Digital Forensics (CCJS 321)

Term: *Fall 2025*
Professor: Lisa Diercks
Pronouns: she/her

Credits: 3
Course Dates: From Sep 8, 2025 - Dec 8, 2025

Email: ldiercks@umd.edu
Office Hours: (Online via Zoom link posted on ELMS)
Wednesdays 5:30PM - 8:00PM
Thursdays 5:00AM - 6:30AM
Course Times: Mondays 2:30 PM - 5:00 PM
Classroom: Building III Room 3211

Course Description

This course provides an introduction to the principles, practices, and tools of digital forensics. Students will explore the investigative processes used to identify, preserve, analyze, and present digital evidence in a legally sound manner. Topics include devices and data storage, legal and ethical considerations, forensic imaging, mobile and cloud forensics, and case studies where digital forensics played a key role. It will also introduce more advanced topics such as memory, cloud and network forensics

Throughout the course, students will gain hands-on experience using forensic tools and techniques in lab-based exercises. Emphasis is placed on developing analytical thinking and technical skills required to conduct a full forensic investigation—from initial evidence acquisition to the creation of professional forensic reports suitable for use in court.

By the end of the course, students will understand the role of digital forensics in modern and criminal and cyber investigations and the vast capabilities of these techniques and digital evidence.

Learning Outcomes

After successfully completing this course you will be able to:

- Understand where and how digital information is stored on various devices including computers, phones, thumb drives, cloud storage and other
- Gain familiarity with the role of digital forensics in law enforcement including legal considerations, warrants, chain of custody and proper evidence handling
- Utilize digital forensics tools and techniques to extract, preserve and analyze digital evidence
- Consider digital evidence challenges and concerns including techniques that hide digital evidence and future technology possibilities
- Apply investigative methods and build timelines to present and report information regarding digital evidence

Required Resources

- Course Website: elms.umd.edu

- Book: No Book Required. Online readings will be assigned as part of coursework.

- Application/Software: All applications and software will be set up on virtual machines in the lab. Software will include open source forensic tools such as Autopsy, FTK Imager, Wireshark and more.

Course Structure

Explain the structure of the course here including elements of how the work outside and inside the class should be balanced.

This course will be held through in-person sessions on Mondays from 2:30 PM - 5:00 PM. The 2.5 hour in-person class sessions will be a blend of instruction and working with forensic tools on computers in the lab. There will also be a variety of online quizzes and assignments on ELMS throughout the course.

Tips for Success in this Course

1. **Determine your level of computer knowledge.** This course will include hands-on use of unfamiliar software. It is expected that students will not have experience with this software. However, it is recommended that students have an understanding of how to install programs on a computer, how to use folders on a computer, and how Google Drive works. If students believe they may need additional information on computer usage topics, there will be resources provided on ELMS. Students are highly encouraged to review these prior to the first class time on 9/8 as we will start in-class exercises.
2. **Participate.** I invite you to engage deeply, ask questions, and talk about the course content with your classmates. You can learn a great deal from discussing ideas and perspectives with your peers and professor. Participation can also help you articulate your thoughts and develop critical thinking skills.
3. **Manage your time.** Students are often very busy, and I understand that you have obligations outside of this class. However, students do best when they plan adequate time that is devoted to course work. Block your schedule and set aside plenty of time to complete assignments including extra time to handle any technology related problems.
4. **Login regularly.** I recommend that you log in to ELMS-Canvas several times a week to view announcements, discussion posts and replies to your posts. You may need to log in multiple times a day when group submissions are due.
5. **Do not fall behind.** This class moves at a quick pace and each week builds on the previous content. If you feel you are starting to fall behind, check in with the instructor as soon as possible so we can troubleshoot together. It will be hard to keep up with the course content if you fall behind in the pre-work or post-work.
6. **Use ELMS-Canvas notification settings.** Pro tip! Canvas ELMS-Canvas can ensure you receive timely notifications in your email or via text. Be sure to enable announcements to be sent instantly or daily.
7. **Ask for help if needed.** If you need help with ELMS-Canvas or other technology, IT Support. If you are struggling with a course concept, reach out to me and your classmates for support.

Policies and Resources for Undergraduate Courses *(delete if you are teaching a graduate course)*

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals

- Copyright and intellectual property

Please visit www.ugst.umd.edu/courserelatedpolicies.html for the Office of Undergraduate Studies' full list of campus-wide policies and follow up with me if you have questions.

Course Guidelines

Names/Pronouns and Self-Identifications:
The University of Maryland recognizes the importance of a diverse student body, and we are committed to fostering inclusive and equitable classroom environments. I invite you, if you wish, to tell us how you want to be referred to in this class, both in terms of your name and your pronouns (he/him, she/her, they/them, etc.). Keep in mind that the pronouns someone uses are not necessarily indicative of their gender identity. Visit trans.umd.edu to learn more.

Additionally, it is your choice whether to disclose how you identify in terms of your gender, race, class, sexuality, religion, and dis/ability, among all aspects of your identity (e.g., should it come up in classroom conversation about our experiences and perspectives) and should be self-identified, not presumed or imposed. I will do my best to address and refer to all students accordingly, and I ask you to do the same for all of your fellow Terps.

Communication with Instructor:
Email: If you need to reach out and communicate with me, please email me at ldiercks@umd.edu. Please DO NOT email me with questions that are easily found in the syllabus or on ELMS (i.e. When is this assignment due? How much is it worth? etc.) but please DO reach out about personal, academic, and intellectual concerns/questions. While I will do my best to respond to emails within 24 hours, you will more likely receive email responses from me on Tuesdays, Wednesdays and Thursdays from 7:00pm - 9:00pm EST

ELMS: I will send IMPORTANT announcements via ELMS messaging. You must make sure that your email & announcement notifications (including changes in assignments and/or due dates) are enabled in ELMS so you do not miss any messages. You are responsible for checking your email and Canvas/ELMS inbox with regular frequency.

Communication with Peers:
With a diversity of perspectives and experience, we may find ourselves in disagreement and/or debate with one another. As such, it is important that we agree to conduct ourselves in a professional manner and that we work together to foster and preserve a virtual classroom environment in which we can respectfully discuss and deliberate controversial questions. I encourage you to confidently exercise your right to free speech—bearing in mind, of course, that you will be expected to craft and defend arguments that support your position. Keep in mind, that free speech has its limit and this course is NOT the space for hate speech, harassment, and derogatory language. I will make every reasonable attempt to create an atmosphere in which each student feels comfortable voicing their argument without fear of being personally attacked, mocked, demeaned, or devalued.

Any behavior (including harassment, sexual harassment, and racially and/or culturally derogatory language) that threatens this atmosphere will not be tolerated. Please alert me immediately if you feel threatened, dismissed, or silenced at any point during our semester together and/or if your engagement in discussion has been in some way hindered by the learning environment.

Major Assignments

Labs
- Labs will use a virtual platform to give students hands-on experience with multiple digital forensic tools that are currently used by law enforcement for digital evidence extraction and analysis
- Assignment details will be available through ELMS
- Deliverables are lab dependent, but may include answering questions, providing a write-up and/or creating a timeline

Assignments
- Assignments will have students conduct research related and provide short write-ups related to the lecture topics or perform a case study
- Digital Forensics is broad and is constantly evolving. These assignments will enhance students understanding of how digital evidence is used to assist criminal investigations

Quizzes
- 3 - 4 Quizzes on ELMS throughout the semester
- These quizzes will be designed to test students on knowledge and understanding of concepts covered in lectures and readings that are not included in labs

Online Discussions
- Discussion assignments are primarily focused in the beginning of the semester to increase understanding and conversations on cornerstone concepts of digital forensics
- Each Discussion assignment will be worth 10 points
- (6 points) Students are required to post an initial discussion post answering a question by Midnight on Wednesday nights
- (4 points) Students are required to respond to two other students discussion posts by Midnight on Sunday nights

Participation & Engagement
- Students are expected to participate in class. There will be various opportunities throughout the course to participate.
- Students will earn class participation points by attending class on time and participating in class discussions. For each class that a student attends on time and actively participates, the student will receive 3 class participation points.
- Missed classes, late arrivals, and failure to participate will result in reduction of points. An unexcused absence will result in the loss of class participation points for that day.
- Students are asked not to use cell phones in class. Students who use cell phones and computers in class for any other reasons than those permitted by this syllabus will be penalized class participation points.

Final Project
- This project will be a culmination of all the tools and concepts students have learned throughout the class
- It will begin with identifying devices at a virtual search site, determining data should be collected, and analyzing images from identified devices
- Deliverable will be a final report and timeline of criminal activity found on the devices

- Each student will be asked to present a small portion of their findings to the class during Finals Week
- All work will be conducted within virtual lab environment
- Grading rubric will be provided on ELMS

Grades

All assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please email me to schedule a time for us to meet and discuss.

Late Work Policy:
- **Discussions** must be completed on time for credit. Late discussion posts and replies will not be accepted as other students are relying on your posts to learn and complete their discussion replies
- **The Final Project** must be completed on time for credit. The Final Project cannot be submitted late as it is in lieu of a final exam.
- Labs, Assignments and Quizzes must be completed on time for **full** credit. Students may turn in these items up to one week after the due date, but will receive a 25% reduction in their score.
  - Example: Student completes a quiz 5 days after the due date. Their score on the quiz was 8/10. This student's recorded grade for the quiz will be 6/10.

I am happy to discuss any of your grades with you, and if I have made a mistake I will work to correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

Final letter grades are assigned based on the percentage of total assessment points earned. Grades will be rounded up if a student is .5% or less away from the next letter grade up. To be fair to everyone I have to establish clear standards and apply them consistently, so please understand that being close to this cutoff is not the same as making the cut (89.4 ≠ 90.00). It would be unethical to make exceptions for some and not others.

Grading Structure

Assignment	Percentage %
Class Participation	10%
Online Discussions	10%
Quizzes	15%
Labs	25%
Assignments	20%
Final Project	20%
Total	100%

Final Grade Cutoffs									
+	97.00%	+	87.00%	+	77.00%	+	67.00%	+	
A	94.00%	B	84.00%	C	74.00%	D	64.00%	F	<60.0%
-	90.00%	-	80.00%	-	70.00%	-	60.00%	-	

Academic Integrity

For this course, some of your assignments will be collected via Turnitin on our course ELMS page. I have chosen to use this tool because it can help you improve your scholarly writing and help me verify the integrity of student work. For information about Turnitin, how it works, and the feedback reports you may have access to, visit Turnitin Originality Checker for Students.

The University's Code of Academic Integrity is designed to ensure that the principles of academic honesty and integrity are upheld. In accordance with this code, the University of Maryland does not tolerate academic dishonesty. Please ensure that you fully understand this code and its implications because all acts of academic dishonesty will be dealt with in accordance with the provisions of this code. All students are expected to adhere to this Code. It is your responsibility to read it and know what it says, so you can start your professional life on the right path. **As future professionals, your commitment to high ethical standards and honesty begins with your time at the University of Maryland.**

It is important to note that course assistance websites, such as CourseHero, or AI-generated content are not permitted sources unless the instructor explicitly gives permission. Material taken or copied from these sites can be deemed unauthorized material and a violation of academic integrity. These sites offer information that might be inaccurate or biased and most importantly, relying on restricted sources will hamper your learning process, particularly the critical thinking steps necessary for college-level assignments.

Additionally, students may naturally choose to use online forums for course-wide discussions (e.g., Group lists or chats) to discuss concepts in the course. However, collaboration on graded assignments is strictly prohibited unless otherwise stated. Examples of prohibited collaboration include: asking classmates for answers on quizzes or exams, asking for access codes to clicker polls, etc. Please visit the Office of Undergraduate Studies' full list of campus-wide policies and reach out if you have questions.

Finally, on each exam or assignment you must write out and sign the following pledge: *"I pledge on my honor that I have not given or received any unauthorized assistance on this exam/assignment."* If you ever feel pressured to comply with someone else's academic integrity violation, please reach out to me straight away. Also, *if you are ever unclear* about acceptable levels of collaboration, *please ask*! To help you avoid unintentional violations, *the following table* lists levels of collaboration that are acceptable for each graded exercise. Each assignment will contain more specific information regarding acceptable levels of collaboration.

	OPEN NOTES	USE BOOK	LEARN ONLINE	GATHER CONTENT With AI	ASK FRIENDS	WORK IN GROUPS
Homework Assignments	✔	✔	✔	---	---	---
Quizzes & Weekly Summaries	✔	✔	✔	---	---	---
Labs	✔	✔	✔	✔	✔	—

Final Project	✔	✔	---	---	---	---

Course Outline

The format of this section will vary based on the design of your course and the semester, but our guidance is to aim for a clear and concise table that maps out all of the assignment assessments and deadlines and gives students a sense of the course's organization.

Week #	Topic	Deliverable Assigned (Due Date on ELMS)
1 (9/1)	Labor Day: Preparing for Class	Survey, Discussion 1, Assignment 1
2 (9/8)	Understanding Computers, Data Storage, and the Internet	Discussion 2, Assigned Reading 1 on ELMS
3 (9/15)	Legal and Ethical Considerations for Digital Evidence	Discussion 3, Quiz 1
4 (9/22)	Crime Scenes with Digital Devices	Assignment 2
5 (9/29)	Creation and Storage of Digital Information - Harddrives	Lab 1: FTK Imager
6 (10/6)	Forensic Tools and Software	Assignment 3, Quiz 2
7 (10/20)	Presenting Digital Evidence: Report Writing and Timeline Creation	Assignment 4, Assigned Reading 2 on ELMS
8 (10/27)	Mobile Device Forensics	Lab 2: Cellebrite Reader
9 (11/3)	Lab Accreditation and Standards	Quiz 3, Assigned Reading 3 on ELMS
10 (11/10)	Internet, Email, and Online Information	Lab 3: Online Artifacts, Assigned Reading 4 on ELMS
11 (11/17)	Cyber Crimes and Network Forensics	Lab 4
12 (11/24)	Cloud and IoT Forensics	Assignment 5, Discussion 4
13 (12/1)	Antiforensics and Advanced Topics	Quiz 3, Assigned Reading 5 on ELMS
14 (12/8)	Capstone Project	

Note: This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed.

Final Project - Due In-Person during Finals Week

Final Project Due Date: 4PM Thursday December, 18 2025.

For the official final exam schedule, please refer to: https://registrar.umd.edu/current/registration/exam.html.

Resources & Accommodations
Accessibility and Disability Services

The University of Maryland is committed to creating and maintaining a welcoming and inclusive educational, working, and living environment for people of all abilities. The University of Maryland is also committed to the

principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the University, or be subjected to discrimination. The Accessibility & Disability Service (ADS) provides reasonable accommodations to qualified individuals to provide equal access to services, programs and activities. ADS cannot assist retroactively, so it is generally best to request accommodations several weeks before the semester begins or as soon as a disability becomes known. Any student who needs accommodations should contact me as soon as possible so that I have sufficient time to make arrangements.

For assistance in obtaining an accommodation, contact Accessibility and Disability Service at 301-314-7682, or email them at adsfrontdesk@umd.edu.

Emergency Preparedness

Emergencies on campus can happen at any time. To prepare, visit prepare.umd.edu or use the emergency symbol in the UMD App to review information. Resources for persons with disabilities are available on the emergency preparedness page of the ADA Coordinator's website.

Student Resources and Services

Taking personal responsibility for your own learning means acknowledging when your performance does not match your goals and doing something about it. I hope you will come talk to me so that I can help you find the right approach to success in this course, and I encourage you to visit UMG's Academic Support Services website to learn more about the wide range of campus resources available to you.

In particular, everyone can use some help sharpening their communication skills (and improving their grade) by visiting UMD's Writing Center and schedule an appointment with the campus Writing Center.

You should also know there are a wide range of resources to support you with whatever you might need (UMD's Student Resources and Services website may help). If you feel it would be helpful to have someone to talk to, visit the Counseling Center or one of the many other mental health resources on campus.

Notice of Mandatory Reporting

Notice of mandatory reporting of sexual assault, sexual harassment, interpersonal violence, and stalking: As a faculty member, I am designated as a "Responsible University Employee," and I must report all disclosures of sexual assault, sexual harassment, interpersonal violence, and stalking to UMD's Title IX Coordinator per University Policy on Sexual Harassment and Other Sexual Misconduct.

If you wish to speak with someone confidentially, please contact one of UMD's confidential resources, such as CARE to Stop Violence (located on the Ground Floor of the Health Center) at 301-741-3442 or the Counseling Center (located at the Shoemaker Building) at 301-314-7651.

You may also seek assistance or supportive measures from UMD's Title IX Coordinator, Angela Nastase, by calling 301-405-1142, or emailing titleIXcoordinator@umd.edu.

To view further information on the above, please visit the Office of Civil Rights and Sexual Misconduct's website at ocrsm.umd.edu.

Basic Needs Security

If you have difficulty affording groceries or accessing sufficient food to eat every day, or lack a safe and stable place to live, please visit UMD's Division of Student Affairs website for information about resources the campus offers you and let me know if I can help in any way.

Veteran Resources

UMD provides some additional supports to our student veterans. You can access those resources at the office of Veteran Student life and the Counseling Center. Veterans and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, disabilities) are welcome and encouraged to communicate these, in advance if possible, to the instructor.

Course Evaluation

Please submit a course evaluation through Student Feedback on Course Experiences in order to help faculty and administrators improve teaching and learning at Maryland. All information submitted to Course Experiences is confidential. Campus will notify you when Student Feedback on Course Experiences is open for you to complete your evaluations at the end of the semester. Please go directly to the Student Feedback on Course Experiences to complete your evaluations. By completing all of your evaluations each semester, you will have the privilege of accessing through Testudo the evaluation reports for the thousands of courses for which 70% or more students submitted their evaluations.

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