

2013

# 114-01 Our Universe- Physical Science 115-01 Lab

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# OUR UNIVERSE - PHYSICAL SCIENCE

Fall 2013

PHYS 114-01	Lecture	Monday	4:30 – 6:10	Linder 203
PHYS 115-01	Lab	Monday	6:25 – 8:15	Linder 203

**Instructor** Mr. Axe, Public school: 29 years, Winton Woods HS: Physics, Biology, Chemistry  
7 years, Kings: Science Curriculum, 8<sup>th</sup> grade science  
Retired from public school teaching June, 2008  
College: UC, Physic by Inquiry, 1996 to present  
XU, OUR UNIVERSE-Physical Science, 2004 to present

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Physics / Chemistry Secretary, Marca Kasselmann: am 745-3626, 110 Linder  
pm 745-3351, 103 Logan

**Office Hours** One hour before class, in the lab; Other hours by appointment.

**Course Description** This course has been designed specifically for pre-service teachers. A number of important introductory topics are covered in depth, with an emphasis on concept development and the reasoning skills necessary to perform and teach scientific inquiry.

Topics : Properties of Matter, Electric Circuits, Magnetism, Kinematics, Forces, and Laws of Motion.

**Text** Physics by Inquiry, volumes I and II by Lillian C.McDermott

The two volume set consists of several modules containing textual material, laboratory experiments, and reasoning exercises. These materials were developed by the Physics Education Group at the University of Washington, and are specifically designed for college-level elem/middle education majors. The texts include hands-on/ minds-on laboratory-based activities, inquiry-oriented instructional strategies, intensive study of a few basic physical concepts, equal emphasis on physics content and scientific process, and address common student difficulties and misconceptions. Both volumes will be used extensively during class.

**Attendance & Participation** The class will be divided into cooperative learning groups. The members of the group will work together to complete experiments and exercises. Student learning is dependent upon observation and discussion so it is essential that you are present and participating. Students should keep a record of the experiments and exercises in their own lab binder. A group Checkpoint form will be used to record group progress. At designated Checkpoints, the instructor will assess group progress and individual understanding. Cell phones and computers should not be used during lab. 10 % of your grade is based upon participation.

**Homework** A homework (HW) guide will be emailed each week. HW will be due one hour before class. HW may be placed in my mail box in the Physics Office. Email option: Scan HW pages as a JPEG or convert to a PDF file. Email the file as an attachmet to: [daxe47@aol.com](mailto:daxe47@aol.com) Email HW must be submitted no later than 7 pm on the Sunday before class. 15 % of your grade is based upon homework.

**Evaluations** Exams correspond to progress through the topics. The evaluations will be based on scientific reasoning, rather than the memorization of facts and formulas. The exam schedule on the weekly assogment page is tentative and dependent upon student progress.

**Grading and Scale** Normally a separate grade is given to the lecture portion and lab portion of science courses. Due to the nature of this course, which combines the lecture and lab, the same grade will be given for both.

The **final grade** is based on the following:

Exams	=	75 %
Homework	=	15 %
<u>Participation</u>	=	<u>10 %</u>
Total	=	100 %

## Grading Scale

A	(94 - 100%)
A -	(90 - 93 )
B +	(87 - 89 )
B	(84 - 86 )
B -	(80 - 83 )
C +	(77 - 79 )
C	(74 - 76 )
C -	(70 - 73 )
D +	(67 - 69 )
D	(65 - 66 )
D -	(60 - 64 )

## **CORE CURRICULUM GOALS AND STUDENT LEARNING OUTCOMES**

GOAL 1: Students will be effective communicators in writing and orally

1. Students will organize and express their ideas in writing and orally
2. Students will formulate clear and arguable theses, supported by evidence drawn from appropriate sources

GOAL 2: Students will be critical thinkers

1. Students will analyze and interpret texts, images, objects, artifacts, and quantitative and qualitative data
3. Students will evaluate the strength of an argument or claim and its evidence

GOAL 3: Students will be creators of new knowledge and expression

1. Students will utilize their imagination and creativity, individually and collectively, to innovate and generate new perspectives to problems
2. Students will utilize analytical and quantitative skills to design experiments and test theories

GOAL 4: Students will be able to understand and appreciate the arts, humanities and science disciplines, and reflect on connections among these studies

5. Students will explain the scientific method, including the difference between hypotheses, theories and laws, valid hypothesis and/or models
6. Students will utilize mathematical and logical reasoning and the language of mathematics with its own symbols, syntax, and semantics.