Syllabus: EXST016 Summer 2016
Science Detectives: An Introduction to Forensic Sciences

COURSE INFORMATION
Location: HJ Patterson Hall, room 1229
Dates: M-F, July 18-29, 2016
Times: Monday-Friday, 9:00 AM-12:30 PM
Website: https://oes.umd.edu/young-scholars/terp-discovery

INSTRUCTOR
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DESCRIPTION
A crime has been committed but the culprit is long gone... What now? Learn how modern science (i.e., biology, chemistry, and physics) is used to figure out what happened and who is responsible. Students in this program will learn a variety of techniques for analysis and identification of crime scene evidence, such as blood, DNA, fibers, hairs, ink, fingerprints, insects, and skeletal remains. The course will also include instruction in modern areas of forensics such as digital forensics. They will then apply these skills to solve a complex crime. In addition, students will learn about the diverse science professions that make up the interdisciplinary field of forensic science. (Enrollment limit: 24).

COURSE POLICIES
What to Wear: Because we will occasionally work with chemicals and laboratory glassware, **open-toed shoes (e.g., sandals) are NOT PERMITTED in the laboratories.** Sneakers or other casual, closed-toed footwear are
ideal. Plan to wear comfortable, casual (and easily washable) clothes such as T-shirts and jeans or shorts. The laboratories we will be working in are air conditioned, but some outdoor activities are planned, so keep this in mind when you are deciding what to wear. Please wear sensible attire and save your best clothes and shoes for other occasions!

*Other General Safety Considerations:*

1. All participants must remain under the supervision of the Instructors during the time the program is in session.
2. No food or drink may be consumed in the laboratory room. This rule is in effect *at all times*. But please note that students will be permitted to briefly leave the classroom for snacks and drinks in the hallway provided the students are quiet and do not disturb students and researchers in the surrounding rooms. Accommodations will be made for students requiring food and/or drink during class time due to medical conditions.
3. Use chemicals only after you have received and understood the safety precautions dealing with each one. Do not ignore such precautions.

*General Code of Conduct: In order to maintain an environment conducive to learning, we ask that you follow a few rules.*

1. Be courteous and respectful to your instructors and fellow classmates. We expect students to listen quietly when your instructors are talking, speak courteously to each other and respect each other’s personal space and belongings.
2. Handle all equipment and materials with care. No throwing of any materials or abusing equipment will be permitted! Intentional destruction of University of Maryland property can result in additional course fees for replacement of destroyed property.
3. Cell phone use (e.g., texting, calling, social media, web browsing, video games, music playing, and other applications) is prohibited while the program is in session unless the instructor states that the phone can be used for class activities (example: using cell phone cameras during crime scene investigations). Ringers must be turned off during lecture times unless the instructor has been informed beforehand that a call is expected. Cell phones will be confiscated
and returned at the end of the day if any improper use is detected by the instructors.

4. Portable music players (e.g., mp3 players, cell phones) are not to be used when the program is in session.

**EVALUATION**

This course is intended to mimic the experiences of a college level course, but provide the students an enjoyable atmosphere to learn at a level appropriate for their age. Students will be evaluated based on 1) their understanding of the basic scientific concepts underlying the specific exercises in forensic sciences and 2) their participation in the course. Forensic science is based on concepts based in biology, ecology, physics, chemistry, anthropology, and sociology; and the science of forensics was developed from experimental investigations utilizing the scientific method. Thus, coursework will focus on the basic principles of these concept areas utilizing evaluation methods typical of an introductory college science course.

**Class participation (56 points)**

*Daily participation = 4pts / day:* Daily participation will be evaluated by the teachers of the course. Students must contribute meaningful dialog to the course (e.g., answer questions, ask questions) and/or participate in the laboratory exercises. Points will be deducted for disruptive behavior and other violations of the conduct policy.

**Homework (20 points)**

Four homework assignments will be required for the students to complete. Homework assignments will require only the material provided in the course and require critical thinking. Students are allowed and encouraged to perform further research into the topics and concepts covered in the homework assignment. Please see the note below about academic dishonesty.

**Crime scene – lab practical (24 points)**

A crime scene will be set up on the last day of the course for students to apply what they’ve learned to solving a hypothetical crime. Students will be divided into groups to investigate particular aspects of the crime using
specific concepts and skills learned during the course. This is akin to a laboratory practical, but students will be graded mostly on their participation in the day’s activities and to a lesser extent the knowledge they display from the previous 13 days of the course.

PLEASE NOTE: The University of Maryland policies related to academic dishonesty apply to all assignments in this course. Students are to perform their own work and should not copy from any available source of information or another student. Collaboration and group learning are encouraged, but all answers must be of the individual student’s own words. Students with any questions about this policy when performing the work assigned should contact the instructors for assistance.

CLASS SCHEDULE
Day 1 – Monday (7-18-2016)
Topics covered:
• Welcome and introduction to Forensic Sciences
• Forensic entomology
• Basics of microscopy
• Begin hair analysis

Day 2 – Tuesday (7-19-2016)
Topics covered:
• Finish hair analysis
• Forensic anthropology

Day 3 – Wednesday (7-20-2016)
Topics covered:
• Forensic odontology
• Blood typing (Homework assignment #1)

Day 4 – Thursday (7-21-2016)
Topics covered:
• Fingerprint analysis
• Handwriting analysis (forgery contest)
Day 5 – Friday (7-22-2016)
Topics covered:
- Blood splatter analysis / blood detection
- Homework assignment #2

Day 6 – Monday (7-25-2016)
Topics covered:
- Powers of observation & facial composites
- Ink identification
- Forensic chemistry (mystery powder)

Day 7 – Tuesday (7-26-2016)
Topics covered:
- Fiber analysis
- DNA analysis (Homework assignment #3)

Day 8 – Wednesday (7-27-2016)
Topics covered:
- Prisoner’s Dilemma
- Visit to campus forensics lab

Day 9 – Thursday (7-28-2016)
Topics covered:
- Ballistics
- Basics of digital forensics & photograph analysis
- Homework assignment #4

Day 10 – Friday (7-29-2016)
Topics covered
- Crime scene analysis (Lab practical)
- Program wrap-up