

FRNSC 210

Essential Practices of Forensic Science

Sample Syllabus

Description

The primary aim of this course is to prepare students for entry into the undergraduate forensic science program and to enhance success in the 400 level forensic science courses. This course is designed to introduce students to several fundamental areas and provide the theory and knowledge essential for success in the field. The associated skills and abilities for these practices will be developed in later courses required for the forensic science program.

Presently, forensic science and criminalistics are primarily specialized; forensic biologists, forensic chemists, trace evidence examiners, latent print specialists, firearm and tool mark examiners, etc. While some criminalists may be cross-trained in other areas, the majority practice solely in a specific sub-discipline. Regardless of the specialty, all criminalists and forensic scientists will be exposed to and required to perform many of the same essential practices. All criminalists will record observations, in the field and in the laboratory, as case notes. They will prepare sketches, take and record measurements, and photograph scenes and/or physical evidence. Microscopes are used in nearly every sub-discipline for the examination of physical evidence. Criminalists are expected to report and testify to their examinations, analyses, results, and conclusions.

This course is designed to introduce students to these fundamental areas and provide the theory and knowledge essential for success in the field. The associated skills and abilities for these practices will be developed in later courses. FRNSC 210 provides a firm foundation for all later courses; it is the cornerstone of your education and will serve you well as a criminalist. This knowledge cannot be forgotten upon completion of this course; it must be retained as it comprises the essential practices required of all criminalists and forensic scientists.

Objectives

On completion of FRNSC 210, students will be able to:

- Describe Kirk's philosophy of criminalistics and the importance of scientific philosophy in forensic science
- Describe accuracy, precision, uncertainty of measurement, and assessment of error
- Describe the terms and organizations: quality assurance; quality control; accreditation; proficiency testing; ASCLD; and ASCLD-LAB.
- Demonstrate the required ISO/17025 and ASCLD-LAB criteria for note taking at a crime scene or in the laboratory
- Explain the proper preparation and maintenance of case folders
- Execute techniques used to preserve the crime scene record, e.g., to take appropriate notes, make proper sketches, and properly use digital SLR photography
- Describe the importance of evidence integrity and chain of custody as well as demonstrate its use
- Perform various measurement methods used at crime scenes and evidence
- Explain the use of f/stop, 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
- Explain resolution and magnification in visible light images including calculating focal length
- Describe various aberrations of lenses and their corrections
- List different microscopes and their uses in a crime lab including advantages and limitations
- Employ techniques to communicate data, results, and interpretations through written communication

Materials

Langford M, Bilissi E. Langford's Advanced Photography. 8th ed. Oxford: Focal Press, 2011.

Additional assigned reading materials will be provided by the instructor.

Course Schedule

Week	Topic(s)
1	Introduction National Academy of Science Report on Forensic Science
2	Forensic science, criminalistics, science, and evidence Professional Organizations in Forensic Science
3	Quality Assurance, Quality Control and Accreditation Physical evidence: control and authentication
4	Observations and Preservation of physical evidence record: Notes and sketches
5	Measurement: tools, techniques, and accuracy/error
6	Introduction to Light and Photography I
7	Introduction to Optics and Photography II
8	Photography III: Cameras, Lenses, and Lighting
9	Videography
10	Forensic Microscopy I
11	Forensic Microscopy II: Phase Contrast and Darkfield
12	Forensic Microscopy III: Polarized Light and Fluorescence
13	Forensic Microscopy IV
14	Thanksgiving Break
15	Communication of Results I
16	Communication of Results II

Grading

Assignment	Points (each)	% of Total Grade
Midterm Exam	100	20%
Final Exam	150	30%
Quizzes (5)	20(each) 100(total)	20%
Exercises (3)	50(each) 150(total)	10%
Total	500	100%

Academic Integrity

Academic integrity is the pursuit of scholarly activity in an open, honest and responsible manner. Academic integrity is a basic guiding principle for all academic activity at The Pennsylvania State University, and all members of the University community are expected to act in accordance with this principle. Consistent with this expectation, the University's Code of Conduct states that all students should act with personal integrity, respect other students' dignity, rights and property, and help create and maintain an environment in which all can succeed through the fruits of their efforts.

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In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and

provide documentation: [See documentation guidelines](#) . If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

Counseling and Psychological Services

Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients' cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

- [Counseling and Psychological Services at University Park \(CAPS\)](#): 814-863-0395
- [Counseling and Psychological Services at Commonwealth Campuses](#)
- Penn State Crisis Line (Available 24 hrs, 7 days a week): 877-229-6400
- Crisis Text Line (Available 24 hrs, 7 days a week): Text LIONS to 741741

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