

Course Overview & Syllabus

Senior Seminar in Digital Investigation FOR 450-01

This course is going to be a hybrid in many ways — it will be partially personal journey as you move through your project and partially public discussion and sharing of information. The goal is that you each find a project that is interesting, intellectually challenging, and a good thing to put on your resume. There will have some periodic tasks, homework, assignments, etc. — but it won't be the same week-to-week schedule of most courses. This course is arranged more like a graduate seminar.

There are several objectives of this course. First, it is a good time to push your own boundaries and be intellectually challenged. Second, this is an opportunity for you to learn something — something that you can use yourself and can also share with others. Third, this is a time to write a paper of high quality for your personal professional portfolio. Fourth, you need to become familiar with the research — and the literature — in the field of cyberforensics and digital investigations. Finally, this is a time for you to do something enjoyable! And... a possible side effect — a journal publication for really good papers.

Course prerequisite: 90 credits

This is a senior level course for Computer & Digital Forensics majors. It is expected that students in this course are well-versed in computer and network forensics, and digital investigations.

Student outcomes:

Upon completion of this course, students will be able to:

- Articulate research, ideas, laws, policies, and opinions in written reports, class discussions, and presentations.
- Demonstrate the ability to do technical and legal research using the Web, the print media, other people, and other resources.
- Demonstrate an awareness of the constantly changing nature of computing and networking technologies and services, the tools to aid in the analysis of these technologies and services, the legal environment in which these analyses are performed, and the changes in society affecting the professional and ethical codes of conduct.

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(up to 9PM)

+1 518-569-1423

<http://www.nycomputernetworks.com/df>

Texts and supplementary resources:

The primary information resources for the course will be the Internet, the library, and other online and in-person resources. [GaryKessler.net](http://garykessler.net) also has a number of papers and articles on topics related to digital forensics. GCK's List of Cybercrime and Cyberforensics-related URLs at <http://www.garykessler.net/library/foresnicsurl.html> has some potentially useful pointers to relevant research sites and journals on the Internet.

Attendance, Homework, and Grading:

This course will require that everyone be engaged in what is going on. During the early and late parts of the semester, there will be a lot of class discussion and sharing, while during the early and middle parts of the semester, you'll have to be in a lot of conversation with me! We're not going to have a lot of weekly assignments, per se, but I will rely on you to stay up with class discussions. Assignments will contain a due date and should be turned in on time; early is better, and late assignments will only be accepted with instructor's pre-approval and may be assessed a penalty. (**NOTE:** *Pre-approval* means that you have discussed with me turning in something late and received explicit permission to do so; it does *not* mean telling me that it will be submitted late.)

It will be necessary for you to use proper formatting for all writing assignments, including citing references and creating a bibliography. **For this course, all references and citations must conform with APA format.** For more information on APA, check out an APA manual from a library, buy a manual at most bookstores, or check out online APA references at Purdue, University of Illinois, or Long Island University.

Unless we have made different arrangements, the final paper should be at least ten (10) single-spaced pages, *not* counting any figures, screen shots, tables, reference list, etc. You must use at least seven references, all from published, reliable literature (i.e., don't use sites like Wikipedia as your source). You also need to create an accompanying presentation — i.e., a Web site or a presentation graphics file (e.g., PowerPoint). More on this as we get started....

At a minimum, it is my intention to publish these papers on the program's web server to showcase your quality academic work. One of our graduates, Derrick Farmer, has his senior thesis published on Forensic Focus. See the following link:

<http://www.forensicfocus.com/a-forensic-analysis-of-the-windows-registry>

You should strive to complete a quality paper that can become a resource for the digital forensics community and attempt to get it published. I will venture to say that employers will look favorably at an applicant that has a published paper.

It's also important that you be creative. As I said above, push your own boundaries. This is a safe place to try something new and see if it works; the worst that'll happen is that it won't but that's educational, as well!! I want you to **think** — and the more you do it, the better and faster you'll get at it!!!

Grades will be weighted roughly as follows:

- Homework: 25%
- Project: 50%
- Attendance, participation, and meeting deadlines: 25%

I will use the College's standard numerical scale for calculating final grades:

A A- B+ B B- C+ C C- D+ D D- F

93+ 90 87 83 80 77 73 70 67 63 60 59-

Applicability of Core Competencies

The Champlain College faculty and administration have committed that our curricula will address these seven critical core competencies:

- Technology
- Critical and Creative Thinking
- Global Studies
- Oral Communication
- Written Communication

- Quantitative Literacy
- Ethical Reasoning

This course addresses these competencies as outlined below.

Technology

This is a capstone course describing technologies learned and employed in previous years.

Critical and Creative Thinking

A big part of this course is determining what topics are currently noteworthy and will have long-lasting significance. Paring down the wealth of information available into the most important and relevant is a first step in critical analysis of the field. The projects will require that students particularly demonstrate real understanding of the subject areas that they choose, with an expectation that they dig down further than what they find at face value.

Critical thinking is reinforced by homework assignments and classroom discussions. Rather than focus on bare "facts," the homework and class meetings focus more on how the subject matter integrates with other things that student know and will learn in the future. We also examine how students' attitudes change as their level of knowledge — and responsibility — changes.

Global Studies

International awareness is not a major focus of this course and, in fact, many aspects of digital investigations are geography-independent. The technology is relatively universal and, therefore, the technical solutions are universal. Laws, however, vary country-by-country so that actions that are illegal in some countries are legal in others (such as unleashing a virus). Although not emphasized, the course does describe some of the geographical, political, and cultural differences as they apply to legal aspects, privacy expectations, and acceptable use policies. Classroom discussions and research projects will probably take students around the world.

Oral and Written Communication

To be successful in the business world, professionals must be able to communicate in both written and oral form. This course will focus on many aspects of digital forensics, and that knowledge is nearly useless if it cannot be communicated.

The digital investigator must be able to communicate to many audiences on many levels:

- Communication with peers and managers at the technical level. This requires an understanding of computer, networking, and legal concepts, as well as the proper vernacular.
- Communication with judges, juries, attorneys, and other lay persons, generally at a non-technical level. A successful technologist must be able to communicate the technical aspects of an analysis in understandable terms; this is often the most challenging portion of a professional's development.

- Communication with individuals at all levels within an organization with all levels of understanding. This includes upper management and supervisors to peers and subordinates, ranging from the technophobe to the technophile.

This course will provide students with ample opportunity to practice their communication skills through the weekly homework assignments and classroom discussions, but even more so through the research project that is part research paper, part oral presentation, and part presentation graphics. All assignments include grammar and composition as a component of grading.

Quantitative Literacy

Professional digital investigators have to be able to analyze patterns of activity to differentiate between normal and abnormal, legal and illegal. Most of the information on computers and networks involves numbers and symbols, and the cyberforensics professional needs to be able to find the connections between disparate data points to be able to recreate a sequence of events. This course will provide students with ample opportunity to practice quantitative literacy through the research project.

Ethical Reasoning

Cyberforensics analysis often requires ethical considerations — When is a subject's privacy being invaded? Is it ever right to withhold incriminating or exculpatory evidence? When is it right to break the law to obtain information? How does one respond to a potentially unethical request by a supervisor? Digital investigators much adhere to a code of ethics and such a framework must be employed in this course.

Students with Disabilities

If you believe that you have a disability requiring accommodations in this class, please contact the Coordinator of Support Services for Students with Disabilities as soon as possible. After you receive your accommodation form, please see me so that I can work with you to implement them in a timely fashion.

Contact: Julie Reville, Coordinator of Services for Students With Disabilities, Phone: 802-651-5961;

Email: jreville@champlain.edu

Academic Honesty Policy

The Champlain College Student Handbook (*The Rudder*) describes the College's Academic Honesty policy. If the instructor suspects that a student has plagiarized or otherwise cheated on an assignment — i.e., to either actually or attempt to knowingly give, receive, or use work that is not your own — the instructor can give a 0 on that assignment.

This is not to suggest that the college or the program discourages your collaboration with students and others; in fact, we encourage as much collaboration as possible. The point of this policy is that work that you submit as your own *has* to be your own! If you work with another

person or other resource that helps you learn an answer to something, that's fine — but what you turn in should be in your own words and clearly demonstrate **your** understanding. If you're unsure, indicate on your paper that you worked with others.

Don't cheat; there's no margin in it!! If you have a problem, talk to me instead.

This course along with the syllabus has been adapted from Gary Kessler, Director of the Center for Digital Forensics and Professor of Digital Forensics at Champlain College and it is being used with permission.

Course calendar: (Subject to change but you will be notified of changes...)

There is an assignment, project work and reading each week during the semester. During each of the 15 weeks, expect to spend a full 6-10 hours working on course materials outside the classroom.

Week/Lecture No. (Start Date)	Topic	Reading*	Assignment
1 (9/2)	<p>Course overview & Syllabus.</p> <p>During this week, think about what you'd like to do in this course and what you'd like to accomplish. Do you want to write a paper, do a hands-on project, do some original research, etc.? You can think about this by yourself, engage in discussion with your classmates, discuss it with me, or... whatever you want.</p>		<p>Assignment #1: Post a message to the Introduction Discussion Forum that tells us: A) who you are; B) when you anticipate graduating and your post-graduation plans; and C) your preliminary thoughts about what you'd like to research in this course. [10 points]</p>
2 (9/8)	Annotated bibliography.		Assignment #2 assigned.
3 (9/15)			
4 (9/22)	Project initiation...		Assignment #2: Annotated Bibliography due in Discussion Forum (2/4, 12:00 noon) [40 points]
5 (9/29)	Post and discuss annotated bibliographies	VAG Chaps. 3, 4; CMU § 2.2.12-2.2.17, 2.3, 3	Lecture 5 Homework
6 (10/6)	<p>Project topic finalized Outline initiated</p> <p>Start thinking about the outline for your project. This is not a committal on your part, per se, but preliminary ideas.</p>		Assignment #3: Project topic due to instructor (2/11, 12:00 noon) [10 points]

7 (10/13)		MID-TERM
10/13	October Recess – there are classes on Tue 10/14 – it is a Monday schedule	
8 (10/20)	Project outline	Assignment #4: Project outline due to instructor (3/3, 12:00 noon) [30 points]
9 (10/27)	Intermediate status report	Assignment #5: Status report due to instructor (3/10, 12:00 noon) [10 points]
10 (11/3)		
11 (11/10)	Rough Draft	
12 (11/17)		
13 (11/24)	Thanksgiving Break NO class on Wed 11/26 –	
14 (12/01)	Student presentations and discussion	Final Project Due Presentations to be posted on the Web Presentation Discussion Thread noon [30 points] Project Papers due to instructor (4/16, 12:00 noon) [50 points]
15 (12/08)	STUDENT PRESENTATIONS	FINAL EXAM WEEK