

SCIENCE 110 - Natural Science

INSTRUCTORS: Dr. Mark A Bransford

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OFFICE HOURS: As posted on the Blackboard course site

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TEXTS:

Physics: Principles with Applications by Douglas C. Giancoli, Pearson Prentice Hall (2004) 6/E

ISBN-10: 0131846612 / **ISBN-13:** 978-0131846616

World of Chemistry, Essentials, by Joesten, Castellion, and Hogg, Brooks/Cole (2006) 4/E

ISBN-10: 0495012130 / **ISBN-13:** 978-0495012139

Additional content material may be provided via the course web site or via in-class handouts.

COURSE DESCRIPTION:

This course is the first semester of a two-semester survey of Natural Science. It focuses on what natural science is, and the exploration of major concepts in physics and chemistry. The heart of the course is focusing on key fundamental principles of physics and chemistry. This class meets on a weekly basis, and the labs will consist of 3 parts: reviewing homework, working examples, working with physics and chemistry data to better illuminate its relevance to the real world (work sheet based labs), and in some instances working in groups to solve a problem.

OBJECTIVES:

1. To understand the nature, purpose, and scope of the natural sciences.
 2. To experience the scientific process by taking on the role of a scientific explorer.
 3. To learn about physics and chemistry as scientific disciplines: how they are related and why they exist.
 4. To develop a working understanding of fundamental concepts in physics and chemistry.
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EVALUATION:

Here are the percentage breakdowns of the various assessments used in this course:

- 3 Exams 60% (20% each)
- Labs 10% (5 labs, so approx 2% for each lab)
- Final Presentation 25%
- Class Participation 5%

Attendance is required and will be taken in class and labs. If you miss attendance-taking you are absent for the purposes of the attendance policy. Two class sessions may be missed without penalty, but the second, and each subsequent absence, will reduce your grade by 1/10 of a grade point. Missing one of the labs (and/or not handing in its summary) will reduce your grade by one grade point, and missing two or more of the labs (and/or not handing in 2 or more lab summaries) will result in an automatic F or N for the course.

ASSIGNMENT INFORMATION:

Exams:

There will be 3 take home exams. No make-up exams will be given.

Homework:

Selected homework problems will be assigned weekly, while I am not collecting these to grade, they will be the basis of your exams.

Labs:

There will be 8 worksheet based labs, to be completed in class. Labs will be used to give a connection from the classroom to the real world, and will emphasize the use of scientific data, not as much the obtaining/measuring of data, although there will be some measurements required.

Final Presentation:

There will be a final group presentation you will participate in. Topics will be discussed in class.

COURSE PERSECTIVE, SKILL, and PREREQUISITE:

Natural World (NW) Perspective:

SCI 110 meets one course credit of the NW perspective, either NW1 or NW2. "This perspective is intended to help students understand themselves in relation to the physical world. Their active role as observers, explorers, and moral agents will be emphasized. Sufficient training in scientific knowledge, concepts, and methods will be provided to equip students for critical and intelligent participation in public debates on technical issues."

Quantitative Reasoning Skill (QR):

SCI 110 meets the QR graduation skill requirement at Augsburg College. QR allows one to be able to properly justify conclusion based on quantitative evidence and its interpretation. Since many scientific ideas find their best and most useful expression in mathematical form, mathematics is a necessary part of this course (note the MPG3 prerequisite below). Moreover, mathematical, statistical, and graphical methods will be used to analyze and interpret experimental data, and the results will be employed to make judgements about competing hypotheses or proposals related to them and for comparison with results drawn from other student's experiments as well as the formal scientific literature.

Mathematics Placement Prerequisite:

This course has a prerequisite of Math Placement Group 3 (MPG3) or above and will make liberal use of simple algebra and graphing skills appropriate to the MPG3 level. Because many students registered for this course may have taken their math placement exams some time ago, it is strongly recommended that you refresh your mathematics skills in order to do well in this course. You can do this by working the problems available via the college's web site at:

<http://www.augsburg.edu/advising/mathtest.html>

If you experience difficulty that you believe may be related to a problem in mathematics understanding or facility please see one of the instructors immediately.

ACADEMIC HONESTY:

In accordance with Augsburg's academic honesty policy, students will sign a statement near the beginning of the course and write the word "pledged" on each assignment and test to reaffirm your commitment to student honesty.
