

CHE 139: Chemistry and Crime
January 2010; M-F 10:30-12:20; T/Th 12:30-3:20

Instructor: Dr. Amanda Nienow
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Classroom: Nobel Hall 201
Laboratory: Nobel Hall 306
Materials:

Text: Richard Saferstein, *Forensic Science: From the Crime Scene to the Crime Lab*, 2009, Pearson/Prentice Hall, ISBN 0-13-515849-4
Supplies: Safety goggles; bound laboratory notebook

Course Description: This applied course is an introduction to criminalistics, the scientific evaluation of physical evidence in criminal cases. Students will learn about the important tools and techniques used by the forensic scientist to supply accurate and objective information in support of criminal investigations. Some of the topics will include: crime scene investigation, microscopic examinations, firearms/ballistics, arson investigation, drugs, blood evidence, and DNA evidence. In addition to classroom lecture/discussion, there will be videos and outside speakers from the Minnesota Bureau of Criminal Apprehension. There also will be about 6 hours each week of laboratory activities. Students will be evaluated on the basis of assigned readings and questions, laboratory notebooks and reports, a final project, and on class attendance.

Course Goals and Objectives

- 1) To gain an understanding of the role of science and specific scientific methods in the field of criminalistics.
- 2) To be able to apply certain scientific principles & methods to the investigation of crime evidence and crime scene investigations.
- 3) To learn something about the role of the forensic scientist in the U.S. criminal justice system.
- 4) To explore the role of forensic science television shows (such as CSI) in developing a public view of criminalistics.
- 5) To improve logical thinking & objective reasoning skills.

Weekly Homework:Assigned review questions will generally be collected on Fridays (**see schedule below for due dates**). A handwritten paper copy must be turned in **no later than 1:30 pm** on the due date. *There will be no make-up or late homework accepted!* I will choose review questions from the textbook for you to do as we cover each topic in class. Only a select number of these collected questions will be graded. **These Review Questions should be done individually.**

Laboratory: You will work in groups of ~3 for most labs. Completed **group** laboratory reports must be turned in by the announced due dates (will be announced before each lab activity). **Reports will not be accepted after that time!** Separate reports should be submitted for each different laboratory activity, even if both are done in the same period/week; this point will be stressed/explained each week. You should use a laboratory notebook for recording your procedures, observations, results, & conclusions as you are doing the various laboratory activities. This will be graded at the end of the term. **Attendance in every scheduled laboratory activity is mandatory.** It will be impossible to make up a missed lab exercise.

Final Project: You will work in groups of 3 or 4 in this multi-faceted final project. Your group will first develop a crime scene and will then investigate a recent crime scene, collect evidence, analyze data, and issue an arrest warrant. Your group will prepare a presentation outlining the crime scene and evidence that led to the arrest warrant on the last day of class. More detail on the final project will be provided next week.

Course Evaluation & Grading: Course requirements will be the following: Completion of assigned chapter review questions (homework), attendance and participation in class, laboratory activities and reports on those activities, and your final project (the specifics of this project and the grading associated with it will be outlined next week).

Lab activities (and notebooks)	40%
Final Project (Both portions)	40%
Final Presentation	5%
Assigned review questions	10%
Attendance	5%

Approximate Grading Scale: A: 100-93%; A-: 92-90; B+: 89-88; B: 87-83; B-: 82-80; C+: 79-78; C: 77-73; C-: 72-70; D+: 69-67; D: 66-62, F: less than 62

At the discretion of the instructor, these cutoffs may be reduced.

Gustavus Honor Code:

Gustavus has adopted an honor code. Each of you is required to abide by the following pledge: "As a community of scholars, the faculty and students of Gustavus Adolphus College have formulated an academic honesty policy and honor code system, which is printed in the Academic Bulletin and in the Gustavus Guide. As a student at Gustavus Adolphus College I agree to uphold the honor code. This means that I will abide by the academic honesty policy, and abide by decisions of the joint student/faculty Honor Board." Pledge: "On my honor, I pledge that I have not given, received, or tolerated others use of unauthorized aid in completing this work."

In this course you will work together on problems in study groups and you will work together in laboratory but you will still be required to turn in work that is **solely** your own. The penalty for not adhering to the honor code will range from taking a zero on the particular piece of work in question to referral to the honor board depending on the circumstances.

Accommodations:

If you have a physical, psychiatric/emotional, medical, or learning disability that may have an effect on your ability to complete assigned course work, please let me know. I will provide assistance and accommodations upon receiving verification from Laurie Bickett in the Academic Advising Center. The Gustavus Adolphus College policies on this matter can be found at www.gustavus.edu/oncampus/advising/disability.cfm.

Office of Student Advising:

The Office of Student Advising (203 Johnson Student Union) is open daily to help students with study problems, time management problems, and many other problems that might interfere with your ability to do your best work.

Tentative Course Schedule

Week 1

Lectures: Intro to Course, Crime Scenes, Fingerprints, Physical Evidence, Blood Spatter Analysis

Labs: Fingerprints, Handwriting Analysis

Visitors: Lindsey Garfield, Crime Scene Coordinator, Bureau of Criminal Apprehension

Week 2

Lectures: Drugs and Toxicology, Chemical Instrumentation

Labs: Analysis of Drugs (with BCA visitor), Lab "Breathalyzer"

Visitors: Ann Engebretson, Drug Chemistry Scientist, Bureau of Criminal Apprehension
Officer Lauren, St. Peter Police Department

Week 3

Lectures: Trace Evidence (Glass, Soil, Paint, Fibers), Arson

Labs: Group Projects, TBD (Arson lab or Trace Evidence lab)

Week 4

Lectures: DNA, Serology, Forensics in court and on TV

Labs: DNA lab, Group Projects (with presentations)

Visitors: Rachel Klick, DNA lab Scientist, Bureau of Criminal Apprehension