Astronomy 10 - Hybrid Format

Schedule # 51000 Spring 2023

Lecture Content is on the class Canvas page

Labs held on Tuesdays 5:00pm - 6:50pm in PHY 70 at Reedley College

Contact Information:

Instructor Name: Kurt Shults
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Office Hours:

Tuesdays 1:00 – 3:00pm in PHY 71

Thursdays 1:00 – 3:00pm in PHY 71

Fridays 9:00 – 10:00am via Zoom https://scccd.zoom.us/j/86599414811

Required Course Materials:

- TEXTBOOK: OpenStax Astronomy Textbook https://openstax.org/details/books/astronomy This is a free textbook that you can download or view from your phone or computer. It is accessible everywhere you have internet.
- A scientific non-graphing calculator

Course Description:

This course covers Astronomical concepts with a minimum of math while fulfilling the science with a lab general education requirement for the CSU and UC systems. The topics covered in this course are: the planets, solar system mechanics, stellar evolution, galaxies, and basic cosmology.

Student Learning Outcomes:

Over the duration of this course, students will -

- Apply reasoning skills regarding the science of the universe to solve mathematical and non-mathematical problems in astronomy
- Read college-level publications written on introductory astronomy topics
- Solve simple algebraic problems that apply to topics in astronomy

Course Content:

- Naked eye astronomy: the motion of the Sun, Moon, and stars as seen from the Earth; seasonal changes; phases of the Moon and eclipses.
- Scientific method and history of astronomy: geocentric and heliocentric models, Copernican Revolution, and Kepler's laws.
- Physics: gravity, temperature, pressure, energy, and conservation laws.

- Light: the nature of light, the electromagnetic spectrum, the atom and spectroscopy, telescopes on Earth and in space, and the Doppler effect.
- Formation and evolution of the solar system.
- The role plate tectonics, volcanism, and magnetic fields play in shaping the surfaces, habitability, and other properties of different planetary bodies.
- Earth: internal structure, surface and atmosphere, magnetosphere, and ability to support life.
- Terrestrial planets: characteristics of the Moon, Mercury, Venus, and Mars, in comparison to Earth.
- Jovian planets: characteristics and properties of Jupiter, Saturn, Uranus, and Neptune.
- Comets, asteroids, and meteorites.
- Sun: internal structure, nuclear fusion, solar activity, heliosphere, and the limits of the solar system.
- Stars: classification of stars, Hertzsprung-Russell (HR) diagrams, main sequence, luminosity, and apparent and absolute brightness.
- Cosmology: large-scale structure, Cosmic Background Microwave Radiation (CMBR), cosmic evolution, the expanding Universe, the geometry of the Universe, and the fate of the Universe.

Textbook:

Great news: your textbook for this class is available for **free** online!
Astronomy from OpenStax, ISBN 1-947172-01-8

You have several options to obtain this book:

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    - View online (Links to an external site.) (Links to an external site.)
    - Download a PDF (Links to an external site.) (Links to an external site.)
    - Order a print copy (Links to an external site.) (Links to an external site.)
    - Download on iBooks (Links to an external site.) (Links to an external site.)

You can use whichever format you want. Web View is recommended -- the responsive design works seamlessly on any device.

Calendar:

- January 16th – Martin Luther King, Jr. Day, no classes held
- January 20th - Last day to drop a Fall 2022 full-term class for full refund
- January 27th - Last day to drop a Fall 2022 full-term class in person to avoid a "W"
- February 17th – Lincoln Day, no classes held
- February 20th – Washington Day
- March 10th – Last day to drop a full-term class
- April 3rd – 7th – Spring recess, no classes held
- May 15th - 19th – Finals week

Exams:

There will be two midterm exams and one final exam. The exams have conceptual questions that are in both multiple-choice and free response format. There will also be some very simple algebra problems

that are appropriate for astronomy. Don't worry; you'll have lots of support for the math part. The exams contribute **50%** of your semester grade, so they are very important to prepare for.

Makeup exams will be given with preapproval only. Details of how the exams will be administered will be given at a later date.

Homework:

Doing your homework assists you in two ways: 1) it helps you learn the material, and 2) it lifts your grade.

Your homework is **20%** of your semester grade. Homework is completed online through Canvas. The homework assignments will be posted and may require you to watch a video (Crash Course Astronomy or some other resource) and then will involve you in answering some multiple-choice questions on the material. These questions will be the foundation for what I will asking during the exams.

There will also be reading guides and homework questions based upon the required reading for each module. This reading will usually consist of sections from the textbook, however other sources may be used. These reading homework questions will usually be in a multiple-choice format, however, some of these will require one or two sentence answers.

Late homework will not be accepted.

Laboratory:

This class has a lab that is **mandatory**. The lab makes up 20% of your grade.

There will be no makeup sessions for Lab. I will drop your lowest lab score. Missing two or more labs will significantly reduce your grade. Make plans to attend every lab session if possible!

Online Discussions:

There are online class discussions that are graded. These discussions cover several topics and can be varied in type. The discussion accounts for **10%** of your grade. The objective of the discussions is twofold: 1) assist in creating the important sense of community in the class and 2) help you clarify your understanding of the discussion topics. **You will need to make your post for the weekly discussion on Sunday of the first week and respond to two other posters by Sunday of the second week for full credit.** Use complete sentences and cite sources when applicable. Your responses must be more substantive than "Yah, I agree" or "Not me". Use complete sentences and make sure you are contributing to the discussion. This form of communication will be important for your future education at a four-year university.

No late Discussion Posts will be accepted. If you are not submitting your initial post by Sunday evening of the first week, you will not be giving your classmates the opportunity to respond by Sunday evening of the second week. Please manage your time wisely.

Grading Policy:

% Grade for the Class	Letter Grade for the Class
90% -100%	A
80%-89%	B
65%-79%	C
55%-64%	D
0%-54%	F

Category of Classwork	% of Class Grade
Exams	50%
Homework	20%
Lab Reports	20%
Online Discussion	10%

Academic Dishonesty

Students at Reedley College are entitled to the best education that the college can make available to them, and they, their instructors, and their fellow students share the responsibility to ensure that this education is honestly attained. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences.

CHEATING

Cheating is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner, such as having improper access to answers, in an attempt to gain an unearned academic advantage. Cheating may include, but is not limited to, copying from another's work, supplying one's work to another, giving or receiving copies of examinations without an instructor's permission, using or displaying notes or devices inappropriate to the conditions of the examination, allowing someone other than the officially enrolled student to represent the student, or failing to disclose research results completely. 48 Administrative Policies 2022-2023 Reedley College Catalog

PLAGIARISM

Plagiarism is a specific form of cheating: the use of another's words or ideas without identifying them as such or giving credit to the source. Plagiarism may include, but is not limited to, failing to provide

complete citations and references for all work that draws on the ideas, words, or work of others, failing to identify the contributors to work done in collaboration, submitting duplicate work to be evaluated in different courses without the knowledge and consent of the instructors involved, or failing to observe computer security systems and software copyrights. Incidents of cheating and plagiarism may result in any of a variety of sanctions and penalties, which may range from a failing grade on the particular examination, paper, project, or assignment in question to a failing grade in the course, at the discretion of the instructor and depending on the severity and frequency of the incidents

Important Notes:

- **All first week assignments need to be completed and submitted by the due date to avoid possibly being dropped from the class.**
- Any student needing accommodations should inform the instructor. Students with disabilities who may need accommodations for this class are encouraged to notify the instructor and contact DSPS early in the semester so that reasonable accommodations may be implemented as soon as possible. All information will remain confidential.

Course Schedule

Astro 10 Schedule - Spring 2023				
	Dates	**Lecture (Online)**	**Lab (Tuesdays 5 - 6:50 PM)**	**Important Dates**
Week 1	1/9 - 1/15	Science and the Universe: A Brief Tour	No Lab	
Week 2	1/16 - 1/22	Observing the Sky: The Birth of Astronomy	Lab 1 - Measurement	1/16 - Monday Holiday (Martin Luther King, Jr. Day)
Week 3	1/23 - 1/29	Orbits and Gravity	Lab 2 - Observing Basics (weather permitting)	
Week 4	1/30 - 2/5	Earth, Moon, and Sky	Lab 3 - Math Practice (Scientific Notation)	
Week 5	2/6 - 2/12	Radiation and Spectra	Lab 4 - Mystery Constellations	
Week 6	2/13 - 2/19	Astronomical Instruments	Exam 1 Review/Study Guide	2/17 - Friday Holiday (Lincoln's Day)
Week 7	2/20 - 2/26	Other Worlds: An Introduction to the Solar System	**Exam 1**	2/20 - Monday Holiday (Washington's Day)
Week 8	2/27 - 3/5	Earth as a Planet	Lab 5 - Modeling the Moon's Motions	
Week 9	3/6 - 3/12	Earthlike Planets: Venus and Mars	Lab 6 - Scale of the Solar System	
Week 10	3/13 - 3/19	The Giant Planets	Lab 7 - My Solar System Online Activity	
Week 11	3/20 - 3/26	Comets and Asteroids: Debris of the Solar System	Exam 2 Review/Study Guide	
Week 12	3/27 - 4/2	Cosmic Samples and the Origin of the Solar System	**Exam 2**	
Spring Recess	4/3 - 4/9	**No Class**	**No Class**	4/3 - 4/7 - Spring Recess
Week 13	4/10 - 4/16	The Sun: A Garden-Variety Star; The Sun: A Nuclear Powerhouse	Lab 8 - Kepler's Law	
Week 14	4/17 - 4/23	Analyzing Starlight	Lab 9 - Chemical Fingerprinting Lab	
Week 15	4/24 - 4/30	The Stars: A Celestial Census	Lab 10 - Sun Observation	
Week 16	5/1 - 5/7	Stars from Adolescence to Old Age	Lab 11 - H-R Diagram/Blackbody Radiation (ONLINE)	
Week 17	5/8 - 5/14	The Death of Stars	Final Exam Review/Study Guide	
Week 18	5/15 - 5/19	**Final Exam will be held on Tuesday, May 16 at 5:00 PM in PHY 70**		