

PHYSICAL SCIENCE 01

Ticket Number 6521

5:55 – 8:00 P.M. Tuesday

8:00 A.M. – 12:00 P.M. Saturday

Room: CMPC-5

Instructor: Professor Charles Mallory

Email: charles.mallory@ieee.org

Web Address: <http://home.ca.rr.com/profmallory/>

Check this location often. This location will contain old quizzes, tests, handouts, study guides and grades.

Office Hours:..... 6:30 – 7:00 PM Thursday

And by arrangement

Text: An Introduction to Physical Science, by Shipman, Wilson & Todd, 11th edition

Attendance:..... This will be taken each class and will count for 5% of your final grade.

Class Description:... This course is designed for non-science majors. It meets the General Education requirements for Natural Sciences. This survey course covers the general principles of Physics, Chemistry and Astronomy.

Homework will be given for each chapter. The test and final questions will come from these questions. The assignments will NOT be collected but you are expected to have completed them.

Tests will be given weekly, and will count for 30% of your final grade. The quiz questions will primarily come from the questions the end of each chapter from the book.

Final will count for 65% of your final grade. The final questions will be taken from the quizzes. The final will be cumulative and cover all quizzes. **Failure to take the final exam will result in an automatic fail in the course.**

Grading will be done on a semi-modified curve. The grade you will earn will be based on the following scale:

A	90% - 100%
B	75% - 89%
C	60% - 74%
D	45% - 59%
F	0% - 44%

I guarantee that you will receive at least the above grade if not higher due to modifications of the curve to fit the class performance.

Grade Breakdown:	Attendance	5%
	Tests	30%
	Final Exam	65%

Anyone found cheating WILL receive an “F” grade.

Tentative Lecture Schedule

Date	Day	Chapt.	Material	Pages
4/8/2008	Tuesday	Instructor Not Present		
4/12/2008	Saturday	Intro	Significant Digits	--
			Scientific Method	--
		1	Measurements	1-24 (23)
4/15/2008	Tuesday	2	Motion	25-43 (18)
		3	Force and Motion	44-68 (24)
4/19/2008	Saturday	<i>Pop Quiz – Chapters 1, 2, 3 and Introduction</i>		
		4	Work and Energy	69-89 (20)
4/22/2008	Tuesday	--	Test 1 - Chapters 1, 2, 3 and Introduction	
		5	Temperature and Heat	90-116 (26)
4/26/2008	Saturday	6	Waves	117-135 (18)
		7	Wave Effects and Optics	136-165 (29)
4/29/2008	Tuesday	8	Electricity and Magnetism	166-197 (31)
5/3/2008	Saturday	9	Atomic Physics	198-225 (27)
		Review		
5/6/2008	Tuesday	--	Test 2 - Chapters 4, 5, 6, 7 & 8	
		10	Nuclear Physics	226-259 (33)
5/10/2008	Saturday	11	The Chemical Elements	260-287 (27)
		12	Chemical Bonding	288-317 (29)
5/13/2008	Tuesday	13	Chemical Reactions	318-346 (28)
5/17/2008	Saturday	15	The Solar System	380-415 (35)
		16	Place and Time	416-437 (21)
		17	The Moon	438-458 (20)
5/20/2008	Tuesday	--	Test 3 - Chapters 9, 10, 11, 12 & 13	
		18	The Universe	459-491 (32)
		19	The Atmosphere	492-521 (29)
5/24/2008	Saturday	--	Test 4 – Chapters 15, 16, 17, 18 & 19	
5/27/2008	Tuesday	Review Test 1, 2, 3 & 4		
5/31/2008	Saturday	Final		

Significant Figures

	Example	Sig. Digits	Sci-Notation
1 All non-zero digits are significant			
	1.589	4	1.589E+00
	0.897	3	8.97E-01
	36000	2	3.6E+04

2 Significant Zero's			
a All sandwiched zero's			
	13.02	4	1.302E+01
	1.0002	5	1.0002E+00
	10.5	3	1.05E+01
b All trailing zero's preceded by a digit			
	5.000	4	5.000E+00
	20.000	5	2.00000E+01
	15.00	4	1.500E+01

3 Non significant Zero's			
a Leading Zeros			
	0.0200	3	2.00E-02
	0067	2	6.7E+01
b Trailing Zero's to the left of the decimal point in a number without a decimal point			
	56000	2	5.6E+04
	1360	3	1.36E+03

*NOTE: Write the numbers in exponential notation if you have any doubt. All zeros used to indicate the power of 10 (order of magnitude) are not significant.

Rounding Off

1 If the last digit to be retained in a number is followed by a number less than 5 (<5),

ROUND DOWN.

Round to 3 significant figures:

28.23	rounds to	28.2
578.1	rounds to	578

2 If the last digit to be retained in a number is followed by a number greater than 5 (>5),

ROUND UP.

Round to 2 significant figures:

5.998	rounds to	6.0
0.00258	rounds to	0.0026
3.6502	rounds to	3.7

3 If the last digit to be retained in a number is followed by 5 (000000... implied),

ROUND the last digit retained to an **EVEN NUMBER.**

Round to 2 significant figures:

1.75	rounds to	1.8
1.050	rounds to	1.0
1.45	rounds to	1.4

Round to 4 significant figures:

67.835	rounds to	67.84
67.885	rounds to	67.88

Calculations

Uncertainty and Significant Figures

The **Least Accurate Number (LAN)** determines the number of digits to which the answer is expressed.

Addition and Subtraction

1. The LAN is the number with the least number of digits following the decimal point.
2. The answer (*sum* or *difference*) can have no more digits *following* the decimal point than the LAN.

Example:

What is the total mass of a mixture made by mixing the following substances?

212	g water (LAN)
1.8	g salt
1.88	g sugar
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215.98	g (incorrect)
216	g (correct)

Multiplication and Division

1. The LAN is the number with the least number of significant figures.
2. The answer (*product* or *quotient*) can have no more significant figures than the LAN.

Example:

Calculate the volume of a rectangular solid that has a length of 4.16 cm, a width of 2.2 cm, and a height of 2.00 cm.

$$\text{Volume} = \text{Length} \times \text{Width} \times \text{Height}$$

$$\text{Volume} = (4.16\text{cm}) (2.2\text{cm}) (2.00\text{cm})$$

LAN

$$\text{Volume} = 18.304 \text{ cm}^3 \text{ (incorrect)}$$

$$\text{Volume} = 18 \text{ cm}^3 \text{ (correct)}$$