

Fall 2019

# FRSC 359-003: Physical Methods of Forensics

David Fisher

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## FRSC 359: Physical Methods of Forensics

*W 8:30-11:20a (FMH 308)*

*F 8:30-11:20a (TIER 209)*

*Fall 2019 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 criminalistics/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	David Fisher ( <a href="mailto:dfisher@njit.edu">dfisher@njit.edu</a> )
W 8:30-11:20am (FMH 308)	Office: Tiernan 385
Th 5:45-7:40pm (TIER 209)	Office Hours: W: 11:30-12:30 & R: 1:30-2:30p

**Required Textbooks:**

<b>Title</b>	Forensic Science Laboratory Manual and Workbook
<b>Author</b>	Thomas Kubic & Nicholas Petraco
<b>Edition</b>	3 <sup>rd</sup>
<b>Publisher</b>	CRC Press
<b>ISBN #</b>	978-1-4200-8719-2

and

<b>Title</b>	Color Atlas of Forensic Toolmark Identification
<b>Author</b>	Nicholas Petraco
<b>Publisher</b>	CRC Press
<b>ISBN #</b>	978-1-4200-4392-1

and other readings as assigned.

**University-wide Withdrawal Date:** The last day to withdraw with a **W** is Monday, November 11, 2019. 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:

<b>Lab safety and cleanliness</b>	10%
<b>Class Participation</b>	10%
<b>Lab exercises</b>	30%
<b>Midterm Exam</b>	20%
<b>Final Exam</b>	30%
<b>Extra Credit will be given for attending NJIAI, NEAFS, or EAS</b>	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 23, 2019
Final Exam Period	Dec 14-20, 2019

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](mailto: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/studentssuccess/disability-support-services/>

**Important Dates:**

Date	Day	Event
Sept 3	T	First Day of Classes
Sept 13	F	Last Day to Add/Drop Classes
Nov 11	M	Last Day to Withdraw
Nov 26	T	Thursday classes meet
Nov 27	W	Friday Classes meet
Nov 28-Dec 1	Th-Su	Thanksgiving recess
Dec 11	W	Last Day of Classes
Dec 12-13	Th-F	Reading Day
Dec 14-20	Sa-F	Final Exam Period

**Course Outline**

Week	Date	T	Assignment
1	Sep 4	Intro to Criminalistics; Lab Accreditation; ISO 17025	Review syllabus; buy textbooks
	Sep 6	Lab Check In; Makerspace Make 101	Sign lab safety contract; buy PPE
2	Sep 11	9/11 Memorial Lecture / Precision Measurement & Error	Ch 3
	Sep 13	Scientific Measurement & Experimental Error	Expt 1 (except 1C)
3	Sep 18	NJSP lab tour (Hamilton, NJ) – we will be taking a van	
	Sep 20	Forgery Detection	Expt 24
4	Sep 25	Acquiring and Classifying Inked and Latent Fingerprints	Expt 5
	Sep 27	Identification and Matching of Fingerprints / ACE-V	Expts 6-7
5	Oct 2	Glass	handout

	Oct 4	Glass Lab	Expt 20 & 1C
6	Oct 9	NJIAI conference ( <a href="http://www.njiai.org">www.njiai.org</a> ) Atlantic City, NJ	
	Oct 11	NJIAI conference	
7	Oct 16	Soil	Handout
	Oct 18	Soil Examination	Expt 25
8	Oct 23	Midterm	
	Oct 25	Forensic Anthropology	Expt 29
9	Oct 30	Toolmarks	Ch 5
	Nov 1	Tool Mark Examination	Expt 19
10	Nov 6	Forensic Odontology	Handout
	Nov 8	Bite Mark Lab	Expt 26-27
11	Nov 13	NEAFS conference ( <a href="http://www.neafs.org">www.neafs.org</a> ); Lancaster, PA	
	Nov 15	NEAFS conference	
12	Nov 20	EAS symposium ( <a href="http://www.easinc.org">www.easinc.org</a> ); Princeton, NJ	NJIT will provide transportation
	Nov 22	Forensic Pathology / Forensic Medicine	handout
13	Nov 27	Newark Medical Examiner's office--Autopsy	
	Nov 29	Thanksgiving—no class	
14	Dec 4	Serial Number Restoration	Handout
	Dec 6	Restoring Serial Numbers on Metals Lab	Handout
15	Dec 11	Last day of class; Review for Final	Study for final
	TBD	Final Exam	

*Updated by David Fisher - Aug 30, 2019  
Department of Chemistry & Environmental Sciences  
Course Syllabus, Fall 2019*

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