

PHS 110 – Fundamentals of Physical Science (22700)

Prerequisite: MAT 090/091/092/093 Developmental/Introductory Algebra (with a C or above) or satisfactory score on Math Placement exam

22700: TR 10:00 AM – 11:15 AM in PS 175 lecture

22704: R 11:30 AM – 2:00 PM in PS 169 laboratory

Instructor: Mrs. Mary Harris, PS 112

Last day for withdrawal without instructor's signature: Friday, March 5, 2010

Last day student initiated withdrawal accepted: Monday, April 26, 2010

Final Exam: 22700 Thursday, May 13, 2010 from 10 AM to 11:50 AM

Office Telephone: (623) 845-3445

Email: m.harris@gmail.maricopa.edu

Web Info: www.gc.maricopa.edu/appliedscience/mjahweb/mjahhome.html

Office Hours: M 11:00 AM – 12:00 PM

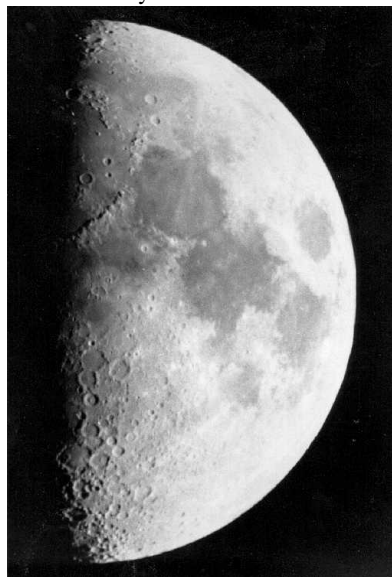
T 12:00 PM – 1:00 PM

W 11:00 AM – 12:00 PM

F 11:00 AM – 12:00 PM

Texts: Physical Science, 7th edition, Tillery ISBN-13: 978-0-07-304992-2
Introduction to Physical Science Laboratory Manual on CD, 2009

Photo courtesy VJK Harris



“Study is known to cause thinking, occasionally deep thinking. Typical side effects include mild temporary anxiety followed by profound long-term satisfaction.” Student Prospectus, University of Chicago

“Science is the attempt to make the chaotic diversity of our sense-experience correspond to a logically uniform system of thought.”
A. Einstein

“For most of human history we have searched for our place in the cosmos. Who are we? What are we? We find that we inhabit an insignificant planet of a hum-drum star lost in a galaxy tucked away in some forgotten corner of a universe in which there are far more galaxies than people. We make our world significant by the courage of our questions, and by the depth of our answers.” Carl Sagan

Course Outline

Week	Lecture	Assigned Homework	Lab
1 (1/19)	What is Science?	Ch 1 Questions: 5,7,9 Exercises: A 1,3,7,9; B 3,9	1. Scientific Notation and Metric Units
2 (1/26)	Motion I	Ch 2 Questions: 1,3 Exercises: A 1,2,6,8,13; B 6,8,13	2. Acceleration FQ #1: WHAT IS SCIENCE?
3 (2/2)	Motion II	Ch 2 Questions: 5,8 Exercises: A 19,24; B 19,24	3. Newton's Second Law FQ #2: MOTION
4 (2/9)	Energy	Ch 3 Questions: 2,5,11,12 Exercises: A 2,4,10,11; B 10,11	Test 1 (Ch 1 – 2)
5 (2/16)	Heat and Temperature	Ch 4 Questions: 1,2,8,9 Exercises: A 1,3,5,7; B 1,3,5,6,7	4. Conservation of Energy FQ #3: ENERGY
6 (2/23)	Electricity	Ch 6 Questions: 1,2,3 Exercises: A 1,2; B 1,2	5. Specific Heat and <i>Center for Learning</i> ¹ FQ #4: HEAT + TEMP.
7 (3/2)	Atmosphere of Earth	Ch 22 Questions: 2,3,4,5	6. Coulomb's Law FQ #5: ELECTRICITY
8 (3/9)	<i>Inconvenient Truth and Writing Center</i> ²	Ch 23 Question: 11	Test 2 (Ch 3 – 4, 6)
3/16 – 3/20	SPRING BREAK		
9 (3/23)	Atoms and Periodic Properties	Ch 8 Questions: 4,7,10 Exercises: A 2,4,12,15; B 4,12,15	7. Physics of the Atmosphere + GHG Analysis
10 (3/30)	Chemical Bonds	Ch 9 Questions: 1,2,6,7 Exercises: A 1,4,7; B 1,4,7	8. Safety Video + Chemical & Physical Changes FQ #6: ATOMS
Take-home Test 3 (Ch 22 - 23) + Essay on Climate Change due in class on Tuesday.			
11 (4/6)	Chemical Reactions I	Ch 10 No homework assigned	9. Molecular Models + Diameter of Molecule
12 (4/13)	Chemical Reactions II	Ch 10 Questions: 3,4,5,10 Exercises: A 3,4,5	10. Chemical Reactions + Oxidation/Reduction FQ #7: CHEM. REACTIONS
13 (4/20)	Nuclear Reactions I	Ch. 13 No homework assigned	Test 4 (Ch 8 - 10)
14 (4/27)	Nuclear Reactions II	Ch. 13 Questions: 1,5,8,11 Exercises: A 1,4,5,6; B 1,4,5,6	11. Radioactive Half-Life FQ #8: NUCLEAR REACTIONS
15 (5/4)	Semester Review		Final Exam preparation FQ #9: SUPERQUIZ
16 (5/10)	Final Exam Week:	22700 Thursday, May 13, 2010 from 10 AM to 11:50 AM	

¹ www.gc.maricopa.edu/cfl/studyskills

² www.gc.maricopa.edu/English/writingcenter/

Course Grading

4 Tests (10% each)	40%
Cumulative Final	15%
Homework	10%
Lecture Quizzes	10%
Notebook	5%
Laboratory	20%

- Lab Reports are 75% of Lab %
- Formula Quizzes are 25% of Lab %

Homework is assigned and graded as an aid for the student. It is intended to help the student gain clearer understandings of some of the concepts presented in the class and to become more proficient at problem solving in physical science.

- Homework is due at the beginning of Tuesday's class, the week after it is assigned. Based on any needs for schedule adjustments, changes may be made to the due date for specific assignments.
- Late homework may be corrected, and may be counted for half credit, if complete.

Homework over a week late will not be accepted.

Homework will not be accepted after the last class period of the semester.

- A selection of homework problems will be selected for grading using the following scale:
3 pts. - all correct, 2 pts. - mostly correct, 1 pt. - mostly incorrect, 0 pt. - no substantial effort.
- There is a zero tolerance policy concerning plagiarism. Refer to the Student Handbook if there is any question as you do papers and homework for any class.
- The in-class/lab tests are closed book and closed notes.
- One of the four tests during the semester is a take-home test. Take-home tests are open book and are a collaborative effort. The in-class/lab tests are closed book and closed notes.
- **The Final Exam is a comprehensive, no notes allowed, in-class exam.**
- Only **ONE** make-up test is allowed. Permission **must be** requested in advance of the scheduled test.

Grading Scale

Letter Grade	Grade Point	Percentage
A	4.0	90 and above
B	3.0	80-89
C	2.0	70-79
D	1.0	60-69
F	0.0	59 and below

(An instructor may curve at his/her discretion)

Minimum Expectations

1. Read the textbook before class. Class time is for discussing ideas (not presenting them), to answer questions, to clarify points of confusion, to demonstrate physical phenomena and process, and to practice doing physical science while getting feedback from the instructor.
2. Attend class. If you miss class, please let your instructor know. Also, you should recopy the lecture notes by hand from any lectures you miss.
3. Memorize the formulas. If you know the formulas before you start your homework, it will help you solve the problems. Also, put away your formula sheet when you are studying for the tests.
4. Be honest. Cheating on tests is not tolerated. **The minimum penalty for cheating on a test is a grade of zero for the test.**

Laboratory Information and Policies

The lab % must be greater than 60% in order to pass³ the course. A completed lab includes, but is not limited to: attendance in lab, performance of the lab (collect and analyze data, perform calculations, answer questions), and a satisfactory lab report by the end of that lab period.

If you absolutely have to miss a lab inform your lab and lecture instructors ahead of time by email. **You may only make up one missed lab.** In order to make up a missed lab, a research paper is required (see Lab Make-up Policy below for details). There is no formula quiz make-up.

Lab Make-up Policy

If a lab is missed, the make-up shall consist of a paper subject to the following requirements:

1. Both the lab and lecture instructor must approve the topic of the paper.
2. Body is 5 pages in length, double-spaced, 12 font, Times New Roman, standard 1" margins
3. Make a works cited page with a minimum of three sources.
4. Include one copy of one page from each source
5. Due date for the paper is 2 weeks after the missed lab. If the missed lab is less than two weeks before the end of the semester, the paper is due on the last class day.

Laboratory Procedures and Expectations

Labs will start on time. Be on time. MAKE SURE YOU HAVE THE CORRECT LAB DOCUMENTS.

No study time for formula quizzes at the start of lab.

Formula quizzes will be given in the first 10 minutes of the lab only.

Lab reports will consist of the following:

1. **Data on the data sheets provided or in neat, tabular format on a separate sheet of paper.**
2. **Calculations are to be done neatly and separately. Be sure to indicate exactly what the calculation is for.**
3. **Questions answered on separate sheets of paper or on pages provided.**
4. **Students will remain in lab until dismissed by the instructor. Lab reports are due at the end of the lab period.**

As stated above, the lab % must be greater than 60% in order to pass the course.

³ See www.maricopa.edu/publicstewardship/governance/adminregs/students/2_3.php#grading
Prepared: January 13, 2010

Formula Quiz Schedule

Note that all formula quizzes are cumulative -- any formula from a previous week is fair game!

Week 1	No Formula Quiz
Week 2	FQ#1: WHAT IS SCIENCE?
Week 3	FQ#2: MOTION
Week 4	Test 1 (Ch 1 – 2) No Formula Quiz
Week 5	FQ#3: ENERGY
Week 6	FQ#4: HEAT AND TEMPERATURE
Week 7	FQ#5: ELECTRICITY
Week 8	Test 2 (Ch 3 – 4, 6) No Formula Quiz

SPRING BREAK

Week 9	No Formula Quiz
Week 10	FQ#6: ATOMS AND PERIODIC PROPERTIES
Week 11	No Formula Quiz
Week 12	FQ#7: CHEMICAL REACTIONS
Week 13	Test 4 (Ch 8 - 10) No Formula Quiz
Week 14	FQ#8: NUCLEAR REACTIONS
Week 15	FQ#9: SUPERQUIZ

Name

Score

Grading Rubric for Paper on Climate Change

Your paper on Climate Change should consist of eight parts.

- 10 points (1) Introduction
- 15 points (2) A general discussion of how the Earth's atmosphere is heated with reference to greenhouse gases. Make sure you distinguish between the gases that absorb terrestrial radiation and the gas (Ozone) that absorbs solar radiation.
- 15 points (3) How the relative concentrations of greenhouse gases have changed in the past 50 years. State what's increasing and what's decreasing. For carbon dioxide show the change over the past 650,000 years.
- 15 points (4) A discussion on whether these changes are contributing to climate change. Make sure you cite your sources.
- 15 points (5) What the US could and should do to address the issue of climate change. This section should complement the previous section of your paper.
- 10 points (6) Include a works cited page with a minimum of three sources. Include one copy of one page from each source. One source **must be** from a peer-reviewed journal or text. Highlight the information you used in your paper. The paper must be at least 5 pages in length, double-spaced, size 12 font, Times New Roman, standard 1" margins.
- 10 points (7) Attach a signed copy of the changes suggested by the Writing Center. If you use the Electronic Writing Center attach the return email.
- 10 points (8) Attach a copy of this grading rubric to the front of your paper.

The paper is due at the beginning of Week 10 in class on Tuesday, March 30. Please make sure you take your paper to the Writing Center on campus for a grammar/style/English check. Please use a paperclip to group pages (i.e. NO staples). You must also email an electronic copy (in WORD) of your paper to your instructor.

Writing Center web site <http://www.gc.maricopa.edu/English/writingcenter/>

Phone: (623) 845-3480

The Writing Center is located in HT2-107, one of the offices on the floor of the Pit (Computer Commons) along the south edge of High Tech Center 2. It is easily identified by the gold filigree decoration mounted above the door.

How to Make an Appointment

Sign the Writing Center Appointment Book at the West Information Desk in HT2. Phone reservations are not accepted. Walk-in appointments are accepted if no other student has already signed up for the time.

Appointments are for *one* 30-minute session. Fill out the Appointment Slip and take it with you to remind you of your session. The Writing Center phone number is on the slip, in case you need to cancel an appointment. Students who make appointments and don't keep them (and don't cancel them, either by erasing their names from the appointment book or calling the WC) won't be allowed to make another appointment for at least two weeks.

Other important Stuff

Course Description

“Survey of the principles of physics and chemistry.” Class Schedule

Supplies

Notebook/paper, scientific calculator (TI-30X or similar), graph paper, pencil, text and lab manual on CD

Support Services

1. The Center for Learning⁴ (623 845-3812) provides free tutoring services.
2. Physical Science Assist in the Physical Science Building. Physical science faculty offer help with homework and course content. This semester's hours are at www.gc.maricopa.edu/appliedscience/physciweb/physciassist.html
3. The Math Solution⁵ (623 845-3813) offers free math and calculator help.
4. The Writing Center⁶ (623 845-3480) offers writing help. It is located in HT2-107, one of the offices on the floor of the Pit (Computer Commons) along the south edge of High Tech Center 2. It is easily identified by the gold filigree decoration mounted above the door.

Course Competencies

1. Apply appropriate problem solving techniques to physical phenomena to develop hypotheses, design experiments, collect and analyze data, and to draw inferences from the evidence.
2. Effectively communicate qualitative and quantitative information orally and in writing.
3. Explain historical and current contexts for the principles and applications of physics and chemistry.
4. Explain the application of fundamental physical and chemistry principles to various physical phenomena.
5. Work effectively in collaborative groups to solve practical and meaningful problems.

Attendance Policy

Class attendance is required. On the second unexcused absence the instructor MAY withdraw the student. Students must be present on all in-class test and final exam days. There will be NO make-up exams or quizzes. It is the each student's responsibility to become familiar with GCC policy regarding withdrawal and incompletes.

Withdrawal

Students bear the responsibility of notifying the Office of Admissions and Records when they discontinue studies in a course or at the college. Please refer to the Withdrawal Procedures in the General Catalog & Student Handbook. It is the student's responsibility to withdraw from the course. **The instructor WILL NOT automatically withdraw a student with excessive absences.**

Official Absences

“Official absences are those which occur when students are involved in an **official activity of the college** (i.e., field trips, tournaments, athletic events). Students must present an Official Absence Excuse form. Absences for such events shall not count against the number of absences allowed by an instructor or department. Students who must miss a class for an official reason must obtain an official absence verification card from the appropriate dean or associate dean and present it to the appropriate instructor(s) before the absence. Prior arrangements must be made with each instructor for make-up work. If prior arrangements have been made, the student will not be penalized. Other official absences include **jury duty** and **subpoenas** . Appropriate documentation will be required. Prior arrangements must be made with each instructor for makeup work. If prior arrangements have been made, the student will not be penalized. In the event of the **death of an immediate family member** , absences for periods of up to one week will not be counted against the number of absences allowed by an instructor or department. Students should contact instructor(s) as soon as possible to arrange for

⁴ www.gc.maricopa.edu/cfl/studyskills

⁵ www.gc.maricopa.edu/math/mathsolution.htm

⁶ www.gc.maricopa.edu/English/writingcenter/

make-up work. Appropriate documentation will be required (for example, a copy of the obituary or funeral program).”

Other Absences

If a student must be absent because of work, family emergency or illness the instructor will work with the student to allow him/her to catch up with the assignments. “Students shall have the right to observe major religious holidays without penalty or reprisal by any administrator, faculty member or employee of the Maricopa Community Colleges. Absences for such holidays shall not count against the number of absences allowed by an instructor or department. At least one week before the holiday, students shall submit to their instructor(s) a written statement which includes both the date of the holiday and the reason why class attendance is impossible. Prior arrangements must be made with each instructor for make-up work.”

Taping of Classes

Taping of lectures and/or labs is NOT allowed without the express permission of the instructor.

Safety Regulations

Arizona Statute ARS 15-151 specifies that every student, teacher and visitor in community colleges must wear appropriate protective eyewear while participating in or when observing vocational, technical, industrial art activities involving exposure to: molten metals; molten materials; cutting, shaping and grinding of materials; heat treatment; tempering or kiln firing of any metal or any other material; welding fabrication processes; explosive materials; caustic solutions; and radioactive materials.

Disciplinary Action

Disciplinary actions may be imposed on students for misconduct or violation of law and/or college rules and policies. This includes cheating. The policies followed in this course may be found in the Student handbook.

Disabilities

If you have a disability that may have some impact on your work in this class and for which you may require accommodations, you need to notify the Disability Services and Resources Office, located in TDS 100. The phone number is 623-845-3080. You must also schedule a meeting with your lecture and lab instructor(s) during the first two weeks of the semester to discuss your specific disability accommodation.

Food

No food or drinks, except water, are allowed in the classroom or laboratory.

Course content may vary from this outline to meet the needs of this particular group.

COPY OF SYLLABUS AND CD ACKNOWLEDGEMENT

Course: **PHS 110**

Semester: **Spring 2010**

Instructor: **Mary Harris PS 112**

Section #:

I acknowledge that I have received a course syllabus and a lab CD for the course/section listed above. I have read the syllabus and understand the attendance, grading and other policies. I recognize that in order to successfully complete this course it may require a further 2-3 out-of-class study hours for each hour spent in class.

Signature: _____

Printed Name: _____

Date: _____

How did you select this course? On-line schedule? Paper schedule?

Did you visit a campus advisor? If so, what assistance did you receive from this person?