

FRSC 498: Video Forensics
Fall 2024
Faculty Memorial Hall 314
Course Syllabus

[NJIT Academic Integrity Code](#): All Students should be aware that the Department of Chemistry & Environmental Science (CES) takes the University Code on Academic Integrity at NJIT very seriously and enforces it strictly. This means that there must not be any forms of plagiarism, i.e., copying of homework, class projects, or lab assignments, or any form of cheating in quizzes and exams. Under the University Code on Academic Integrity, students are obligated to report any such activities to the instructor.

COURSE INFORMATION

Course Description: *Forensic Video Analysis is the scientific examination, comparison, and/or evaluation of video in legal matters. The Video Forensics course is intended to provide the student with the basic use of digital images and digital audio/video in a forensic setting. The Video Forensics course introduces the student to the application of best practices utilizing various industry standard and open source tools to introduce video evidence in court. Students will be provided methodology and hands on experience in performing imaging tasks that are commonly faced in the digital forensics community today such as image/video enhancement, format conversion, authentication, and comparative analysis.*

Number of Credits: 3

Prerequisites: N / A

Course-Section and Instructor

Course-Section	Instructor
FRSC 498	Brandon Epstein
Mondays 6:00-8:50 PM	Office:
	Office Hours: By appointment
	email: brandon.e.epstein@njit.edu

Required Textbook:

Reading materials provided online through Canvas

IMPORTANT INFORMATION - You must have a computer running the Windows operating system in compliance with the [University's minimum computer specifications](#). You must also have local administrator rights (ability to install software) on your computer.

University-wide Withdrawal Date: The last day to withdraw with a **W** is Monday, November 11, 2024. It will be strictly enforced.

Learning Outcomes: Upon completion of this course, students will:

- Identify and define professionally and legally accepted methodologies, standards, and best practices for the forensic processing of video and image evidence.
- Analyze and apply the correct forensic tool, technique, or methodology to enhance, archive, and print a digital image without compromising its authenticity as evidence.
- Compare and contrast image and video evidence utilizing scientific methodologies, standards, and best practices.
- Perform content and non-content based video authentication examinations.
- Develop and articulate forensic image and video enhancements and comparisons in a forensic report format.
- Construct a courtroom presentation that is legally acceptable in a court of law

POLICIES

All CES students must familiarize themselves with, and adhere to, all official university-wide student policies. CES takes these policies very seriously and enforces them strictly.

Grading Policy: The final grade in this course will be determined as follows:

Class Participation	10%
Assignments	40%
Midterm	25%
Final Exam	25%

Your final letter grade in this course will be based on the following:

A	90-100	C	70-76
B+	87-89	D	60-69
B	80-86	F	<60
C+	77-79		

Attendance Policy: Attendance at classes will be recorded and is **mandatory**. Each class is a learning experience that cannot be replicated through simply “getting the notes.”

Homework Policy: Homework is an expectation of the course. The homework problems set by the instructor are to be handed in for grading and will be used in the determination of the final letter grade as described above.

Exams: There will be one midterm exam held in class during the semester and one comprehensive final exam. The following exam periods are tentative and therefore possibly subject to change:

Midterm	October 28, 2024
Final Exam	Final Exam Week Dec 16-20, 2024 (Date TBD)

Makeup Exam Policy: There will normally be **NO MAKE-UP QUIZZES OR EXAMS** during the semester. In the event that a student has a legitimate reason for missing a quiz or exam, the student should contact the Dean of Students office and present written verifiable proof of the reason for missing the exam, e.g., a doctor’s note, police report, court notice, etc. clearly stating the date AND time of the mitigating problem. The

student must also notify the CES Department Office/Instructor that the exam will be missed so that appropriate steps can be taken to make up the grade.

Cellular Phones: All cellular phones and other electronic devices must be switched off during all class times. Such devices must be stowed in bags during exams or quizzes.

ADDITIONAL RESOURCES

Accommodation of Disabilities: Office of Accessibility Resources and Services (*formerly known as Disability Support Services*) offers long term and temporary accommodations for undergraduate, graduate and visiting students at NJIT.

If you are in need of accommodations due to a disability please contact Chantonette Lyles, Associate Director at the Office of Accessibility Resources and Services at **973-596-5417** or via email at lyles@njit.edu. The office is located in Fenster Hall Room 260. A Letter of Accommodation Eligibility from the Office of Accessibility Resources Services office authorizing your accommodations will be required.

For further information regarding self-identification, the submission of medical documentation and additional support services provided please visit the Accessibility Resources and Services (OARS) website at:

- <http://www5.njit.edu/studentsuccess/disability-support-services/>

Important Dates See: <https://catalog.njit.edu/about-university/academic-calendar/>

Date	Event
Sep 5	First Day of Classes
Nov 11	Last day to withdraw
Nov 28-Dec 1	Thanksgiving Recess
Dec 13	Last day of class
Dec 12-13	Reading days
Dec 15-21	Final Exams

Course Outline

Lecture	Date	Topic	Reading
1	Sep 9	Introduction to Video Forensics	"SWGDE DME as a Forensic Science Discipline"
2	Sep 16	Video: From Light to Pixels	"SWGDE Technical Overview of Digital Video Files"
3	Sep 23	Video Encoding	"SWGDE Digital Image Compression and File Format Guidelines" ISO Base Media File Format 14496-12
4	Sep 30	Metadata Analysis	
5	Oct 7	Video Acquisition	"SWGDE Best Practices for Data Acquisition from Digital Video Recorders"
6	Oct 14	File Format Conversion	"SWGDE Technical Notes on FFmpeg"
7	Oct 21	File Format Conversion – cont'd	
8	Oct 28	Midterm	
9	Nov 4	Video/Image Enhancement	"Proposed Framework for Forensic Image Enhancement"
10	Nov 11	Video/Image Enhancement – cont'd	
11	Nov 18	Image Comparison	"SWGDE Technical Overview for Forensic Image Comparison"
12	Nov 25	Image Comparison – cont'd	
13	Dec 2	Video/Image Authentication	'SWGDE Best Practices for Digital Forensic Video Analysis'
14	Dec 9	Reporting/Testimony	"SWGDE Requirements for Report Writing in Digital and Multimedia Forensics"
	TBD	Final	

*Updated by Brandon Epstein - August 7, 2024
Department of Chemistry & Environmental Sciences
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