

# Common Chemistry Myths

CHE 109

1 credit

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**INSTRUCTOR: Jessica Hilborn**

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course website: <http://homepages.gac.edu/~jhilborn/CommonChemistryMyths.html>

**TA: Nissa Hannemann**

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I invite you to stop by anytime to ask questions and clarify any course material. If you are unable to make it to an office hour, please email or call me to set up an appointment. I want you to succeed in this course, so I will make every effort to be available for assistance.

## MEETING INFORMATION

Lecture—Nobel 305

Lab—Noble 306

Times—12:30-2:20 or 1:30-3:20 or 12:30-3:20 (see schedule)

## COURSE DESCRIPTION

This course will explore a myriad of chemistry myths from the past and present, and examine the chemical principles behind them. Lectures will discuss forensic science, environmental chemistry, alchemy, biological chemistry and polymers, among other topics. Lab work will directly correlate with lecture topics.

## COURSE GOALS, OBJECTIVES, AND EXPECTATIONS

Students will gain an appreciation and deeper understanding of everyday chemistry encounters and applications that they may normally take for granted. Students will be exposed to a variety of lab situations aimed at further engraving important details of the topics discussed. The techniques and instrumentation used will parallel those used in industry and government work, again emphasizing the application to real life. Students will learn to communicate scientifically by listening to guest lecturers from the scientific community, and by performing experiments and reporting results and discoveries of their own.

## PREREQUISITES

CHE-102, CHE-107, or instructor approval.

## MATERIALS REQUIRED

Reading materials and lab handouts will be posted online or provided in class. For lab, a bound pre-numbered notebook is required. Also, a lab apron and goggles are required. Goggles can be loaned if necessary and lab aprons will be provided. For the Alchemy Lab, two pennies (1982 or older) are needed.

## COURSEWORK

The course grade will be determined based on performance in the following areas: attendance, class discussion and lab participation, lab notebooks, oral presentations, quizzes, and papers.

- Attendance and Participation: Class time is variable depending on the day's topic and scheduled activities. The block of time between 12:30 and 3:20 should be reserved for this class. Specific times for each day are noted on the attached calendar. Please plan to eat your lunch before class begins, as chemicals and/or lab equipment may be used in class for demonstration purposes, and also as a courtesy to guest lecturers we will host. Participation is essential to the success of the class and includes posing and answering questions, leading lab discussions, etc. Points will be taken away for class disruptions or obstructive comments. Attendance and participation will account for 20% of your final grade.
- Lab Notebooks: This course will be largely lab-based, as with every topic there will be a corresponding lab. Labs will be completed in pairs or in groups. You will be expected to keep an orderly notebook for each experiment performed. See "How to Keep a Lab Notebook" handout for my suggestions. Preparing the lab notebook as much as possible prior to lab is recommended because you will gain an understanding of the experiment to be performed and be able to start right away. Notebooks will be turned in periodically and will account for 35% of your final grade.
- Oral Presentations: For two of the topics we will cover (forensics and food), there will be several independent experiments that will be performed by different groups in the lab. Each group will give an oral presentation summarizing their experiment, observations, conclusions, etc. See "How to Give a Scientific Presentation" handout for my suggestions. At the end of the course, you and a partner will also give an "oral presentation" to a group of elementary school students as part of an Outreach Day. See "Outreach Day" handout. Oral presentations will account for 25% of your final grade.
- Quizzes: Exit quizzes will be given on lab days and will include information from the lab and lecture covering the topic. Quizzes will account for 10% of your final grade.
- Written Papers: Outside research is essential to a scientist; *quality* outside research is even more important. During the first class session, we will meet with a research librarian and will discuss ways to research things online, as well as in the library itself. These techniques should be applied while writing short reports on certain the topics assigned in class. These written papers will account for 10% of your final grade.

## GRADING

Grading in this course is ABCDF. The point distribution and letter grade breakdown is shown below. Grade disputes should be brought to my attention immediately and the situation will be taken into consideration.

Lab Notebooks	8 @ 25 points
Oral Presentation	2 @ 50 points
Outreach Day	1 @ 50 points
Quizzes	8 @ 10 points
Written Papers	2 @ 30 points

A 94-100%	B+ 87-89%	C+ 77-79%	D 60-69%
A- 90-93%	B 83-86%	C 73-76%	F < 60%
	B- 80-82%	C- 70-72%	

## LABORATORY

Proper lab conduct and safety will be strictly enforced. Goggles must be worn at all times—upon entering the lab and until you exit. There is zero tolerance for horseplay and other boisterous and rambunctious activity. The lab is an extension of the classroom and will be supervised with the same policies and expectations.

## ACADEMIC MISCONDUCT

Plagiarism, cheating, and other academic dishonesty will not be accepted. The Honor Code will be enforced. Cases will be reported to the Dean and a failing grade in the class will be recorded by the Registrar. Please see the Academic Bulletin for information on the Honor Code here at Gustavus.

## EQUAL OPPORTUNITY DISCLOSURE

Gustavus Adolphus College is an equal opportunity employer and educator, and does not discriminate based on gender, sexual orientation, race, religion, or ethnic background. This policy extends to my classroom in my treatment of students, and in students' treatment of each other. Any situations of harassment that arise should be brought to my or another faculty member's attention and will be dealt with immediately. Students who wish to *confidentially* disclose a disability are welcome to do so, and appropriate accommodations will be made.

<b>7 Syllabus &amp; Orientation</b>	<b>8 Alchemy</b>	<b>9 Alchemy Lab</b>	<b>10 Dyes Lab</b>	<b>11 Dyes</b>
1:30-3:20 Meet in 305 Continue in library Julie Gilbert, GAC	12:30-2:20 Meet in 305	12:30-3:20 Meet in 305 then in 306  <i>Exit quiz</i>	12:30-3:20 Meet in 305, then in 306	12:30-2:20 Meet in 305  <i>Scientist Paper due Alchemy lab due Dyes lab due</i>
<b>14 Polymers</b>	<b>15 Polymers Lab</b>	<b>16 Jewelry</b>	<b>17 Modeling</b>	<b>18 Forensics</b>
12:30-2:20 Carolyn Wanamaker, UMN Meet in 305  <i>Dye quiz</i>	12:30-3:20 Meet in 305, then in 306  <i>Exit quiz</i>	12:30-2:20 Julee Johnson, Julee's Jewelry	1:30-3:20 Meet in 305  <i>Exit quiz Cleaners Paper due</i>	12:30-3:20 Stephanie Eckerman, BCA Meet in 305, then in 306
<b>21 Forensics Lab</b>	<b>22 Environmental Chemistry</b>	<b>23 Environmental Chemistry Lab</b>	<b>24 TBA</b>	<b>25 Presentations</b>
12:30-3:20 Meet in 305, then in 306  <i>Exit quiz</i>	1:30-3:20 Matt Grandbois, UMN Meet in 305	12:30-3:20 Meet in 305, then in 306  <i>Exit quiz</i>		12:30-3:20 Meet in 305 <i>Forensic Lab Presentation</i>
<b>28 Outreach Day</b>	<b>29 Food Chemistry</b>	<b>30 Food Chemistry Lab</b>	<b>31 TBA</b>	<b>1 Presentations</b>
<i>Time TBA</i>	12:30-2:20 Meet in 305	12:30-3:20 Meet in 305, then in 306  <i>Exit quiz</i>		12:30-3:20 Meet in 305 <i>Food Lab Presentation</i>