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# COURSE SYLLABUS

# FRNSC 210: Essential Practices of Forensic Science

**IT IS THE RESPONSIBILITY OF EACH STUDENT TO CAREFULLY REVIEW THIS DOCUMENT.**

*The content of this syllabus is subject to change. An email notification will be sent with any updates.*

## Course Instructor

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## Course Manager

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## Contacting the Instructional Team

**If you want to email someone on the instructional team, use Canvas.** We are much more likely to see your email in Canvas then when it is mixed in with the 100s of other emails we get each day to our other inboxes.

We will also **use Piazza for class discussion**. There are no mandatory class discussions for points - use of this system is simply to help you get your questions answered more quickly than email if possible. The system is designed to help you get information fast and efficiently from classmates, your CA, the instructor, or the course manager. Rather than emailing questions to the teaching staff, I encourage you to post your questions on Piazza. If it's something simple, a classmate may be able to help and you will not have to wait for a CA or instructor to get back to you. Note: If you are caught using Piazza to cheat

(asking flat out for answers), you will be brought up on academic integrity charges. If you have any problems or feedback for the developers, email team@piazza.com.

## Required Course Materials

- **Principles and Practice of Criminalistics: The Profession of Forensic Science.** Keith Inman and Norah Rudin. CRC Press 2000. ISBN 9781420036930
  - There are e-book versions of this text available online. You can rent it for as low as $30 for six months here: https://www.crcpress.com/Principles-and-Practice-of-Criminalistics-The-Profession-of-Forensic-Science/Inman-Rudin/p/book/9780849381270 I am unsure if you can highlight or make notes using their e-reader. You can also buy the book online or in the bookstore.
- **Plugable USB 2.0 Digital Microscope** with Flexible Arm Observation Stand. Compatible with Mac, Windows, and Linux. 2 megapixel with 10x-250x magnification range. This is available through Amazon.com. The link for the item is: https://www.amazon.com/Plugable-Microscope-Flexible-Observation-Magnification/dp/B00XNYXQHE/ref=sr_1_1?ie=UTF8&qid=1482496892&sr=8-1&keywords=plugable+digital+microscope
- **Instructor provided reading** and websites on CANVAS
- **Microsoft Word**. As a Penn State student you have free access to Word using office365.psu.edu.
- **Access to a scanner**. Handwritten case notes must be scanned using a scanner (no photos, no mobile phone scanning apps). If you do not have one, find the nearest scanner on campus.
- **pdfmerge.com**. You may need to use this website or a similar website to coalesce individual pages of your case notes into one cohesive document for submission.

## Recommended Reading (not required)

- Langford M, Fox A, Smith S. Langford's Advanced Photography: The Guide for Serious Photographers. Focal Press - Elsevier.ISBN: 978-0-240-52191-6
- De Forest PR. Crime Scene Investigation. In: Sullivan LE, Rosen MS, editors. Encyclopedia of Law Enforcement, Volume 1: State and Local. Thousand Oaks: SAGE Publications, 2005, p. 111--116. (ISBN: 9780761926498).
- De Forest PR. Foundations of Forensic Microscopy. In Saferstein R, editor. Forensic Science Handbook: Volume I. 2nd ed. Upper Saddle River: Prentice--Hall, 2002. (ISBN: 9780130910585) Chapter 5.
- Instructor provided reading and websites on CANVAS.

## Introduction

You should have completed FRNSC 100 (Introduction to Forensic Science), CHEM 110, and CHEM 111, which are the prerequisite courses for FRNSC 210. You should also be familiar with Penn State's online course delivery system. This course is offered online only and accessible via CANVAS. Successful completion of FRNSC 210 is required before entrance into the remaining Forensic Science major courses. This course is designed to prepare students for entry into the undergraduate forensic science program by providing theory and knowledge essential to success in the 400 level forensic science courses and in the profession of criminalistics/forensic science. The associated skills and abilities will be further developed in later courses of the forensic science program. In this course, students will learn essential

principles of criminalistics. The necessity of an objective, rigorous scientific approach in forensic investigation will be stressed.

## Overview

The course is broken into two major sections:

- **Part 01** - Ethics, history, accreditation/certification, observation, documentation, and communication
- **Part 02** - Light, optics, microscopy, and photography. These topics will be utilized in your professional career as well as further explored during your forensic science curriculum at Penn State.

## Goals

- This course will prepare students in the fundamentals of criminalistics and forensic science, including the basic knowledge required to:
- Perform observations and documentation
- Describe the nature and origin of physical evidence
- Communicate difference of accreditation and certification and their importance of each in the lab
- Capture and preserve the physical evidence record by documenting observations using techniques that include measurements, notes, sketches, and photographs
- Describe federal rules of evidence and their importance for the expert witness
- Write or evaluate reports according to accreditation standards
- Explain foundational theories of light and optics used in photography and forensic microscopy
- Communicate results of analyses, examinations, and interpretations
- The primary aim of the course is to prepare students for in-depth courses in criminalistics and forensic science using an intensive, problem solving style as well as through reading, use of interactive websites, practical exercises, homework, quizzes, and exams.

**Learning Outcomes**

- Upon completion of FRNSC 210, the student will be able to:
- Communicate Kirk's philosophy of criminalistics and the importance of scientific philosophy in criminalistics
- Describe the purpose of professional organizations within forensic science
- List several professional organizations including several accrediting bodies
- Explain the terms of and organizations for quality assurance, quality control, accreditation, proficiency testing, ASCLD, and ASCLD-LAB
- Demonstrate the required ISO/IEC 17025 and ASCLD-LAB criteria for taking notes at a crime scene or in the laboratory
- Perform various measurement methods used at crime scenes and on evidence in the laboratory
- Describe accuracy, precision, uncertainty of measurement, and margin of error
- Document observations using techniques that include measurements, notes, sketches, and photography
- Explain the proper preparation and maintenance of case folders

- Describe the importance of evidence integrity and chain of custody, and demonstrate its use
- Explain resolution and magnification in visible light images including calculating focal length
- Ask the right question for the case
- Describe different microscopes and their uses in a crime lab including advantages and limitations
- Describe fundamental theories of light, microscopical illumination, image formation, and aberrations of optical lenses and their corrections
- Explain the use of and relationship between aperture, shutter speed, and ISO in capturing a properly exposed image
- Describe color temperature and how it affects a captured image and the apparent color of an object
- Explain proper exposures for different lighting conditions
- Describe and employ proper methods for communication of results of analyses, examinations, and interpretations

## Expectations

The following summarizes the expectations for this online course:

***The Instructor will:***

- Provide clear and concise information on all assignments and assessment methods through weekly taped lectures and email correspondence
- Respond to queries within 48 hours via email
- Treat all students fairly and respectfully
- Do everything reasonably possible to facilitate learning
- Uphold the level of academic excellence expected of all Penn State faculty
- Conduct them self respectfully in online discussions and contribute constructive relevant knowledge

***The Course Assistants will:***

- Respond to queries within 48 hours
- Treat all students fairly and respectfully
- Act as a liaison for the students and instructor for general requests and concerns
- Immediately contact the instructor if they are unable to adequately address a student's question or concern
- Conduct themselves respectfully in online discussions and contribute constructive relevant knowledge

***The Students will:***

- Be actively engaged in the course by reading and using the required textbooks and online resources
- Read course material assigned before engaging in homework, quizzes, exams, or exercises
- Be actively engaged in the course by interacting with the instructor, CA, and online classmates (when permitted)
- Communicate to instructors and CA via Canvas email
- Ask questions and/or ask for help if they do not understand a concept/topic/assignment/directions
- Attend voice thread sessions

- Be expected to be proactive and take responsibility for their education by reading ahead of anticipated material
- Be expected to maintain the highest levels of academic integrity, honesty, ethical behavior, and honor throughout the course
- Be familiar with the University and ECoS academic integrity policy, as well as the specific policies of this course. You will be expected to abide by these policies in both letter and spirit, and anticipate consequences of your actions should you choose to disregard these policies.
- Be expected to complete and submit all assessments by the date specified by the instructor or course assistant(s)
- Be expected to immediately notify both the instructor and your course assistant via email and/or Canvas if an unavoidable emergency prevents the timely submission of an assignment or completion of an assessment. The instructor will determine what constitutes an unavoidable emergency.
- Understand that late, incomplete, or missing assignments and/or incompletion of assessments will adversely affect their grade
- Conduct themselves respectfully in online discussions and contribute constructive relevant knowledge
- **Be expected to complete quizzes and examinations alone, individually, without assistance from other individuals or resources,** including notes, textbooks, electronic or digital or online resources, or other means of communication, etc.
- Be expected to submit her/his own work unless the instructor permits collaboration

## Late Work Policy

**Because the student has at least seven (7) days to complete homework, quizzes, and exercises, late submissions will not be accepted for full credit without PRIOR authorization from the Instructor.** Extensions may be granted for exigent circumstances if the instructor is informed ahead of time (documentation may be requested) and believes the extension is warranted. Not all circumstances may be considered exigent or worthy of delay by the instructor. Contact the instructor or your course assistant as soon as possible with any issues or concerns or if you have questions.

**If no authorization has been granted, quizzes and exams cannot be made up. You will receive a grade of zero** for missing quizzes and exams if you have not received prior approval from the instructor before the quiz or exam window closes.

If no authorization has been granted, **late assignments (homework and exercises - NOT quizzes and exams) will be deducted 10% for every 24 hours that passes from the due date up to 5 days late**. If your assignment is more than 5 days late, it will be marked with a 0. For example:

- If the homework assignment is due at 11:59pm on Monday night and you submit it at noon on Tuesday, you will have 10% (2 points) taken off your final grade for the late assignment. If you earn 17/20 for that assignment, your grade will be lowered to 15/20.
- If the assignment is due at 11:59pm on Monday night and you submit it at 12:00am on Wednesday morning, you will have 20% (4 points) taken off your final grade for that late assignment. If you earn a 17/20 for that assignment, your grade will be lowered to 13/20.
- The numbers for every day late: 2 points off for 20 point assignment, 5 points off for 50 point exercise, 10 points off for 100 points exercises, and 20 points off for 200 point exercises.

- **NOTE: Late is late, whether that deadline is missed by 1 day, 1 minute, or 1 second.** If you choose to tempt fate and not upload your assignment until right before it is due, and you have an issue with Canvas or your internet, and the assignment does not get uploaded until after the deadline, it is considered late. The work is due at 11:59:00pm. Work submitted at 11:59:01pm or later is late. If this happens to you, and you choose to email a CA or instructor about the issue, we will remind you of the Late Policy in the syllabus and to manage your time more efficiently in the future so you do not end up in this situation again.

***NO LATE WORK WILL BE ACCEPTED AFTER THE FINAL DEADLINE OF THE CLASS. THE USUAL POLICY FOR LATE WORK WILL NOT APPLY TO ANY WORK SUBMITTED AFTER THE LAST DUE DATE POSTED. ALL WORK MUST BE SUBMITTED BY THE LAST DUE DATE/DEADLINE GIVEN FOR THIS COURSE.***

**Improperly submitted homework and exercises will be considered late until they are resubmitted properly.** Your CA cannot grade what they cannot read. It is YOUR responsibility to make sure that the work you submit is correct, legible, and accessible. It is not the fault of the CA, manager, or instructor to tell you if you have submitted something incorrectly, nor is it their responsibility to tell you (although we will try if we catch it). You alone are responsible for your work and the submission of your work. If you have questions about how to submit work or if it submitted properly or is viewable, email your CA to check for proper submission – give them *at least 24 hours* to respond. Some examples of improperly submitted work include:

- Wrong document title or file name on submission
- Blank or incomplete work on the assignment
- The wrong document was submitted
- Scans of the document are too faint or illegible
- The assignment was submitted as photos or mobile scans of the document instead of using a scanner
- The assignment was emailed to a CA instead of uploaded to Canvas
- The work was cut and paste into a text box instead of submitted
- The document submitted is not a Word document and/or is in an un-openable or corrupted format
- **If you use a Mac or Apple product, you MUST save and submit your work as a .doc, .docx or pdf in order for Canvas to recognize it. If you submit a .pages document, it will be considered late until it is submitted in one of the acceptable formats.**

## Course Calendar

***Subject to Change* - You will be sent an email if/when changes are made**

| Week | Date | Lecture Topic | *Assigned Reading | Exercise | **Exercise Due Date |
|---|---|---|---|---|---|
| 1 | 26-AUG | Introduction to Criminalistics | PPC Chapters: 1,3, Appendix F | --- | --- |
| 2 | 02-SEP | History | PPC Chapter: 2 | EX. #1 Describe Photograph | 09-SEP |

| | | | | | |
|---|---|---|---|---|---|
| 3 | 09-SEP | QA/QC and Accreditation | PPC Chapters: 9,10, 12 | EX. #2 Proper Packaging and Documentation | 16-SEP |
| 4 | 16-SEP | Preserving the Physical Record | PPC Chapters: 4,5,6 | EX. #3 Coin Class & Individualizing Characteristics | 30-SEP |
| 5 | 23-SEP | Metrology | Instructor Provided Materials | EX. #4 Dimensional Analysis Problems | 07-OCT |
| 6 | 30-SEP | Introduction to Crime Scene Investigation | PPC Chapters: 7, 8 | EX. #5 Mock Crime Scene | 14-OCT |
| 7 | 07-OCT | Legal Aspects of Criminalistics | Instructor Provided Materials | EX. #6 Assessment of Expert Testimony | 21-OCT |
| 8 | 14-OCT | Communication of Forensic Results | PPC Chapter: 11 | --- | --- |
| SB | 21-OCT | MIDTERM EXAM | Instructor Provided Materials | --- | --- |
| 09 | 28-OCT | Fundamentals of Microscopy - 1 | Instructor Provided Materials | EX. #7 Broken Toothpicks, cut and torn paper | 11-NOV |
| 10 | 04-NOV | Fundamentals of Microscopy - 2 | Instructor Provided Materials | EX. #8 Calibration of Microscope | 18-NOV |
| 11 | 11-NOV | Fundamentals of Microscopy - 3 | Instructor Provided Materials | --- | --- |
| 12 | 18-NOV | Fundamentals of Photography - 1 | Instructor Provided Materials | EX. #9 Demonstration of Locard's Exchange Principle | 09-DEC |
| 13 | 25-NOV | THANKSGIVING | BREAK! | --- | --- |
| 14 | 02-DEC | Fundamentals of Photography - 2 | Instructor Provided Materials | EX. #10 Understanding ISO, F/# & Shutter Speed | 16-DEC |
| 15 | 09-DEC | Fundamentals of Photography - 3 | Instructor Provided Materials | --- | --- |
| FINALS WEEK | 16-DEC | FINAL EXAM (Due 20 DEC) | --- | --- | --- |

*Additional reading materials will be assigned, and can be found in the reading folders in each module.

**Time given to complete labs varies. Some labs you will have one week, others two weeks. Proper time management will be crucial to successfully completing all of your work.

## Assignment of Points

| Activity/ Exercise | Points | Approximate Percentage |
|---|---|---|
| Lecture Quizzes; 14 x 10 points each | 140 | 5% |
| Reading Questions; 14 x 20 points each | 280 | 10% |
| Midterm | 500 | 18% |
| Final Exam | 500 | 18% |
| Exercise 1 | 50 | 2% |
| Exercise 2 | 50 | 2% |
| Exercise 3 | 200 | 7% |
| Exercise 4 | 100 | 4% |
| Exercise 5 | 200 | 7% |
| Exercise 6 | 100 | 4% |
| Exercise 7 | 200 | 7% |
| Exercise 8 | 100 | 4% |
| Exercise 9 | 200 | 7% |
| Exercise 10 | 200 | 7% |
| **Total Points** | **2820** | |

## Grading

This table contains the minimum number of points a student must earn to achieve a particular letter grade in the class.

| Percent | Minimum Number of Points | Letter Grade |
|---|---|---|
| 100% | 2820 | A |
| 93% | 2623 | A |
| 90% | 2538 | A- |
| 87% | 2453 | B+ |
| 83% | 2341 | B |
| 80% | 2256 | B- |
| 77% | 2171 | C+ |
| 70% | 1974 | C |
| 60% | 1692 | D |
| <60% | 1691 or less | F |

## Midterm and Final Exams

The midterm and final are both worth 500 points. The exams are taken online. Be sure to read the instructions provided for each exam before you begin. No extensions will be granted without prior authorization from the instructor or documented proof of hospitalization/debilitating illness.

## Policies

***Academic Integrity***

All Penn State policies regarding ethics and honorable behavior apply to this course and each student must abide by the Academic Integrity policies set forth by the University Faculty Senate (Policy 49--20: Academic Integrity) and the Eberly College of Science. Academic dishonesty is not limited to simply cheating on an exam or assignment. The following is quoted directly from the "PSU Faculty Senate Policies for Students" regarding academic integrity and academic dishonesty: "Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized

possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students." All University and Eberly College of Science policies regarding academic integrity/academic dishonesty apply to this course and the students enrolled in this course. It is your responsibility to be thoroughly familiar with all policies and sanctions. They can be accessed at:

http://science.psu.edu/current-students/Integrity/Syllabi.html

http://www.science.psu.edu/academic/Integrity/Policy.html

http://senate.psu.edu/policies-and-rules-forundergraduate-students/

While discussion of course concepts and cooperative study are strongly encouraged, any collaboration, discussion, assistance, cheating (use of friends, books, notes, the internet, etc.) and plagiarism, etc., are NOT permitted during quizzes, examinations or any other assignments *unless otherwise specified in writing by the instructor.* All exam answers must be your own, and you must not provide any assistance to other students during quizzes homework, or exams. **Any collaboration, discussion, assistance, cheating (use of friends, books, notes, the internet, etc.) about or during a quiz, examination, exercise, homework, assignment, or commitment plagiarism or other unethical or dishonest behavior, will result in failure of the quiz, examination, exercise, homework, and/or assignment and may lead to failure of the course and University disciplinary action. Integrity violations become part of your record.**

Integrity and ethics are considered exceptionally important by the instructor and course assistants. You are entering a profession where your integrity is of paramount importance and cannot be suspect in any way. Do not think lying, stealing, or cheating will be tolerated. Do not tolerate this in other students in the forensic science program – report it. **The sanctions will depend on the offense severity: 0 credit on the quiz, exam, exercise, homework, assignment, or other class assignment up to failure of the course. Ethics violations become part of the academic record.**

**Note: you MUST complete the Academic Integrity Module provided on Canvas. This outlines very specifically what is and is not allowed and what is considered a violation of academic integrity. Be sure to pay attention and take that information to heart.**

Each student in this course is expected to work entirely on her/his own while taking any quiz or exam, to complete exercises or other assignments on her/his own effort without the assistance of others unless directed otherwise by the instructor, and to abide by University and Eberly College of Science policies about academic integrity and academic dishonesty. Academic sanctions are determined and assigned by the instructor or by the instructor together with the College Academic Integrity Committee. Disciplinary sanctions may be recommended by the instructor, the College Committee, or the Associate Dean, and are assigned by the Office of Judicial Affairs. The XF grade is a disciplinary sanction that is only assigned with the concurrence of the instructor, the College of Academic Integrity Committee, and Judicial Affairs.

***Code of Mutual Respect***

The Eberly College of Science Code of Mutual Respect and Cooperation embodies the values that we hope our faculty, staff, and students possess and will endorse to make The Eberly College of Science a place where every individual feels respected and valued, as well as challenged and rewarded.

http://science.psu.edu/climate/code-of-mutual-respect-and-cooperation/Code-of-Mutual-Respect%20final.pdf/view

***Disability Policy***

Penn State welcomes students with disabilities into the University's educational programs. If you have a disability--related need for reasonable academic adjustments in this course, contact the Office for Disability Services (ODS) at 814-863-1807 (V/TTY). For further information regarding ODS, please visit the Office for Disability Services Web site at

http://equity.psu.edu/ods/

To receive consideration for course accommodations, contact ODS and provide documentation. See the documentation guidelines at

http://equity.psu.edu/student-disability-resources/guidelines

If the documentation supports the need for academic adjustments, ODS will provide a letter identifying appropriate academic adjustments. Please share this letter and discuss the adjustments with your instructor as early in the course as possible. You must contact ODS and request academic adjustment letters at the beginning of each semester.