**Forensic Chemistry 3550-010**

**Spring, 2012**

**Instructor:** Dr. Ray Mohseni

**Office Hours:** T-W, 10 am-11 am or by appointment

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**Course Description:**

This course introduces students to the methods used by crime laboratories to the chemical and physical interpretation of the data obtained from a crime scene. The course satisfies one of the oral intensive requirements.

**Purpose and Goals**

**Course Objectives:** This course is designed for chemistry undergraduate students to acquire crime laboratory techniques and to develop effective scientific and oral communication skills. Students will also develop a broader knowledge of chemical principles:

-To provide comprehensive understanding of the nature of forensic chemistry

-To apply chemical principles and techniques to the analysis of forensic samples

-To develop strong communication skills in relating forensic data to the general population.

**Learning Outcomes**

At the completion of this course, the student is expected to:

-follow the chain of custody protocol.  
-calculate the probability of an outlier set of data.   
- collect crime scene evidence so that it could be used in a court.  
 -analyze the pen ink collected from a suspect and relate it to the ransom note found in a crime scene.  
-conduct glass and fiber analyses.  
-classify different fibers.  
-determine blood typing.  
-identify blood alcohol level.

-compare hair types and hair analysis results.  
-differentiate between different classes of illicit drugs.  
-identify drugs using analytical instrumentation.  
-investigate the partitioning of an illicit drug in the biological system.  
-employ interpersonal communication skills.

**Texts:** Lecture: Criminalists, Saferstein, S., Eleventh Edition (required)

Laboratory: Mohseni, R., Forensic Chemistry Experiments”, 2010, (required)

-You can login the Desired to Learn (D2L) site for the lecture notes, if available, or announcements. You go to <http://elearn.etsu.edu>, using your username and password. Click on the course link. The lecture notes are posted under the Content tab, and get updated throughout the semester.

**Major Course Topics**

1. Statistical analysis

2. Collection of evidence at a crime scene

3. Ink analysis

4. Glass and fiber analysis

5. Blood typing

6. Hair analysis

7. Determination of blood alcohol level

8. Illicit drug classifications

9. Drug analysis

10. Partitioning of an illicit drug in the body

11. Case studies

Assessments:

Lab – Experiments

Students conduct eight experiments; each experiment requires participation and report sheet.

Lecture

Three one-hour tests

Comprehensive final exam

Presentations:

-Two presentations will be given by students.

Grade Assignment

|  |  |
| --- | --- |
| Lab experiments | 100 points each, 800 points together, normalized to 15% of final grade |
| one-hour tests | 100 points each, 300 points together, normalized to 40% of final grade |
| final exam | 100 points, normalized to 20% of final grade |
| Presentations | 100 points each, 200 points together, normalized to 25% of final grade |
| total | 100% of final grade |

**Grading:**

There will be three tests and a comprehensive final exam. There are two presentations given by the students.

The final examination will be comprehensive and worth 20%.

Make-up examination will only be given to students for extenuating circumstances.

The lab performance is worth 15%.

There will be two presentations given by the students. The oral assignment I (13% of the course grade) is the oral presentation. Oral assignment II (12% of the course grade) is participation in group discussions and meetings.

Test 1 February 9 13%

Test 2 March 22 13%

Test 3 April 12 14%

Final exam May 1 (8-10 am) 20%

Lab Performance 15%

Presentations

Presentation I (February 14) 13%

Presentation II (April 17) 12%

Test and course grades will be assigned as follows:

A 90-100% B+ 84-86% C+ 72-75% D+ 60-63%

A- 87-89% B 80-83% C 68-71% D 56-59%

B- 76-79% C- 64-67% F 55%

Borderline grades will be assigned based on the overall performance.

**Oral Communication Assignments:**

Successful completion of the formal presentation will clearly bolster self-confidence. Part of the lecture will be devoted to oral presentation instruction. We will discuss the dos and don’ts of presentation to be an effective speaker. Students are required to perform two presentations during the semester. These presentations weigh 25% of the course grade.

**Presentation 1**: Making Oral Presentation (13% of the course grade)

The topic of the first presentation is directly related to forensic chemistry. The topic will be to discuss a piece of analytical instrumentation and how it is used in a crime lab. Be creative with your topics. Please submit all topics to your instructor no later than January 15, 2011 for approval.

You are required to use at least two sources (periodicals, peer-reviewed journal articles, textbooks, or credible internet sources). The source should be cited orally in the speech. It should also appear in the outline and the bibliography. You will be required to turn in your documents to your instructor 24 hrs before your presentations. You will not be allowed to speak unless you have submitted your documents.

The speech will be extemporaneous. In other words, you will practice ahead of time and speak from a basic outline or the Power Points. The speech should be about 15 minutes long. This should be an informative speech.

The instructor will evaluate the speeches in four areas: introduction, body, conclusion, and delivery. The instructor will provide the feedback to the speaker immediately and after the class if necessary.

**Presentation 2**: Making Oral Presentation (12% of the course grade)

The topic of the second presentation is a case study or expert testimony on a piece of evidence. Be creative with your topics. Please submit all topics to your instructor no later than March 1, 2011 for approval.

The presentation should take about 15 minutes.

The instructor will evaluate the speeches in four areas: introduction, body, conclusion, and delivery. The instructor will provide the feedback to each group immediately and after the class if necessary.

**Attendance Policy**

You are expected to participate in all interactive aspects of the course. You must finish all the experiments. If you miss the experiment, there will be no make up policy, and you receive a grade of zero for the missing experiment. The failure to attend the lab component of the course will result in grade of zero for the lab. You are expected to take the tests and the final exam promptly. The failure to take any test and/or final exam will result in a grade of zero for the missing assignment.  You must also conduct the presentations as scheduled. You are also responsible for attending the other students' presentations. Failure to attend other student’s presentations will cause one point grade deduction from the course grade.

**Course Policy:**

* Attendance – Students are expected to attend classes regularly. Attendance will not be taken. You are responsible for any missed lecture material.
* Classroom – All electronic devices must be turned off unless you are on-call as a medical or safety personnel. Any distractive behavior (including the use of electronic devices) will result in a warning the first time and by dismissal for the remainder of the class period the second time (please refer to the college catalog for the classroom misconduct policy). **No** electronic items other than **non-programmable** scientific calculators and **no** hats or sunglasses are allowed during exams.
* Calculators – The use of only **non-programmable** scientific calculators for this course makes it easier for you to be prepared to use a non-programmable calculator on an exam.
* All students need to read the Departmental Academic Integrity Policy, posted on the News page of this course on D2L.
* It is the policy of ETSU to accommodate students with disabilities, pursuant to federal law, state law and the University’s commitment to equal educational access. Any student with a disability who needs accommodations, for example arrangement for examinations or seating placement, should inform the instructor at the beginning of the course. Faculty accommodation forms are provided to students through Disability Services in the D.P.Culp center, telephone 439-8346.
* **Mental Health:** Students often have questions about mental health resources, whether for themselves or a friend or family member.  There are many resources available on the ETSU Campus, including: ETSU Counseling Center (423) 439-4841; ETSU Behavioral Health & Wellness Clinic (423) 439-7777; ETSU Community Counseling Clinic: (423) 439-4187.
* **If you or a friend are in immediate crisis, call 911.**
* Available 24 hours per day is the National Suicide Prevention Lifeline: 1-800-273-TALK (8255).

**Special Needs**: Students with disabilities who wish to have accommodations provided by the University must identify themselves to the instructor.

Good luck and have a wonderful semester.