



School of Engineering
*Information
Technology Program*

ITP 375: Digital Forensics and Cyber Investigations

Units: 4

Fall 2023

Monday & Wednesday, 11:00 AM – 12:50 PM

Syllabus for Schedule of Classes – Subject to Minor Change

Location: RRB 101

Instructor: Pierson Clair

Office: TBD

Office Hours:

TBD

Contact Info: pclair@usc.edu

Teaching Assistant: TBD

Office: TBD

Office Hours:

TBD

Contact Info:

TBD

IT Help: Viterbi IT

Hours of Service:

Monday – Friday, 8:30 a.m. – 5:00 p.m.

Contact Info:

DRB 205

(213) 740-0517

engrhelp@usc.edu

Course Description

In 2013, worldwide cybercrime profits exceeded the worldwide drug trade profits. Computers are becoming more of a threat today than ever before. From cyber-terrorism to identity theft, the digital age has brought about a change in the way that crime is being committed. The usage of computers in crime has led to the emerging field of computer forensics. This course is designed to give students the tools and techniques for investigating crime involving digital evidence.

This course is designed as an introductory course in digital forensics and cyber investigations. Students will first understand basic investigative techniques and how digital forensics is applied to investigations. The course will then focus on the tools and techniques to perform a full investigation involving digital evidence.

Catalogue Description

Forensic science techniques. Digital evidence preservation. Processes and methodologies for digital examinations. Cybercrime investigations. Windows file system analysis. Real case scenario analysis and reporting.

Learning Objectives

Upon completing this course, students will:

- Understand the fundamentals of digital forensics
- Understand the legal aspects of forensic investigations
- Understand the relationship between IT, business continuity and forensics
- Learn best practices for cyber investigations
- Initiate and complete a single system forensic analysis
- Articulate their forensic findings

Prerequisite(s): ITP 125

Course Notes

This course can be taught either in person or online.

Required Readings and Supplementary Materials

There is no required textbook for the course. The following textbooks can be supplemental for aiding in your understanding of the material. The course schedule will suggest reading from the textbooks listed

Hacking Exposed: Computer Forensics, 2nd Edition. Davis, Philipp, and Cowen
ISBN: 0071626778
Identified as HECF

Windows Forensic Analysis Toolkit, 4th edition. Carvey. ISBN: 0124171575
Identified as WFAT

Windows Registry Forensics, 2nd edition. Carvey. ISBN: 012803291X
Identified as WRF

Description and Assessment of Assignments

There will be approximately 10 quizzes throughout the semester that will be completed online. They will consist of approximately five questions, and will be open book, open note.

Assignments in the class will include a series of lab exercises in which students will be given a series of step-by-step instructions on how to perform a specific task using a forensic tool or how to perform a forensic analysis technique using a specific tool. The lab will require students to report on their findings and reflect on the meaning of the uncovered forensic artifact in terms of a typical investigation. Grading will be based on extracting the correct data and the explanation of the relevance of the finding. Lab exercises are typically structured to take approximately one week to complete.

There will be three case assignments as a part of the class. Each one follows the same format. Students will be given a background on the investigation and the need for a forensic analysis. Students will be given a forensic image of a suspect system upon which to complete their investigation. Students will then be given two to three weeks (depending on the complexity of the case) to complete their examination and submit their forensic report. Grading is based on the following:

- Findings: 5 points

- Supporting Details: 5 points

- Writing Style, Grammar and Notes: 5 points

An example case scenario is provided:

You have been hired by Funlux Technologies to perform an employee investigation of Ms. Wanda Wheaton. She has been showing disrespectful behavior to the company CEO, Mr. Kurt Bigshot. She has also lashed out at other employees.

The company has hired you to perform an investigation of her system to find anything that could be used to justify her employment termination.

Your goal is to determine if Ms. Wheaton is involved in any disclosure of confidential information or any activities that could be damaging to the company.

Grading Breakdown

	% of grade
Lab Assignments (Total)	45
Quizzes	10
Case 1	10
Case 2	10
Case 3	10
Final Exam	15
TOTAL	

Assignment Submission Policy

All assignments will be submitted through Blackboard.

Additional Policies

No make-up exams (except for documented medical or family emergencies) will be offered nor will there be any changes made to the Final Exam schedule.

It is your responsibility to submit your assignments on or before the due date. Assignments turned in one day late will have 25% of the total points deducted from the graded score. Assignments turned in two days late will have 50% of the total points deducted from the graded score. After two days, submissions will not be accepted and you will receive a 0.

Synchronous session recording notice

The live lectures (synchronous sessions) will be recorded and provided to all students asynchronously.

Course Schedule: A Weekly Breakdown

Week	Topics/Daily Activities	Readings	Deliverable/Due Dates
1	Introduction to Forensics	HECF Chapter 1	
2	Computers, Media and Storage	HECF Chapter 2	Lab 1: Case Preparation
3	Forensic Software/Hardware Introduction	HECF Chapters 3 & 4 WFAT Chapter 1	Lab 2: Media Forensic Acquisitions
4	Filesystems	HECF Chapter 6 WFAT Chapter 4	Lab 3: Tool Setup and Filesystem Analysis
5	Bookmarking & Searching Data Encoding	Lecture Notes	Lab 4: Searching & GREP
6	File Type Analysis Forensic Report Writing	Lecture Notes	Lab 5: File Metadata Analysis Case 1 Assigned
7	Pattern Matching (GREP)	Lecture Notes	Lab 6: GREP Lab
8	Work on Case 1	N/A	
9	Windows Registry Analysis	WFAT Chapter 5	Lab 7: Basic Windows Registry Analysis Case 1 Due Case 2 Assigned
10	Tracking User Activity	HECF Chapter 12	Lab 8: User Activity Tracking
11	USB Device Tracking	WFAT Chapter 8	Lab 9: USB Activity Analysis
12	Email Analysis	HECF Chapter 11	Lab 10: Email Analysis Case 2 Due Case 3 Assigned
13	Deleted File Analysis	Lecture Notes	Lab 11: Deleted File Analysis
14	New Topics in Digital Forensics	Lecture Notes	N/A
15	Course Conclusion and Final Exam Review		Case 3 Due
FINAL		Date: For the date and time of the final for this class, consult the USC Schedule of Classes at classes.usc.edu/ .	

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call

studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symlicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710

campussupport.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.

Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC)

ombuds.usc.edu

A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.