**Chemistry 190 Forensic Chemistry (Lecture and Lab) 4 credits**

Winona State University Spring 2009

**Instructor:** Dr. Jeanne Franz Office: Pasteur 344 Phone: (457)-5297 email:jfranz@winona.edu

**Lecture:** M,W 9-9:50 PA 237 **Lab:** SLC 364 Monday and Wednesday 11-12:50 or 1-2:50

**Office hours:** M 3-4, T 11-2, W 3-4, Th 11-2, and F 8-10 or by appointment

\* I can also be reached via email or voice mail if I am not in my office.

**Required texts:** *Criminalistics: An Introduction to Forensic Science* by Richard Saferstein 9th edition, **2007**

**Required materials:** Carbon copy notebooks for each lab team. This is a laptop course, you will occasionally need to bring your laptops to lecture or lab.

**Course Web Page**: course1.winona.msus.edu/jfranz Course material will be available here including laboratory handouts as well as the full University Studies syllabus

**Laptop Computer Policy:** Laptop computers can be a very useful learning tool in the right circumstances. In other circumstances they can be a real source of annoyance. As a courtesy to your instructor and your classmates, only use your laptop computer for classroom related activities during class.

**General Information:** Chemistry 190 is intended to be an introduction to the Forensic Sciences with an emphasis on Chemistry. This course fulfills the critical analysis requirement for University Studies. It is intended primarily for Criminal Justice majors however anyone with an interest in Forensic Science can benefit from this course. This course will give students an appreciation for the activities of a real forensic lab however students should not regard themselves as experts on any of the techniques learned in this course just from their exposure to the material in the course.

**Grading:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Laboratory: | 30% |  | 90% + 2% | A | Grades are |
| Exam1 | 15% |  | 80% + 2% | B | Non-competitive |
| Exam 2 | 15% |  | 70% + 2% | C | And will be |
| Problem based activities | 30% |  | 60% + 2% | D | assigned as |
| Final project/ presentation | 10% |  | < 60% | F | follows: |

**Timeliness Policy**: All lab reports, assignments, etc. will be due on the specified date. Late assignments will have 5% of the value deducted per day late including weekends and holidays. Plan ahead!

**Exams:** There will be a mid-term and final exam in this course. Makeup exams will only be allowed with a valid written excuse. Examples of excused absences are illness documented by a physician or serious illness or death in the family. Concepts presented in lab, lecture, discussed in the assigned chapters, or resource information from the instructor or web will be the basis of exam material.

**Laboratory safety:** Approved safety goggles are required at all times in the laboratory. Students who wear contact lenses are strongly urged not to wear them during labs. Goggles will be available for purchase the first week of lab.

**Laboaratory Attendance:** In order to receive credit for a given lab, you must be present for all portions of lab. In the event of an absence due to illness or family emergency, the instructor should be contacted as soon as possible and arrangements made to make up the missed lab.

|  |  |
| --- | --- |
| **Week** | **Lab** Schedule is subject to change |
| January 12,14 | No lab |
| January 19,21 | No lab, Martin Luther King day holiday Monday |
| January 26, 28 | The Case of the Broken Glass |
| February 2,4 | Physics of Automobile crashes |
| February 9,11 | Treadmark casts |
| February 16, 18 | No lab Assessment Day February 17 |
| February 23, 25 | Fingerprint analysis |
| March 9,11 | Renters Beware: Blood, fingerprint, and metal analysis |
| March 16, 18 | Forensic Geology SEM Lab |
| March 23, 25 | Using GIS as a Forensic tool |
| March 30, April 1 | Forensic Use of DNA |
| April 6, 8 | DNA Fingerprinting and Statistics |
| April 13,15 | Filthy Lucre: Investigation of Currency Contamination |
| April 20, 22 | Drug Bust: The Identity Of Illicit Drugs In A Urine Sample |
| April 27, 29 | Lab cleanup and check out |

Topics to be covered and corresponding chapters in Saferstein

**Basics of Forensic Science**

Introduction to Forensic Science: Careers, What is Forensic Science? Chapter 1

Analyzing a Crime Scene Chapter 2

Evidence collection: What you see and (properly) collect is what you get; Importance of avoiding pre-judgement Chapter 3

Physical Evidence: Measurements, fingerprints Chapters 4, 14, and Instructor provided resource material

**Tools of Forensic Scientists**

Physics: Study of momentum Instructor Provided Resource material

Chemistry: Inorganic Analysis Chapter 6 and Instructor Provided resource material

Geographic Information Systems (GIS) / Geology: How GIS is and can be used for multi-jurisdictional data sharing Instructor provided Resource material and parts of Chapter 7

Biology: DNA: The indispensable forensic science tool Chapter 13

Statistics: How forensic statistics can be used to help solve crime Instructor Provided Resource Material

Chemistry: Organic Analysis: Instrumentation Chapters 5 and 11

Chemistry: Organic Analysis of controlled substances Chapters 9 and 10

**Synthesis**

Final presentations: Students will be asked to research a historical crime of controversial resolution. They will analyze the available evidence and make conclusions about the crime. Students will present their findings to a jury of the class in written and oral form.

Completion of this course will include requirements and learning activities that promote your abilities to achieve the following outcomes:

1. evaluate the reliability and validity of information;
2. analyze modes of thought, expressive works, arguments, explanations or theories;
3. recognize possible inadequacies or biases in the evidence given to support arguments or conclusions;
4. advance and support claims

Successful completion of laboratory, problem based activities, and final crime scene analysis and participation in lecture activities will promote your abilities to achieve Outcomes a to d.