Fall 2021

FRSC 359-001: Physical Methods of Forensics & Lab

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NJIT New Jersey Institute of Technology

THE COLLEGE OF SCIENCE AND LIBERAL ARTS

THE DEPARTMENT OF CHEMISTRY AND ENVIRONMENTAL SCIENCE

FRSC 359: Physical Methods of Forensics

M 6:00-7:55p Lecture
(Faculty Memorial 305)
R 6:00-10:05p (TIER 209)
Fall 2021 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: This course is designed to prepare undergraduate students in the forensic science program for impression, pattern, and trace evidence analysis. This course provides the theory, knowledge, and skills that are essential to success in forensic science coursework and the profession. Criminalistics is the branch of forensic science that involves the recognition and identification, or classification, individualization, and reconstruction of physical evidence. The knowledge, skills and abilities that were learned in FRSC 201: Introduction to Forensic Science and FRSC 307: Crime Scene Investigation & Lab will be further developed and honed. The purpose of this course is to gain in-depth understanding of non-biological evidence utilizing physical methods. Students in this course will learn the principles of criminalistics, proper evaluation and comparison of impression evidence in the analysis of unknown materials. There will be an emphasis on the necessity of an objective and rigorous scientific approach to forensic investigations. This course will contain components of proper packaging; class and individual characteristics; principles of criminalists/forensic science; laboratory accreditation guidelines and procedures, ethics; and performing physical comparisons.

Number of Credits: 4

Prerequisites: FRSC 201; FRSC 307 (may be taken as a co-requisite)

Course-Section and Instructor

Course-Section	Instructor
FRSC 359-003	Dr. Kevin Parmelee
M 6:00-7:55pm (FMH 305)	Email: parmelee@njit.edu

Th 6:00-10:05pm (TIER 209)	Office Hours: By Appt. C: 908-420-1102

Required Textbooks:

Material Provided by Instructor

University-wide Withdrawal Date: The last day to withdraw with a **W** is Wednesday, November 10, 2021. It will be strictly enforced.

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

- Classify the nature and origin of physical evidence
- Capture and preserve the physical evidence record by performing observation and accurately documenting the record
- Describe impression/pattern evidence origins and perform evidence evaluations and comparisons
- Summarize ISO 17025 and accrediting body accreditation guidelines and how they integrate with laboratory policy and procedures
- Interpret and analyze pattern/impression evidence using mathematical calculations and physics.
- Communicate the results of analysis, examinations, and interpretations in written reports according to accreditation standards that are relevant to the investigator and attorney.
- Describe the importance of chain of custody, and appropriate packaging of evidence to maintain evidence integrity
- Summarize differences between identifying, class, and individualizing characteristics
- Explain the process of and perform physical comparisons
- Capture observations accurately in documentation

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:

Lab safety and cleanliness	10%
Class Participation	10%
Lab exercises	30%
Midterm Exam	20%
Final Exam	30%
Extra Credit will be given for attending NJIAI, NEAFS, or EAS	5% per conference

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

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." After two unexcused absences, each subsequent absence will result in your class participation score being lowered by one percentage point. You are

expected to read the relevant chapter and/or reading assignment prior to the lecture. Students who participate in lecture will receive points towards their class participation grade.

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 Exam	Oct 18, 2021
Final Exam Period	Dec 15-21, 2021

The final exam will test your knowledge of all the course material taught in the entire course.

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 turned in during exams.

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:

Date	Day	Event
Sept 1	W	First Day of Classes
Sept 8	W	Last Day to Add/Drop Classes
Nov 10	W	Last Day to Withdraw
Nov 23	T	Last class before Thanksgiving
Nov 25	R	Thanksgiving break begins
Nov 28	Sun	Thanksgiving break ends

Dec 10	F	Last Day of Classes
Dec 13-14	M-T	Reading Day
Dec 15-21	W-T	Final Exam Period

Course Outline

Week	Date	T	Assignment
1	Sep 2	Intro to Criminalistics; Lab Accreditation; ISO 17025	Review syllabus; buy textbooks
		Lab Check In; Makerspace Make 101, CSIPix, Faro	Sign lab safety contract; buy PPE
2	Sep 6 (off)	Scientific Measurement & Error	Handout, Ch 3
	Sep 9	Scientific Measurement & Error	Lab 1
3	Sep 13	Forgery Detection	
	Sep 16	Forgery Detection	Lab 2
4	Sep 20	Acquiring and Classifying Fingerprints-CSIPix	Obtain CSIPix, chap 4&5 SourceBook
	Sep 23	Acquiring and Classifying Fingerprints-CSIPix	Lab 3, CSIPix uploading
5	Sep 27	Identification and Matching of Fingerprints / ACE-V-CSIPix	CSIPix annotating, chap 6&9 SourceB

	Sep 30	Identification and Matching of Fingerprints / ACE-V - CSIPix	Lab 4, CSIPix and Court Charting
6	Oct 4	Acquiring and Classifying Footwear-CSIPix	CSIPix uploading
	Oct 7	Identification and Matching Footwear-CSIPix	Lab 5, CSIPix annotating & Charts
7	Oct 11	Soil	Handout
	Oct 14	Soil Examination	Lab 6
8	Oct 18	Midterm	
	Oct 21	FARO training	
9	Oct 25	Toolmarks/Firearms	Ch 5, Faro software
	Oct 28	Tool Mark Examination - Faro	Lab 7, Faro capture & Process
10	Nov 1	Serial Number Restoration	Handout
	Nov 4	Restoring Serial Numbers on Metals Lab	Lab 8
11	Nov 8	Bloodstain Pattern Analysis - Faro	Faro review
	Nov 11	Bloodstain Pattern Analysis -Faro	Lab 9 Faro capture& Process
12	Nov 15	Forensic Odontology/Anthropology	Handout
	Nov 18	Bite Mark Lab	Lab 10
13	Nov 22	Forensic Pathology, Entomology	
	Nov 25	Thanksgiving—no class	
14	Nov 29	Newark Medical Examiner's office--Autopsy	
	Dec 2	Shooting Reconstruction & Technology - Faro	Faro review
15	Dec 6	Shooting Reconstruction & Technology - Faro	Lab 11, Faro capture& Process
	Dec 9	Last day of class; Review for Final	Study for final
	TBD	Final Exam	