Astronomy 1101 – *From Planets to the Cosmos*
Autumn Semester 2015

Lectures: MWF, 12:40-1:35pm, 209 W 18th Ave 170 (EA170)

Professor: Dr. Richard Pogge
Office: 4059 McPherson Lab (292-0274)
Office Hours: Tues & Thursday 1:30-3:30pm or by appointment
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Required Textbook: None.
Course Web Page: All online materials and updates will be posted to this course's Carmen page (24567).

Course Objectives

Astronomy 1101 is an overview of astronomy from our solar system to the universe as a whole. It is a General Education (GE) Physical Science course in the Natural Science category. The goals of courses in this category are for students to understand the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

The expected learning outcomes for GE courses in the Natural Science category are as follows:

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the interdependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

Astronomy 1101 will meet these expected outcomes by covering three overarching and interconnected themes:

1. The Long Copernican Revolution: the discovery of the nature of our solar system and planetary systems around other stars, the physics of light and gravity.
2. The Lives of Stars: the nature and evolution of stars and the origin of the elements we find in nature.
3. The Cosmos: the history of galaxies and the universe, evidence for the Big Bang, and the structure of the universe on its largest scales.

I will attempt to convey a number of the facts that astronomers and astrophysicists have learned about these topics, to describe the outstanding scientific problems that are the focus of current research, to illustrate ways in which physical principles are used to understand the universe, and to show how scientific theories are developed and tested against observations.

Among the questions that you should be able to answer by the end of the course are the following:

- What is the architecture of our solar system, and how do we find other planetary systems?
- What is a star?
- What is a galaxy?
- What is the evidence for dark matter?
- What is the Big Bang theory?
- What empirical evidence supports and/or challenges our explanations for the physical nature of stars, galaxies, and the cosmos?

Course Organization

This is a four-credit hour course; each week, there will be 3 hours of lecture and one two-hour laboratory session. For Arts and Sciences students in a Bachelor of Arts program, this course meets the Arts and Sciences GE requirement of a natural sciences course that includes a laboratory component.

Weekly Laboratory, Lab Write-Ups & Homework

Astronomy 1101 laboratory meets weekly. **Attendance is required**. The primary goal is to reinforce the concepts covered in lecture and to introduce quantitative thinking. All labs start with a half-hour session led by Dr. Schlingman in the OSU Slettebak Planetarium in 5033 Smith Laboratory. The class then divides into smaller groups who accompany their TA to their assigned rooms in Smith Lab for the lab work proper. Each student will finish their in-class lab write up before the end of the session, but this write-up can be taken home to use with the homework assignment handed out at the end of each lab at the start of the next lab time, and then it is turned in the following week along with the homework answers.

The lab times, rooms, and TAs are as follows:

Monday 1:50-3:40	SM3082	TA: Jeff Sun (sun.579@osu.edu
Monday 1:50-3:40	SM3094	TA: Ben Wibking (wibking.1@osu.edu)
Tuesday 2:20-4:10	SM3082	TA: Jamie Tayar (tayar.1@osu.edu)
Tuesday 2:20-4:10	SM3094	TA: Suk Sien Tie (tie.5@osu.edu)
Thursday 2:20-4:10	SM3094	TA: Jenna Freudenburg (freudenburg.2@osu.edu

Please attend only the lab section room and time you are signed up for. Attendance at the weekly laboratory and the lab write-ups account for **20%** of the final grade.

Before leaving the lab, students will be given a homework assignment due at the start of the **next lab session** along with your lab write up. The homework will consist of questions that follow from the laboratory exercises and the class lectures. Collectively, these homework assignments will account for **20%** of the final grade.

Collectively, lab attendance, write-ups, and homework count for **40%** of the final grade. **No missed laboratory or late homework will be accepted** except for legitimate, documented emergencies. We will drop the lowest lab and homework scores in computing your final grade.

In-Class Exams

There will be two in-class exams, scheduled for the following days:

In-Class Exam 1: Friday, September 25
In-Class Exam 2: Wednesday, November 4

Please mark your calendars with these dates. The exams will be held at the normal class time and you will have the entire time in which to complete them. Exams cover the material in the lectures and labs

sessions since the previous exam. All exams will be **closed-book, closed-notes, multiple-choice** tests. Collectively, the two in-class exams will account for **30%** of the final grade.

Makeup exams are only offered by advance arrangement with the professor, except for legitimate, documented emergencies. If you are away on official University-sponsored activities (ROTC, sports, band, etc.), please get a letter from your coach, director, etc. **in advance** of the exam. Exams must be made up before the Wednesday following the missed exam date.

Final Exam

The Final Exam is **Thursday, December 17 from 2:00-3:45pm in EA170**. Attendance is mandatory. The final will be **comprehensive** and worth **30%** of your grade.

No makeup final will be offered. Students who miss the final exam will be given an incomplete (I) with an alternative grade equal to getting a zero on the final, and have to make it up the following Semester to avoid the alternative grade. In keeping with University policy, early finals will **not** be available for those persons who wish to depart early for break.

Grading Policy

Your course grade will be based on the following:

- 20% Weekly Lab attendance and write-ups
- 20% Weekly homework
- 30% In-Class Exams
- 30% Final Exam

Weekly laboratory attendance is required. Lab write-ups are graded on a 4-point integer scale. In round numbers, 4=A, 3=B, etc. However, we will curve the *cumulative* lab scores combined from the entire semester after dropping the lowest score on the labs to compute the final lab grade for the semester.

Each problem on the weekly homework is graded on the same 4-point scale used for labs, and the average over all problems on an assignment is recorded as the grade for that assignment. Like the labs, we will curve the *cumulative* homework scores after dropping the lowest score on the homework, and use this curve to determine the final homework grade for the semester.

The two in-class exams will be 50-question, multiple-choice exams graded on a standard C+/B- curve. Each exam will be curved independently, and grade breakdowns will be posted when exams are returned.

The comprehensive final exam will be a 100-question multiple-choice exam graded on a C+/B- curve.

The overall final course grade will be computed by combining the separate grades from each of the exams, labs, and homework in the proportions described above. Attendance will be taken each day, and will be factored into your final grade. Regular attendance could increase your grade by one step (e.g., B+ to A-) if your calculated overall grade (lab+homework+exams) is within 2% of the next higher grade.

Lectures

Lectures are Monday, Wednesday, and Friday at 12:40-1:35pm, in Room 170 in the 209 W. 18th Avenue classroom building. **Attendance is required**. The lectures, along with the labs and homework assignments, are your primary source of course content, and exams are based on the lectures and the lab exercises. Attendance will be taken daily using Top Hat (plus a backup sign-up sheet). Similarly, participation in classroom activities (group problems and discussions) will factor

into the final course grade. I will use attendance and participation to increase your grade by one step (e.g., from B+ to A-) if your course grade is within 2% of the higher grade.

Student Response System (Top Hat)

Every non-testing day in class we will use OSU's new web-based student response system Top Hat (resourcecenter.odee.osu.edu/top-hat). Top Hat works with laptops and mobile devices (with free iOS and Android apps) connected to the OSU wireless network. You login using your usual OSU name.# and password (no new account needed). We will use Top Hat to ask group questions, take attendance, and perform brief concept assessments and surveys. Your Top Hat scores are recorded in Carmen, and I will use them to track attendance and participation in class to be factored into the attendance and participation components of your final course grade.

Top Hat will also be used in some lab sections, so please bring your devices with you.

Students with Disabilities

Students with disabilities that have been certified by the Office for Disability Services (ODS) will be appropriately accommodated and should inform the instructor as soon as possible of their needs. The Office for Disability Services is located in 150 Pomerene Hall, 1760 Neil Avenue; Phone: 292-3307, VRS: 429-1334; (ods.osu.edu). We will rely on ODS to verify the need for accommodation and to help develop appropriate strategies. Students with disabilities who have not previously contacted ODS are encouraged to do so by visiting the ODS website and requesting an appointment. Please take care of this well in advance of the exams, as processing the paperwork takes time.

Academic Misconduct

It is the responsibility of the Committee on Academic Misconduct to investigate or establish procedures for the investigation of all reported cases of student academic misconduct. The term "academic misconduct" includes all forms of student academic misconduct wherever committed; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information, see the Code of Student Conduct (studentconduct.osu.edu).

Classroom Etiquette

To help establish and maintain a courteous, respectful, and distraction-free learning environment in our classroom, I ask that everyone please observe the following rules of classroom etiquette:

Making or taking phone calls and texting is prohibited.
During class, please put your cell phone into silent ring mode, and do not make or take calls or text during class. This is very rude and distracting to others around you.

Use of laptops, tablets, smart phones, or other wireless devices is reserved for in-class activities.
When not being used for in-class activities via Top Hat, please put laptops, tablets, smart phones, etc. into standby mode (closed lid/dark screen) until the next activity. Please do not surf the web, text, tweet, post, work on other classes, etc. Such activity is very distracting to others around you.

Please do not start packing up until class is completely over
I'll be clear when we're done, and I work very hard to stay on time, please wait until I finish.

No conversing during lectures.
Please respect the wishes of your fellow students to listen to the lecture, and do not carry on conversations during class except during group discussions or problem-solving sessions.