FIS 10100
Investigating Forensic Science
COURSE SYLLABUS AND DESCRIPTION
Summer 2018

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Office: EL 137 and Phone: 274-2094
Office Hours: by appointment

Class times and Location: On-line

Prerequisites: None. Open to all students

Course Description
Forensic science is the application of scientific methods to matters involving the public. Crime scene investigation will be taught so students will have general knowledge on techniques used in the field. Students will also be exposed to basic understanding of common forensic science concepts and learn how analysis of specific types of evidence is analyzed in a forensic science laboratory. Topics will include but are not limited to crime scene, hairs, explosives, fire debris, serology, DNA, illicit drugs, fingerprints, firearms, footwear, questioned documents, inks, glass, paint, blood spatter, and soils.

Principles of Undergraduate Learning

- **Integration and Application of Knowledge** – work across traditional course and disciplinary boundaries
- **Intellectual Depth, Breath, and Adaptiveness** – modify one’s approach to an issue or problem based on the contexts and requirement of particular situations
- **Core Communication and Quantitative Skills** – The ability of students to express and interpret information, perform quantitative analysis, and use information resources and technology—the foundational skills necessary for all IUPUI students to succeed.
Course Content and Goals
The course will be divided into 4 different modules all of which consist of separate units. Each unit within each module will have goals which are the outcome you will learn after completing the unit. These modules include Forensic Science Investigations, Pattern Evidence, Biological Evidence, Chemical Evidence.

Module 1: Forensic Science Investigations will include an introductory to the forensic laboratory, crime scene investigation and Evidence.

Unit 1: Introductory to Forensic Laboratory – includes tools used in analysis of forensic evidence, overview of the course material, requirements for the laboratory

Unit 2: Crime Scene – includes looking at different scenarios and concluding with an outcome, photographing the scene, finding important and useful information
- Be able to describe crime scene investigation procedures
- Describe methods for collection and preservation of physical evidence from crime scenes
- Define the tools of forensic science in crime scene investigation

Unit 3: Physical Matches /Pattern Evidence – includes fitting pieces together, such as glass, plastics, wood, and paper; handwriting analysis
- Understand the application of physical matches
- Describe and apply forensic techniques used on questioned documents from an examiner’s analysis

Module 2: Pattern Evidence will include physical matches and pattern and impression evidence including, handwriting analysis, toolmarks, footwear, tiretreads, and fingerprints

Unit 1: Impression Evidence: Toolmarks, Firearms, Footwear and Tiretreads – includes examining toolmarks in different materials and matching together, examining 3 dimensional and 2 dimensional footwear and tiretreads, and firearms examination of bullet and cartridge casings.
- Describe how different types of impression evidence is analyzed
- Recognize the application of impression evidence such as tiretreads, footwear, firearms and toolmark analysis used in forensic science

Unit 2: Fingerprints – includes examining fingerprints by physical, chemical and lighting methods, learning Henry Classification System
- Explain, evaluate, and identify characteristics of fingerprints
- Perform physical and chemical means to develop fingerprints

Unit 3: Question Documents – includes the analysis of handwriting and analysis of inks.
- Recognize the 12 characteristics of used in handwriting analysis
- Recognize elements of forgery
- Indicate how inks are analyzed by forensic scientists
Module 3: Biological Evidence will include bodily fluid identification, blood spatter and DNA analysis and hair examination.

Unit 1: Body Fluid Identification
- Explain methods for collection, preservation, and visualization of biological evidence from crime scenes

Unit 2: Blood Spatter
- Explain how bloodstain pattern evidence can be used in an investigation

Unit 3: DNA
- Explain principles applied to DNA typing techniques
- Interpret different methods used to analyze DNA

Module 4: Chemical Evidence will include fibers, explosives and fire residue examination, and illicit drug analysis techniques.

Unit 1: Hair and Fibers
- Indicate how hair and fiber evidence are analyzed by forensic scientists
- Explain how hair and fiber evidence are used in forensic investigations

Unit 2: Explosives/Fire Residue
- Indicate how fire residue is analyzed by forensic scientists
- Indicate how explosives are analyzed by forensic scientists

Unit 3: Illicit Drugs/Microchemistry
- Indicate how illicit drugs are analyzed by forensic scientists

Class procedures

1. **Assignments:** All assignment information and submissions will be through Canvas. Points may be deducted if submitted late.

2. **Quizzes:** There will be a short quiz over each topic. Although there is no time limit on the quizzes, they are open book and are to be done at home. You have ONE attempt to complete the quizzes. These quizzes are in lieu of mid-term exams and count for 20% of your overall grade. These quizzes will close at midnight one week after they are assigned.

3. **Final Exam:** There will be a comprehensive final exam that will consist of multiple choice questions and true/false questions. The quizzes and case questions are designed to prepare you for the final. The exam date and time will be announced as soon as that information is made available. You are expected to take the exam when offered. The final exam is worth 40% of your overall grade.

4. **Course Material:** You are responsible to review the section material including course material and reading assignments. We will be using an eText this semester, so you must have the capability of accessing these materials. This is built into your Canvas Course, so you do not have to buy a book. All other assignments require Acrobat Reader installed on your computer. It is a free download from the Adobe website. I will also use Windows 7 and Microsoft Office 2010, these are available to you through UITS website, which I recommend. You will need this to access word documents and power point slides that I post under the Files tool of Canvas.
5. **Communication:** Announcements will be made on Canvas to changes in course content. To contact me with questions, concerns, or comments please email me directly @ roskowsd@iupui.edu. I will respond to your email within 24 hours, with an exception to email sent Friday evening through Sunday. I will respond to your email on Monday. I only use the messaging tool on Canvas while I am logged into Canvas and therefore do not receive messages after hours. I will only be available during Monday through Friday, 9am to 4pm, to answer questions.

6. **Internet:** YOU MUST HAVE ACCESS TO THE INTERNET USING A BROWSER. All of the course materials including the answers to exams, assignments, news and announcements, last minute changes outlines of my lectures will be kept in an Canvas file for this class.

**Grading Contributions**

**Grading Scale and Policy**
Your grade will be based on the grading scale as outlined below. You are responsible for ensuring that your grades are recorded. Check them regularly. Do not come to me at the end of the semester about an issue that occurred early in the semester. Your lowest assignment grade and attendance grade will be dropped. There will be no curving of final grades, although I generally round up to the nearest whole percentage. This very clearly puts you in one of the grading ranges below. I have personally verified how Canvas calculates grades and have found that it is correctly calculating grades, including extra credit. If you are having concerns about your grade, talk to me before the end of the semester. I will be more than happy to give you some pointers, etc. **Do not ask me to change your grade.**

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