

PHY 104 - Astronomy: the Solar System
4 Credit Hours
Fall 2008

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Class Time: TH 5:30 – 7:17 pm **Office hours:** TH, 4:45-5:15 pm and after class

Course (Catalog) Description: The Sun, planets, space travel, the search for extraterrestrial life.
Topics include: The Universe and its Motion; Observing the Sky; Matter and Energy; Light; Telescopes and Spacecrafts; History of Astronomy.

The Solar System and its Formation: the Sun, the Planets and Remnants; Characteristics of the Planets and their Motion; Comparative Planetology; the Planetary Moons; Asteroids, Meteorites and Comets; Life on Earth and Search for Life in the Solar System.

Prerequisites: None.

General Education Learning Outcomes: This course satisfies the university general education requirement in Natural Science and Technology (NST) knowledge exploration area.

The learning outcomes for NST courses state that the student will demonstrate:

- Knowledge of major concepts from natural science or technology, including developing and testing of hypotheses; drawing conclusions; and reporting of findings through some laboratory experience or an effective substitute (Laboratory experiences are met by either a limited number of interactive experiences, collecting and interpreting raw data, or other effective experiences such as a virtual laboratory). Requires at least 3 laboratory experiences during the course.
- How to evaluate sources of information in science and technology.

In addition to the general-education learning outcomes, this course also includes the crosscutting capacity of Critical Thinking.

Course Goals and Objectives: Since time immemorial man has looked at the skies to find an answer to many questions, such as the meaning of life, how our lives are connected to the Sun, Moon, planets and stars... The mysteries of the sky have fascinated ancient philosophers, kings and religious leaders alike. But it is only in relatively recent times that Astronomy has emerged as an actual science.

The main goal of this course is to foster the appreciation of Astronomy as a science. Therefore the course will include, besides an historical overview of the development of Astronomy in ancient civilizations, an introduction to the scientific method.

The course will also introduce basic concepts of mechanics and geology as an aid to the understanding of planetary motion, composition, etc.

The nature of this course is descriptive: therefore minimal amount of mathematics will be used. To

deepen the understanding of concepts, though, a number of tools will be used in addition to lecturing:

- **Laboratories** – these include both qualitative and quantitative analysis of data and serve to reinforce the understanding of fundamental concepts and to gain an appreciation for the way that modern experiments are made by astronomers.
- **In-class activities** – to be performed in groups, these activities are primarily aimed at reinforcing the understanding of concepts learned in the lecture.
- **Sky simulation activities** – using an interactive desktop planetarium, we will study the motion of celestial objects over very long periods of time and recreate events that cannot be experienced in a lifetime of observing.
- **Homework** – comprehensive of reading, concept and visual quizzes.

- Textbooks:**
- Bennett: The Cosmic Perspective: Solar System– with Mastering Astronomy and Sky Gazer CD-Rom – Edition 5/E – Pearson – ISBN: 0321503171
 - De Jong: Astronomy Active Learning In-Class Tutorials – 2006 Edition, Pearson
 - Ferguson: Lab Manual for Phy 104 – Cengage Custom Publishing

NB: If you purchase a used book, make sure that the Voyager-Sky Gazer CD-Rom is enclosed. You will have to purchase the Access Card to Mastering Astronomy online at

<http://www.masteringastronomy.com>

Click on the textbook icon and then choose: 'Buy Now' – the cost is \$26.67.

Features: The textbook includes two important Student Supplements:

“*Mastering Astronomy Website*”: featuring interactive tutorials, interactive figures and photos, mini documentaries, etc.

<http://www.masteringastronomy.com>

“*Tutor Center*”: provides one-to-one tutoring by qualified college instructors in the evenings and weekends via phone, fax, e-mail and the Internet.

<http://www.aw-bc.com/tutorcenter>

Equipment: Metric ruler, scientific calculator, pencil, colored pencils. Please bring daily to class.

Homework: The homework – Reading, Conceptual and Visual Quizzes – is intended to help the students familiarize with the concepts introduced by the course and to help them gauge their understanding of the material. The Chapter must be read **in advance** of the lecture and the quizzes are due **before** the Chapter is covered by the lecture.

Please see the attached sheet. **No late homework is accepted.**

The Homework is worth 20% of the final grade.

Tutorials are also available for each chapter. These are an excellent self-study tool for deepening the understanding of main concepts. Tutorials will not be graded.

Laboratories: Three of the classes will be dedicated to laboratories to be worked out in groups of

two under the instructor's guidance. Please bring a fine point pencil, eraser, color pencils, ruler, basic calculator and *Ferguson, Laboratory Manual for Phy 104*.

NB: no make-up dates for these labs.

LAB 1:	The Moon	Sept. 25
LAB 2:	The Planets – Analysis of Observations	Oct. 28
LAB 3:	Kepler’s Third Law and Masses in Astron.	Dec. 2

The Laboratories are worth 20% of the final grade.

In-Class Activities: A number of activities will be utilized as a complement to the lecture to help the students understand more difficult concepts. The activities will be worked out in groups of two. These include:

- Selected activities from: *Astronomy Active Learning In-Class Tutorials* (please bring this book to class everyday)
- Some simulation activities using the Voyager Sky-Gazer CD-Rom
- End of chapter In-depth Questions and How Science Works

Course Reserves: Lecture notes will be available as on-line Electronic Reserve Material through the Library (see attached sheet). Also, VHS videos from Carl Sagan’s Cosmos series

will be available on 2 hour-Reserve for watching at the Library.

Exams: There will be three exams. All exams will be closed-book and will consist of essay questions and multiple-choice questions. You may bring an 8 ½” x 11” sheet containing personal notes. No make-up dates for the exams. No final exam.

Exam # 1:	Thursday, October 2	(Ch 1, 2, 3, 4)
Exam # 2:	Tuesday, November 4	(Ch 5, 6, 7, 8)
Exam # 3:	Tuesday, December 9 6:30 pm!!	(Ch 9, 10, 11, 12)

The Exams are worth 60% of the final grade (Ex1: 10%, Ex2: 20%, Ex3: 30%)

Final grade: The final grade will be calculated on the basis of the following percentages:

* Homework:	20%
* Laboratories:	20%
* Exams:	60%

Grading:	A (4.0)	total score:	> 95%
	A (3.6 - 4.0)		86 - 95 %
	B (3.0 - 3.5)		73 - 85 %
	C (2.0 - 2.9)		60 - 72 %
	D (1.0 - 1.9)		50 - 59 %

Common Courtesy Guidelines:

For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regard to all course interactions.

For example:

- Show up for class on time.
- Turn off your cell phones and put away iPods and other devices before class begins.
- Do not leave class early, and do not rustle papers in preparation to leave before class is dismissed.
- Be attentive in class; stay awake, don't read newspapers, paperbacks, etc.
- If you must be late or leave early on a particular day, please inform your instructor in advance.
- Play well with others. Be kind and respectful to your fellow students and your teachers.

You can expect your grade to be lowered if you do not practice common courtesy.

Academic Conduct Policy:

Cheating on examinations, plagiarism, falsifying reports/records, and unauthorized collaboration, access, or modifying of computer programs are considered serious breaches of academic conduct. The Oakland University policy on academic conduct will be strictly followed with no exceptions.

See catalog under Academic Policies and Procedures.

Add/Drops:

The University add/drop policy will be explicitly followed. It is the student's responsibility to be aware of the University deadline dates for dropping the course.

Special Considerations:

Students with disabilities who may require special considerations should make an appointment with campus Disability Support Services. Students should also bring their needs to the attention of the instructor as soon as possible.

Time Schedule and Topical Outline:

The class schedule, below, indicates class dates, exam dates, specific topical material to be covered, and homework assignments.

The instructor reserves the right to make minor adjustments to this schedule.

SELF-ASSESSMENT QUIZZES – ONLINE HOMEWORK

When you purchase the textbook (new or used), make sure it's packaged with the *Student Access Kit to Mastering Astronomy*. Or else you may choose to purchase the Access Kit online at: www.masteringastronomy.com

Day One: Register for the Class

Go to the Mastering Astronomy website: www.masteringastronomy.com

Click on **Tours and Training** and download the PDF file **Student Guide for Getting Started**.

- Back to the Home page, click on **Register** and then **New Students**
- Do you have the Student Access Code from the Student Access Kit inside your textbook? Click **Yes or No** (in which case you may purchase it online)
- Do you have a Pearson Education Account? Select **No**, then
 - create your **Login Name** (last name, first name please) and **Password**
 - enter the **Mastering Astronomy Access Code** (inside the Student Access Kit)
 - enter your personal information
 - choose the *school location* (Zip: 48309)
 - click on '**Next**': a 'Confirmation & Summary' page will appear.
- Click on '**Log In Now**' – Now you can Login as a Returning User.
 - Now enter the *student ID* – your Grizzly ID number
 - and the **Course ID: P104F08CASTOLDI** – NB: 104 & 08 are numbers!

To access the Homework:

Go to the Mastering Astronomy website: www.masteringastronomy.com

- Step 1: Login
- Step 2: Click on **Assignment List**
- Step 3: Choose the homework chapter, e.g. 'Chapter 1'
- Step 4: Click on: **Reading Quiz** for the assigned chapter
 - a) answer all the questions
 - b) submit for grading
- Step 5: Click on: **Concept Quiz**
 - a) answer all the questions
 - b) submit for grading
- Step 6: Click on: **Visual Quiz**
 - c) answer all the questions
 - d) submit for grading

Please Note:

If you do not enter the Class ID, your grade will not appear on my Gradebook!

TUTORIALS – A SELF-STUDY TOOL

When you Login under **www.masteringastronomy.com**, besides the homework Assignments, you will also find on the left hand side a number of self-study tools, including Tutorials.

Listed below are Tutorials that you may want to explore.

Tutorials will not be graded. This tool is uniquely for your own benefit.

Chapter 1	- Scale of the Universe
Chapter 2	- Seasons - Phases of the Moon
Chapter 4	- Motion and Gravity - Energy
Chapter 5	- Light and Spectroscopy - Doppler Effect
Chapter 6	- Telescopes
Chapter 7	- Orbits and Kepler's Laws
Chapter 8	- Formation of the Solar System
Chapter 9	- Shaping Planetary Surfaces
Chapter 10	- Surface Temperature of Terrestrial Planets

ACCESSING COURSE ELECTRONIC-RESERVE MATERIALS
(Lecture Notes)

1. Go to www.kl.oakland.edu (or from the OU web page click on **Library**)
2. Under **Express Links** select **Electronic Reserve**
3. **Login** using the following format:

Lastname_Firstname	e.g. Smith_John
Last 5 digits of your Grizzly ID	e.g. 12345

Click on **Login**
4. On the list of E-Reserves click on the course: **PHY 104**
5. Then select the Lecture Notes for a given chapter

NB: Your browser will utilize the Adobe Acrobat Reader plug-in.

If you do not have Adobe Acrobat Reader, please go to:

<http://www.adobe.com/products/acrobat/readstep2.html>

where you will be able to download an executable file that you can run and install on your computer.

You can also **print or save the item** by clicking on the appropriate icon.

To save: Click on the disk icon

- Under the *Save In* (look up box), select the destination (e.g. your hard drive...)
- Under *File Name*, give a name to your file (8 characters max)
- Under *Save as Type*, choose 'Acrobat' (*.pdf)
- Finally, click on *Save*

Also, the **Carl Sagan Cosmos series**
is available in VHS format
for 2-hour reserve

at the front desk of the Library

PHY 104 – TENTATIVE SCHEDULE – FALL 2008

TUESDAY	THURSDAY	TUESDAY	THURSDAY
9/2 Chapter 1 Our Place in the Universe	9/4 Chapters 1 & 2 Discovering the Universe Ch 1 Hom due	9/9 Chapter 2 Discovering the Universe Ch 2 Hom due	9/11 Chapter 3 The Science of Astronomy Ch 3 Hom due
9/16 Chapter 3 The Science of Astronomy	9/18 Chapter 4 Motion, Energy and Gravity Ch 4 Hom due	9/23 Chapter 4 Motion, Energy and Gravity	9/25 LAB # 1 The Moon
9/30 Chapter 5 Light Ch 5 Hom due	10/2 EXAM # 1 (Ch 1, 2, 3, 4)	10/7 Chapter 5 Light	10/9 Chapter 6 Telescopes Ch 6 Hom due
10/14 Chapter 6 Telescopes	10/16 Chapter 7 Our Planetary System Ch 7 Hom due	10/21 Chapter 7 Our Planetary System	10/23 Chapter 8 Formation of the Solar System Ch 8 Hom due
10/28 LAB # 2 The Planets – Analysis of Observations	10/30 Chapter 9 Planetary Geology – Terrestrial Planets Ch 9 Hom due	11/4 EXAM # 2 (Ch 5, 6, 7, 8)	11/6 Chapter 9 Planetary Geology – Terrestrial Planets
11/11 Chapter 9 Planetary Geology – Terrestrial Planets	11/13 Chapter 10 Planetary Atmospheres Ch 10 Hom due	11/18 Chapter 10 Planetary Atmospheres	11/20 Chapter 11 Jovian Planetary Systems Ch 11 Hom due
11/25 Chapter 11 Jovian Planetary Systems	11/27 -	12/2 LAB # 3 Kepler's Third Law and Masses in Astronomy	12/4 Chapter 12 Asteroids, Comets... Ch 12 Hom. due
12/9 EXAM # 3 (Ch 9, 10, 11, 12) Please notice: 6:30 pm!!	12/11		