credit for this activity.

Final Exam: The in-person final exam will be closed-book/closed notes and will cover both the theoretical and laboratory material in the course. The final exam will be given on May 6, 2023, from 10:30 AM to 12:30 PM. All students are expected to take the final exam during the scheduled time period.

Course Policies

Attendance

Students are expected to attend class meetings regularly and to abide by the attendance policy established for the course. It is important that you communicate with the professor and the instructional team prior to being absent, so you, the professor, and the instructional team can discuss and mitigate the impact of the absence on your attainment of course learning goals. Please inform the professor and instructional team if you are unable to attend class meetings because you are ill, in mindfulness of the health and safety of everyone in our community.

If you are experiencing any symptoms of COVID-19 (https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html) please seek medical attention from the Student Health and Wellness Center (940-565-2333 or askSHWC@unt.edu) or your health care provider PRIOR to coming to campus. UNT also requires you to contact the UNT COVID Team at COVID@unt.edu for guidance on actions to take due to symptoms, pending or positive test results, or potential exposure.

Lecture Section: Class attendance is regarded as an obligation as well as a privilege. All students are therefore expected to attend each class meeting. A student who misses class is still responsible to find out what was discussed and to learn the material that was covered and obtain the homework that was assigned on the missed day. The instructor is not responsible for re-teaching material missed by a student who did not attend class. Therefore, each student is accountable for and will be evaluated on all material
covered in this course, regardless of attendance. If there are extenuating circumstances preventing you from attending the class, please notify your instructor so that you can work together to ensure your success in learning the material.

Examination Policy
Assessment exams will be closed-book/closed-notes and will be completed in-person in the lab classroom during the assigned lab section time using the lab computers and applicable software.

The final exam will be closed-book/closed-notes and will be given during the scheduled exam time on Tuesday, December 7, 2021, from 1:30 PM to 3:30 PM in the classroom for the face-to-face section.

A make-up exam will be given at the discretion of the instructor when a student misses an exam with a documented excused absence.

Assignment Policy
The University is committed to providing a reliable online course system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will extend the time windows and provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and contact the UNT Student Help Desk: helpdesk@unt.edu or 940.565.2324 and obtain a ticket number. The instructor and the UNT Student Help Desk will work with the student to resolve any issues at the earliest possible time.

All assignments will be posted to Canvas with given due dates. Submissions will be done using Canvas to the appropriate assignment drop box by the due date and time. A sophisticated program will be used to compare your assignment submission to the work of all other students (including students in past classes).

Instructor Responsibilities and Feedback
Your instructor is committed to providing a quality course that includes clear instructions for projects and assignments as well as an appropriate amount of time to complete the assignments. Questions about an assignment may be addressed to the instructor or the TA supporting this course. Study guides for exams will be made available to students prior to the exam.

Every attempt will be made to answer e-mails within 24 hours. If you do not receive a response by that time, please re-send the e-mail and verify that you have sent it to my correct e-mail address: Beddu.Murali@unt.edu. It is my hope that grades will be returned to students approximately one week after the due date (for the latest section, in the case of labs), but please keep in mind that this course has a number of students with limited grading resources who are students as well, so we ask your patience if we run behind in returning the graded assignments.

Syllabus Change Policy
This syllabus may be modified as the course progresses should the instructor deem it necessary. Notice of changes to the syllabus shall be made through Canvas and/or class announcement.

UNT Policies
Academic Integrity Policy
Academic Integrity Standards and Consequences. According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to
cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.

This course follows UNT’s policy for Student Academic Integrity that can be found at https://policy.unt.edu/policy/06-003 as well as the Cheating Policy for the Department of Computer Science and Engineering (posted on Canvas). Specifically, the first instance of a student found to have violated the academic integrity (i.e., cheating) policy will result in a grade of "F" for the course and have a report filed into the Academic Integrity Database, which may include additional sanctions.

Collaboration with other students in your team is only acceptable for Projects 1-4. And although you may seek assistance from your instructor, TA, and other students during the lab session for non-exam lab assignments, you are still required to work on your own lab assignment and turn in your individual work to Canvas before the lab session is complete, unless directed otherwise.

Individual programming assignments (i.e., projects) given outside of the lab in this course are meant to be problem-solving exercises and must be the sole work of the individual student. You should not work with other students on shared program solutions or use program solutions found on the Internet. Specifically, you should never copy someone else’s solution or code, and never let a classmate examine your code. A sophisticated program will be used to compare your work to the work of all other students (including students in past classes). If you are having trouble with an assignment, please consult with your instructor or TA associated with the class.

You must do your own work on exams. There should be no ambiguity here.

In case the above description and in-class discussion of appropriate and inappropriate collaboration do not answer all of your questions, please meet with your instructor and look at the university Student Rights and Responsibilities web page.

ADA Policy
UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one’s specific course needs. Students may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website (https://disability.unt.edu/).

Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)
The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.
**Emergency Notification & Procedures**
UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

**Retention of Student Records**
Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student’s records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University’s policy. See UNT Policy 10.10, Records Management and Retention for additional information.

**Acceptable Student Behavior**
Student behavior that interferes with an instructor’s ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT’s [Code of Student Conduct](https://deanofstudents.unt.edu/conduct) to learn more.

**Access to Information - Eagle Connect**
Students’ access point for business and academic services at UNT is located at: my.unt.edu. All official communication from the University will be delivered to a student’s Eagle Connect account. For more information, please visit the website that explains Eagle Connect and how to forward e-mail [Eagle Connect](https://it.unt.edu/eagleconnect).

**Student Evaluation Administration Dates**
Student feedback is important and an essential part of participation in this course. The student evaluation of instruction is a requirement for all organized classes at UNT. The survey will be made available during weeks 13, 14 and 15 of the long semesters to provide students with an opportunity to evaluate how this course is taught. Students will receive an email from "UNT SPOT Course Evaluations via IASystem Notification" ([no-reply@iasystem.org](mailto:no-reply@iasystem.org)) with the survey link. Students should look for the email in their UNT email inbox. Simply click on the link and complete the survey. Once students complete the survey they will receive a confirmation email that the survey has been submitted. For additional information, please visit the [SPOT website](http://spot.unt.edu/) or email [spot@unt.edu](mailto:spot@unt.edu).

**Survivor Advocacy**
UNT is committed to providing a safe learning environment free of all forms of sexual misconduct. Federal laws and UNT policies prohibit discrimination on the basis of sex as well as sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking and/or sexual
assault, there are campus resources available to provide support and assistance. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-5652648.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the Electronic Code of Federal Regulations website (http://www.ecfr.gov/). The specific portion concerning distance education courses is located at Title 8 CFR 214.2 Paragraph (f)(6)(i)(G).

The paragraph reads:

(G) For F-1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F-1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

(1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.

(2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Student Verification

UNT takes measures to protect the integrity of educational credentials awarded to students enrolled in distance education courses by verifying student identity, protecting student privacy, and notifying students of any special meeting times/locations or additional charges associated with student identity verification in distance education courses.
Use of Student Work
A student owns the copyright for all work (e.g. software, photographs, reports, presentations, and email postings) he or she creates within a class and the University is not entitled to use any student work without the student’s permission unless all of the following criteria are met:

- The work is used only once.
- The work is not used in its entirety.
- Use of the work does not affect any potential profits from the work.
- The student is not identified.
- The work is identified as student work.

If the use of the work does not meet all of the above criteria, then the University office or department using the work must obtain the student’s written permission.

Download the UNT System Permission, Waiver and Release Form

Transmission and Recording of Student Images in Electronically-Delivered Courses

1. No permission is needed from a student for his or her image or voice to be transmitted live via videoconference or streaming media, but all students should be informed when courses are to be conducted using either method of delivery.

2. In the event an instructor records student presentations, he or she must obtain permission from the student using a signed release in order to use the recording for future classes in accordance with the Use of Student-Created Work guidelines above.

3. Instructors who video-record their class lectures with the intention of re-using some or all of recordings for future class offerings must notify students on the course syllabus if students' images may appear on video. Instructors are also advised to provide accommodation for students who do not wish to appear in class recordings.

   Example: This course employs lecture capture technology to record class sessions. Students may occasionally appear on video. The lecture recordings will be available to you for study purposes and may also be reused in future course offerings.

No notification is needed if only audio and slide capture is used or if the video only records the instructor's image. However, the instructor is encouraged to let students know the recordings will be available to them for study purposes.

Academic Support & Student Services
Student Support Services

Mental Health
UNT provides mental health resources to students to help ensure there are numerous outlets to turn to that wholeheartedly care for and are there for students in need, regardless of the nature of an issue or its
severity. Listed below are several resources on campus that can support your academic success and mental well-being:

- Student Health and Wellness Center (https://studentaffairs.unt.edu/student-health-and-wellness-center)
- Counseling and Testing Services (https://studentaffairs.unt.edu/counseling-and-testing-services)
- UNT Care Team (https://studentaffairs.unt.edu/care)
- Individual Counseling (https://studentaffairs.unt.edu/counseling-and-testing-services/services/individual-counseling)

**Chosen Names**
A chosen name is a name that a person goes by that may or may not match their legal name. If you have a chosen name that is different from your legal name and would like that to be used in class, please let the instructor know. Below is a list of resources for updating your chosen name at UNT.

- UNT Records
- UNT ID Card
- UNT Email Address
- Legal Name

*UNT euIDs cannot be changed at this time. The collaborating offices are working on a process to make this option accessible to UNT community members.*

**Pronouns**
Pronouns (she/her, they/them, he/him, etc.) are a public way for people to address you, much like your name, and can be shared with a name when making an introduction, both virtually and in-person. Just as we ask and don’t assume someone’s name, we should also ask and not assume someone’s pronouns.

You can add your pronouns to your Canvas account so that they follow your name when posting to discussion boards, submitting assignments, etc.

Below is a list of additional resources regarding pronouns and their usage:

- What are pronouns and why are they important?
- How do I use pronouns?
- How do I share my pronouns?
- How do I ask for another person’s pronouns?
- How do I correct myself or others when the wrong pronoun is used?

**Additional Student Support Services**
- Registrar (https://registrar.unt.edu/registration)
- Financial Aid (https://financialaid.unt.edu/)
- Student Legal Services (https://studentaffairs.unt.edu/student-legal-services)
- Career Center (https://studentaffairs.unt.edu/career-center)
- Multicultural Center (https://edo.unt.edu/multicultural-center)
- Counseling and Testing Services (https://studentaffairs.unt.edu/counseling-and-testing-services)
- Pride Alliance (https://edo.unt.edu/pridealliance)
- UNT Food Pantry (https://deanofstudents.unt.edu/resources/food-pantry)

Academic Support Services
- Academic Resource Center (https://clear.unt.edu/canvas/student-resources)
- Academic Success Center (https://success.unt.edu/asc)
- UNT Libraries (https://library.unt.edu/)
- Writing Lab (http://writingcenter.unt.edu/)