

California Lutheran University

Bachelor's Degree for Professionals

Course Number and Title – Physics 100, Introduction to Astronomy

Term – Fall 2016, August 29 – November 14

Main Campus, Swenson 105

Drop Dates: September 12th Last day to add/ drop without financial penalty

October 10th Last day to withdraw without academic penalty

Instructor: Ryan VanOmmeren,

Instructor Contact: rvommere@callutheran.edu

Office Hours/Tutoring: I am full-time staff at CLU and can be available most days with an appointment. My office is in the facilities building on north campus.

Course Description

This course follows the text and text materials to discuss fundamental principles and foundational science relating to astronomy, specifically:

1. Gravitation, Nature of Light, Tools of Astronomy: Topics include Kepler's laws of gravity-controlled motion, fundamental properties of atoms and light, Electromagnetic Energy, land and space telescopes.
2. The Solar System: Topics include the Sun, the planets and other orbiting bodies, the formation of the solar system, and the current, productive! search for extra solar planets.
3. Stars: Topics include the properties of stars, their birth, lives and death, their bizarre corpses, like pulsars, black holes and neutron stars.
4. Galaxies and Cosmology: Topics include different types of galaxies, galaxy formation, galaxy interactions, and Big Bang Cosmology.

Beyond the text lectures, this course combines a simple experiment in class each week with course discussion. Everyday science regarding such things as weather, gravity, and optics are illustrated via in-class experiments; and that illustration is utilized to connect lessons in astronomy.

Textbooks/Required Readings

Cosmic Perspective, ISBN-13:978-0-321-83955-8 by Bennett, Donahue, Schneider, Voit (7th ed.)

There will also be two weekly reading assignments, one of which will be selected by students on a rotating basis.

Course Outcomes

By the end of the class students should be able to:

1. Understand the size of the earth, the solar system and the universe.
2. Understand the age of the universe.
3. Discuss the phases of the moon.
4. Know how early and later astronomers made discoveries.
5. Understand how physical principles like gravity and temperature are manifested on earth.
6. Understand radio waves and light waves.
7. Discuss how the solar system came into existence.
8. Articulate the difference between our planet and gaseous planets like Jupiter.
9. Quantify the energy of the sun.
10. Understand the speed of light.
11. Understand fundamental science principals such as air pressure, humidity, force, acceleration, and velocity.

Class Format

Because of the connection to a weekly in-class experiment and because of the connection between the experiment and class discussions, this class is similar to a traditional class. Additionally, a weekly homework set is used to reinforce the principals of the class, and that discussion will be held weekly as a part of class in an interactive format.

Outside of class, there will be two weekly reading assignments. All students will have the opportunity to select at least one reading assignment for the class. Approximately 13-14 hours of course time will be delivered via on-line reading and discussion of these assignments.

Course Assignments/Requirements/Course Schedule

Each week there will be two articles posted for discussion. One will relate to an astronomy or current scientific development, the other will involve principals of learning. Each student will be expected to select at least one article of each type on a rotating basis. Discussion responses will be required by all students each week. Responses should be thoughtful and a minimum of 100 words.

Course Assignments/Requirements/Course Schedule

Class #	Date	Class Discussion	Class Experiment	Homework Due
1	Thursday, September 1, 2016	Chapter 1, Our Place in the Universe Chapter 2, Discovering the Universe "Big Numbers" Math	Grapefruit and Size of the Solar System Phases of the moon Iphone and Droid Stargazing Apps	
2	Thursday, September 8, 2016	Homework Review and Discussion Chapter 3, Science of Astronomy Chapter 4, Understanding Light, Motion, Energy	Law of Equal Area	Reading 1 Homework 1 Text Chapters 1,2,3,4 Excel Assignment
3	Thursday, September 15, 2016	Homework Review and Discussion Chapter 5, Light and Matter Chapter 6, Telescopes Everyday Physics	Microwaves and Marshmallows	Reading 2 Homework 2 Text Chapters 5,6
4	Thursday, September 22, 2016	Homework Review and Discussion Chapter 8, Formation of the Solar System Chapter 9, Terrestrial Planet Geology Video	Conservation of Angular Momentum	Reading 3 Homework 3 Text Chapters 8,9
5	Thursday, September 29, 2016	Homework Review and Discussion Midterm Chapter 10, Atmospheres of Terrestrial Planets	Humidity and Dew Point	Reading 4 Homework 4 Text Chapters 10
6	Thursday, October 6, 2016	Homework Review and Discussion Midterm Post-Review Chapter 11, Jovian Planets	Freezing Temperatures and Ice Water Freezing Temperatures and Dry Ice	Reading 5 Homework 5 Text Chapters 11
7	Thursday, October 13, 2016	Homework Review and Discussion Chapter 12, Asteroids, Comets, Dwarf Planets Chapter 14, The Sun Video	Hydrogen from Water	Reading 6 Homework 6 Text Chapters 12, 14

8	Thursday, October 20, 2016	Homework Review and Discussion Carl Sagan Video Back to Stargazing!	Stargazing	Finish Lab 4
9	Thursday, October 27, 2016	Homework Review and Discussion Chapter 15, Surveying Stars Chapter 17, Star Stuff	Doppler Effect	Reading 7 Homework 7 Text Chapters 15, 17
10	Thursday, November 03, 2016	Student Presentations Final Exam Preparation		
11	Thursday, November 10, 2016	Final Exam		

Student Workload/Carnegie Hours:

Activity	Instructor-Led Hours		Homework Hours		Remarks
	Weekly	Course	Weekly	Course	
Readings of required text and homework			5	55	Over 11 weeks, uneven distribution
Weekly Classes	3 hr. 20 min.	36 hrs. 40 min.			Includes final exam
Article Assignment				10	Average, varies by student
Homework Posting and Discussion		8 hrs.			Average, varies by student
Mid-term Prep				10	Average, varies by student
Discussion Board		5			Average, varies by student
Final Presentation				15	Average, varies by student
Final Exam Prep				10	Average, varies by student
Total		50		100	

Grading

CRITERION	PORTION	GRADING SCALE
1. Weekly Graded Homework	35%	A 95-100 A- 90-94.9
2. Discussion (includes discussion board and in-class participation)	10%	B+ 86-89.9 B 83-85.9
3. Midterm	15%	B- 80-82.9 C+ 76-79.9
4 Student Project	20%	C 73-75.9 C- 70-72.9
5 Comprehensive Final Exam	20%	

Attendance Policy

A part of every discussion grade includes both online and in-class discussion. Even though discussions are held online, to receive credit on the discussions, a student must be present in class.

Course Evaluations Statement

All course evaluations are conducted online. Your feedback is important to us. You will receive an email message reminding you when the website is open for your feedback. The link is: <http://courseval.callutheran.edu>

Disability Statement

California Lutheran University is committed to providing reasonable accommodations in compliance with ADA of 1990 and Section 504 of the Rehabilitation Act of 1973 to students with documented disabilities. If you are a student requesting accommodations for this course, please contact your professor at the beginning of the semester and register with the Disability Support Services Coordinator, Wendy Jimenez, for the facilitation and verification of need. The Disability Support Services Coordinator is located in the Center for Student Success Office at 3259 Pioneer Street, and can be contacted by calling 805.493.3878 or emailing wjimene@callutheran.edu

Statement on Academic Honesty

The educational programs of California Lutheran University are designed and dedicated to achieve academic excellence, honesty and integrity at every level of student life. Part of Cal Lutheran's dedication to academic excellence is our commitment to academic honesty. Students, faculty, staff and administration share the responsibility for maintaining high levels of scholarship on campus. Any behavior or act which might be defined as "deceitful" or "dishonest" will meet with appropriate disciplinary sanctions, including dismissal from the University, suspension, grade F in a course or various

forms of academic probation. Policies and procedures regarding academic honesty are contained in the faculty and student handbooks.

Plagiarism, cheating, unethical computer use and facilitation of academic dishonesty are examples of behavior which will result in disciplinary sanctions. Plagiarism includes, but is not limited to:

- word for word copying without using quotation marks or presenting the work as yours
- using the ideas or work of others without acknowledgement
- not citing quoted material. Students must cite sources for any information that is not either the result of original research or common knowledge.

Standards of Student Conduct Statements:

- [Student Life Handbook](#)
- [Academic Honesty Statement](#)

University Harassment Policy

Be civil to each other, both on- and offline. For information on the University's **student harassment policy and rights**, please go to the following link:

[Student Life Handbook](#)

Sexual Misconduct

California Lutheran University does not tolerate any degree of sexual misconduct on or off-campus. We encourage you to report if you know of, or have been the victim of, sexual harassment, misconduct, and/or assault. If you report this to a faculty member, she or he must notify Cal Lutheran's Title IX Coordinator about the basic facts of the incident. More information about your options for reporting can be found at:

<http://www.callutheran.edu/title-ix/>

Pearson Library

Pearson Library provides access to scholarly books, journals, ebooks, and databases of full text articles from scholarly journals. To begin using these materials, visit the library web page <http://www.callutheran.edu/library>

There are many ways to contact Pearson Library for research assistance, no matter where you are!

- Email Yvonne Wilber (Professionals liaison) at ywilber@callutheran.edu
- General Library email: CLUlibrary@callutheran.edu
- Library main phone: 805.493.3250
- Text us your question: 805.493.3867
- Get more help at: <http://www.callutheran.edu/library/help/>

Cal Lutheran Writing Center

The Writing Center provides 1:1 writing consultations, in-person and online, with trained undergraduate and graduate writing consultants. We welcome all writing-related projects at any stage of the writing process across the diverse disciplines of study at Cal Lutheran. The Writing Center also hosts writing workshops, provides in-class visits, facilitates writing groups, and offers a writer's studio option for longer, sustained projects. Services suit writers of all levels, including traditional undergraduates, graduate students from all fields, all English language learners, and accomplished scholars alike. All members of the Cal Lutheran community with an @callutheran.edu email address are welcome to make use of our services. For more information, please visit at www.callutheran.edu/writing_center or call 805.493.3257. Please schedule appointments online through MyCLU Blackboard with the yellow "The Writing Center" icon in "Tools," or stop by The Writing Center itself, located in the Darling Collaboration Suite of Pearson Library.

Veterans Resources

If you are a veteran, military member, or a family member of a veteran or military member, please refer to Cal Lutheran's Veterans Resources webpage for important information: <http://www.callutheran.edu/veterans/>. Also, if you are a veteran receiving benefits and you are struggling in a class, you most likely qualify for free tutoring. Please contact the Veterans Coordinator, Jenn Zimmerman, veterans@callutheran.edu or 805.493.3648, for more information.

Help Desk

Students may contact the Help Desk about telephone, network, wireless network, software questions password problems, hardware problems, and general consultation (i.e. you cannot log into your MyCLU portal, or you are having problems with Blackboard). Please email specific details about your problems to helpdesk@callutheran.edu, click on the following link for more information http://www.callutheran.edu/iss/technology_services/helpdesk.php or call: 805.493.3698

Final Note

This syllabus is subject to change. Every effort will be made to alert students to changes that occur in a timely manner.