DFOR 790 – Fall 2024 Syllabus
Advanced Digital Forensics
George Mason University

Administrative Information

Instructor:	David Loveall
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Office hours:	By appointment
Classes:	F, 19:20 – 22:00, Hybrid Online and Horizon Hall 4016

Course Description

Capstone course for the MS in computer forensics program. Students will be exposed to case studies and be required to conduct computer forensic investigations of digital media, intercepted packet switched data, and / or multisource log information to successfully complete each case study. These case studies will form the basis for expert testimony to be provided by the students. *Prerequisites: DFOR 660, DFOR 661, and DFOR 663 or DFOR 664; minimum of 18 credits completed in the MS in Digital Forensics Program prior to registration.*

Textbooks

Note that this book is available to GMU students for free at the URL listed.

Title:	*A Guide to Forensic Testimony*
Author:	Fred Chris Smith and Rebecca Gurley Bace
Print ISBN-13:	978-0201752793
URL:	https://learning.oreilly.com/library/view/a-guide-to/0201752794/

Goals

As the capstone of the Digital Forensics program, students will apply what they have learned in prior classes to preserve, process, analyze, report, and present digital evidence. By the end of the semester, students should be prepared to participate professionally in digital forensics. Students will be able to identify court decisions, policy announcements, technology innovations, and news articles that will impact the discipline and be able to discuss and debate cogently with peers on those topics. Students will demonstrate their ability to convey

complex technical topics to a lay audience by way of providing expert testimony in a moot court scenario.

Participation

All students will be expected to both participate in and lead discussions regarding current events based on their submitted write-ups. Failure to participate in discussions may be used as a factor impacting their own write-up scores. Students are expected to provide constructive feedback to their peers after testimony.

Grading

Grades assigned will be assigned as A (>90%), B (>80%), C (>70%), and F. Grades will be assessed on the following components:

10%	CV
25%	Current Events Write-Up (5 in total)
10%	Tech Terms
10%	Deposition
10%	Prosecution Report of Examination
10%	Defense Report of Examination
15%	Prosecution Testimony
10%	Defense Testimony

Letter grades will be assigned as follows:

≥ 90%	A
≥ 80%	B
≥ 70%	C
< 70%	F

Assignments

A curriculum vitae will be prepared by all students and submitted. This should be developed such that the student would be prepared to provide to a court prior to testifying as an expert witness in the field of digital forensics. Where required by a Non-Disclosure Agreement, or

similar requirement, specific details may be redacted. If this is required, please discuss with the instructor ahead of time.

Throughout the course, there will be five (5) current event write-ups required. These should document a court decision, policy announcement, technology innovation, or news article that will impact the discipline of digital forensics or cyber analysis. The student shall write a paper of approximately one (1) page and submit at least 24 hours prior to class. Each student may only submit one write-up per week. Papers will be used as discussion topics for the entire class.

A list of current tech terms will be provided for the class and supplemented by in class discussion. Students will be required to develop definitions / explanations for these terms appropriate for use in explaining them to individuals outside of the discipline of digital forensics, e.g. attorneys, judges, and juries. The subset of terms defined by an individual student will be selected by the instructor.

Two reports of examination appropriate for submission to a court proceeding will be written by all students. One of these shall be for a prosecutor, the other for a defendant. The basis of these reports will be examinations of digital evidence conducted by the student. The report written for the prosecutor will be provided to another student in the course who is conducting a parallel exam for a defendant and vice versa.

Each student will present their findings in a multiple moot court scenarios, with a report of examination written by the student forming the basis of the testimony provided. The first scenario will be in the form of a deposition from an earlier examination. The second scenario will be in the form of expert testimony for the prosecution in a criminal proceeding. The third scenario will be in the form of expert testimony for the defense, responding to earlier testimony from another student. Specific dates for testimony will be selected by the instructor.

Important Dates

Please visit http://registrar.gmu.edu/calendars/ and view important dates for the current semester.

Call 703-993-1000 for recorded information on campus closings (e.g. due to weather).

Attendance Policy

Students are expected to attend each class, to complete any required preparatory work (including assigned reading) and to participate actively in lectures, discussions and exercises.

As members of the academic community, all students are expected to contribute regardless of their proficiency with the subject matter. Although the class is held online, a synchronous discussion is important for demonstrating proficiency in the elements of the course.

Students are expected to make prior arrangements with Instructor if they know in advance that they will miss any class and to consult with the Instructor if they miss any class without prior notice.

Departmental policy requires students to take exams at the scheduled time and place, unless there are truly compelling circumstances supported by appropriate documentation. Except in such circumstances, failure to attend a scheduled exam may result in a grade of zero (0) for that exam.

Communications

Communication on issues relating to the individual student should be conducted using email or telephone. Email is the preferred method – for urgent messages, you should also attempt to contact the Instructor via telephone. Email messages from the Instructor to all class members will be sent to students' GMU email addresses – if you use another email account as your primary address, you should forward your GMU email to that account. Lecture slides are complements to the lecture process, not substitutes for it - access to lecture slides will be provided as a courtesy to students provided acceptable attendance is maintained.

Academic Integrity

GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification. Students are required to be familiar and comply with the requirements of the GMU Honor Code @ http://oai.gmu.edu/the-mason-honor-code/. All assessable work is to be completed by the individual student. Students must NOT collaborate on the project reports or presentation without explicit prior permission from the Instructor.

The material provided in the course is proprietary. Uploading this material anywhere without the express permission of the instructor is strictly prohibited and a violation of the Mason Honor Code. Individual course components that are provided openly for computer forensics education, research, and open standards and sourced from locations such as Digital Corpora, government publications, and textbooks may be shared following their respective requirements, such as appropriate academic citations.

Disability Accommodations

If you have a learning or physical difference that may affect your academic work, you will need to furnish appropriate documentation to the Office of Disability Services. If you qualify for accommodation, the ODS staff will give you a form detailing appropriate accommodations for your instructor. In addition to providing your professors with the appropriate form, please take the initiative to discuss accommodation with them at the beginning of the semester and as needed during the term. Because of the range of learning differences, faculty members need to learn from you the most effective ways to assist you. If you have contacted the Office of Disability Services and are waiting to hear from a counselor, please tell me.

Diversity

George Mason University promotes a living and learning environment for outstanding growth and productivity among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth.

An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.

The reflection of Mason's commitment to diversity and inclusion goes beyond policies and procedures to focus on behavior at the individual, group and organizational level. The implementation of this commitment to diversity and inclusion is found in all settings, including individual work units and groups, student organizations and groups, and classroom settings; it is also found with the delivery of services and activities, including, but not limited to, curriculum, teaching, events, advising, research, service, and community outreach.

Acknowledging that the attainment of diversity and inclusion are dynamic and continuous processes, and that the larger societal setting has an evolving socio-cultural understanding of diversity and inclusion, Mason seeks to continuously improve its environment. To this end, the University promotes continuous monitoring and self-assessment regarding diversity. The aim is to incorporate diversity and inclusion within the philosophies and actions of the individual, group and organization, and to make improvements as needed.

Privacy

Students must use their MasonLive email account to receive important University information, including messages related to this class. See http://masonlive.gmu.edu for more information.

COVID-19

GMU's guiding principle for a safe return to campus is "We pledge to support the health, safety, and well-being of the Mason community while fulfilling the university's mission." The implementation of this principle is important for the entire University community. Due to the fluid nature of the pandemic, changes will be made as circumstances warrant.

Lectures and discussion will be conducted online. To the extent practical, a wide range of classroom technologies will be utilized to allow students to learn how to leverage these technologies in support of the field of digital forensics.

The court system has been attempting to adapt to COVID-19 and judges are leveraging videoconferencing in an unprecedented fashion. Online moot court will be used to present this style of testimony to students by way of the deposition. Eventually, courts will return to in person arguments, and it will be beneficial to students to have a moot court experience that mimics this environment.

Recognizing there are a wide range of individual circumstances, no students will be required to attend an in-person moot court. An instructor facilitated discussion will occur during the first week of class to identify benefits and concerns regarding the specific circumstances of this course.

See https://www.gmu.edu/Safe-Return-Campus for more information.

Generative AI

Students are permitted to use Generative AI tools to support their learning of course material whenever they find it beneficial. However, the use of these tools must adhere to the

fundamental principles of the Honor Code. Any violations of academic integrity will be reported to the Office of Academic Integrity.

While you are free to use Generative AI tools, you are fully accountable for any incorrect, biased, or unethical content that is included in your submissions. Your assignment grade will reflect the inclusion of any such material. Furthermore, you must be transparent about your use of these tools, clearly identifying which tools were used and how they contributed to your work.

The use of Generative AI is expected to become commonplace in many professional fields. Gaining experience in the ethical, efficient, and effective use of these tools during this course will prepare you for their application in your future career.

As discussed during the class overview in Week 1, the content of all written submissions will serve as the foundation for future in-class oral discussions. Students must be prepared to understand, explain, and robustly defend the conclusions presented in their work, regardless of the tool used. Whether your work incorporates assistance from Generative AI or you are using forensics software to parse digital evidence, simply stating “the computer said so” as a justification is insufficient and will negatively impact your grade.

Readability improvements to the syllabus section on Generative AI were suggested by OpenAI's GPT-4 language model.

See https://stearnscenter.gmu.edu/knowledge-center/ai-text-generators/ for more information.

Schedule and Topics

Date		Discussion Topics	Assignment
Week 1	8/30	Syllabus. Class overview. Curriculum vitae. COVID-19 discussion.	
Week 2	9/6	Reporting: Reports of Examination, notes, technical documentation.	**Deposition Report of Examination, (Current Event)**
Week 3	9/13	Presenting: Testifying as an expert witness. Technical and administrative presentations.	**CV, (Current Event)**
Week 4	9/20	Analysis: Developing expert opinions. Interpretation.	**(Current Event)**
Week 5	9/27	Deposition. Tech terms. *Detailed below.*	**Defense Report of Examination, (Current Event)**
Week 6	10/4	Deposition. Tech terms.	**(Current Event)**
Week 7	10/11	Deposition. Tech terms.	**Prosecution Report of Examination, (Current Event)**
Week 8	10/18	Moot court. *Detailed below.*	**(Current Event)**
Week 9	10/25	Moot court.	**(Current Event)**
Week 10	11/1	Moot court.	**(Current Event)**
Week 11	11/8	Moot court.	**(Current Event)**
Week 12	11/15	Moot court.	**(Current Event)**
Week 13	11/22	Moot court.	**(Current Event)**
	11/29	Thanksgiving Recess, No classes.	
Week 14	12/6	Moot court.	**(Current Event)**
Week 15	12/13	Moot court.	**(Current Event)**

Specific dates are subject to change.

Weeks 5 to 7: Each week, one-third of the students will be selected to present a detailed defense of their report previously submitted as a final project in DFOR 661. Another third will

explain key technical terms, and the final third will provide constructive feedback on their peers' work.

Weeks 8 to 15: Each week, two to four students will be selected to present their prosecution or defense report of examination. The specific weeks for each student will be assigned one week in advance. Students will receive discovery material containing the contents of another student's report from the opposing side. During the week, each student will meet with an assigned attorney to prepare a direct examination, receive guidance on how to handle their own cross-examination, and provide advice on key issues that may be significant during the cross-examination of the opposing expert. Students not presenting in moot court will participate as jurors, providing verbal feedback and anonymous written feedback to the participants.