



Physics and Engineering
School of STEM

PSC 1004 – The Cosmos

Number of Units: 4

Fall 2024

Meeting days/times (MWF 1:30 pm – 2:35 pm)

Meeting location (Latter Hall (LA) 102)

Final Exam: (Wednesday, 12/18, 1:30 – 4:00 pm)

INFORMATION	SPECIFICS FOR THE COURSE
Instructor title and name:	Dr. Anthony Cortez
Phone:	(619) 849-2439
Email:	AnthonyCortez@pointloma.edu
Office location and hours:	Office Hours: By Appointment Book a time here Location: Rohr Science 282

PLNU Mission

To Teach ~ To Shape ~ To Send

Point Loma Nazarene University exists to provide higher education in a vital Christian community where minds are engaged and challenged, character is modeled and formed, and service is an expression of faith. Being of Wesleyan heritage, we strive to be a learning community where grace is foundational, truth is pursued, and holiness is a way of life.

Physics and Engineering Department Mission

The Physics and Engineering Department at PLNU provides strong programs of study in the fields of Physics and Engineering. Our students are well prepared for graduate studies and careers in scientific and engineering fields. We emphasize a collaborative learning environment which allows students to thrive academically, build personal confidence, and develop interpersonal skills. We provide a Christian

environment for students to learn values and judgment and pursue integration of modern scientific knowledge and Christian faith.

General Education Mission

PLNU provides a foundational course of study in the liberal arts informed by the life, death, and resurrection of Jesus Christ. In keeping with the Wesleyan tradition, the curriculum equips students with a broad range of knowledge and skills within and across disciplines to enrich major study, lifelong learning, and vocational service as Christ-like participants in the world's diverse societies and culture.

Course Description

PSC 1004 The Cosmos (FE) (4 Units)

An introduction to our place in the universe emphasizing religious, cultural and historic perspectives including modern developments in physics and astronomy.

Meets a Foundational Explorations requirement; does not count toward any Chemistry or Physics majors.

Prerequisite(s): MTH 0099 or equivalent.

Program and Course Learning Outcomes

Course Learning Outcomes:

1. Apply basic scientific principles to address topics in cosmology and astronomy
2. Explain observations of the cosmos in terms of scientific processes
3. Apply a scientific approach to ask and address questions about our planet, galaxy, and universe
4. Solve qualitative and quantitative problems relevant to introductory astronomy
5. Discuss how modern science relates to human culture and the origins of cosmology

General Education Learning Outcomes

This course is one of the components of the Foundational Experience program at Point Loma Nazarene University, through which students will acquire knowledge of human cultures and the physical and natural world while developing skills and habits that foster life-long learning. Specifically, this course supports this broader context in developing FELO 1e. Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature.

Required Texts and Recommended Study Resources

Understanding Our Universe - With Access By Palen 4TH Edition

Course Credit Hour Information

In the interest of providing sufficient time to accomplish the stated Course Learning Outcomes, this class meets the PLNU credit hour policy for a 4 unit class delivered over 15 weeks. It is anticipated that students will spend a minimum of 37.5 participation hours per credit hour on their coursework. For this

course, students will spend an estimated 150 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules.

Assessment and Grading

Grades will be based on the following:

- **Homework:** Homework will be assigned weekly and is due at the start of class the following week.
- **Activities:** Through the semester there will be small projects/worksheets aligned with the textbook for you to complete.
- **Examinations and the Final Examination.** There will be 4 in semester exams and one final exam. Examinations and the Final Examination will include problems and questions over material assigned in the text, readings, and handouts, as well as material presented in class. No examination shall be missed without prior consent or a well-documented emergency beyond your control. A score of zero will be assigned for an examination that is missed without prior consent or a well-documented emergency beyond your control. The final exam date and time is set by the university at the beginning of the semester and may not be changed by the instructor. This schedule can be found on the university website and in the course calendar. No requests for early examinations will be approved. Only in the case that a student is required to take three exams during the same day of finals week, is an instructor authorized to consider changing the exam date and time for that particular student.

Grading Distribution	Percent
Activities	25
Homework	25
4 In-Semester Exams	30
Final Exam	20
Total	100

Sample Standard Grade Scale Based on Percentages

Standard Grade Scale Based on Percentages					
	A	B	C	D	F
+		87- 89	77-79	67-69	
	91 -100	83-86	73-76	63-66	0-59
-	90-92	80-82	70-72	60-62	

Final Examination Policy

Successful completion of this class requires taking the final examination on its scheduled day. The final examination schedule is posted on the [Traditional Undergraduate Records: Final Exam Schedules](#) site. If you find yourself scheduled for three (3) or more final examinations on the same day, you are authorized to contact each professor to arrange a different time for one of those exams. However, unless you have three (3) or more exams on the same day, no requests for alternative final examinations will be granted.

Incompletes and Late Assignments

All assignments are to be submitted by the due dates. Assignments will be considered late if posted after the due date and time using Pacific Standard Time. Late assignments will receive a grade of 0.

Spiritual Care

Please be aware PLNU strives to be a place where you grow as whole persons. To this end, we provide resources for our students to encounter God and grow in their Christian faith.

If you have questions, a desire to meet with the chaplain or have prayer requests you can contact your professor or the [Office of Spiritual Life and Formation](#).

State Authorization

State authorization is a formal determination by a state that Point Loma Nazarene University is approved to conduct activities regulated by that state. In certain states outside California, Point Loma Nazarene University is not authorized to enroll online (distance education) students. If a student moves to another state after admission to the program and/or enrollment in an online course, continuation within the program and/or course will depend on whether Point Loma Nazarene University is authorized to offer distance education courses in that state. It is the student's responsibility to notify the institution of any change in his or her physical location. Refer to the map on [State Authorization](#) to view which states allow online (distance education) outside of California.

PLNU Copyright Policy

Point Loma Nazarene University, as a non-profit educational institution, is entitled by law to use materials protected by the US Copyright Act for classroom education. Any use of those materials outside the class may violate the law.]

PLNU Recording Notification

In order to enhance the learning experience, please be advised that this course may be recorded by the professor for educational purposes, and access to these recordings will be limited to enrolled students and authorized personnel.

Note that all recordings are subject to copyright protection. Any unauthorized distribution or publication of these recordings without written approval from the University (refer to the Dean) is strictly prohibited.

PLNU Academic Honesty Policy

Students should demonstrate academic honesty by doing original work and by giving appropriate credit to the ideas of others. Academic dishonesty is the act of presenting information, ideas, and/or concepts as one's own when in reality they are the results of another person's creativity and effort. A faculty member who believes a situation involving academic dishonesty has been detected may assign a failing grade for that assignment or examination, or, depending on the seriousness of the offense, for the course. For all student appeals, faculty and students should follow the procedures outlined in the University Catalog. See [Academic Policies](#) for definitions of kinds of academic dishonesty and for further policy information.

PLNU Academic Accommodations Policy

PLNU is committed to providing equal opportunity for participation in all its programs, services, and activities in accordance with the Americans with Disabilities Act (ADA). Students with disabilities may request course-related accommodations by contacting the Educational Access Center (EAC), located in the Bond Academic Center (EAC@pointloma.edu or 619-849-2486). Once a student's eligibility for an accommodation has been determined, the EAC will work with the student to create an Accommodation Plan (AP) that outlines allowed accommodations. The EAC makes accommodations available to professors at the student's request.

PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their AP in that particular course. Accommodations are not retroactive so clarifying with the professor at the outset is one of the best ways to promote positive academic outcomes.

Students who need accommodations for a disability should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. It is the student's responsibility to make the first contact with the EAC. Students cannot assume that

because they had accommodations in the past, their eligibility at PLNU is automatic. All determinations at PLNU must go through the EAC process. This is to protect the privacy of students with disabilities who may not want to disclose this information and are not asking for any special accommodations.

Sexual Misconduct and Discrimination

In support of a safe learning environment, if you (or someone you know) have experienced any form of sexual discrimination or misconduct, including sexual assault, dating or domestic violence, or stalking, know that accommodations and resources are available through the Title IX Office at pointloma.edu/Title-IX. Please be aware that under Title IX of the Education Amendments of 1972, faculty and staff are required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact Counseling Services at counselingservices@pointloma.edu or find a list of campus pastors at pointloma.edu/title-ix.

If you (or someone you know) have experienced other forms of discrimination or bias, you can find more information on reporting and resources at www.pointloma.edu/bias

PLNU Attendance and Participation Policy

Regular and punctual attendance at all class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions, the faculty member will issue a written warning of de-enrollment. If the absences exceed 20 percent, the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an “F” grade.

Tentative Schedule (Subject to Updates)

Date	Topic	Reading
(WEEK 1) 2-Sep	No Class	
4-Sep	Introductions	
6-Sep	Our Place in the Universe	1.1-1.3
(WEEK 2) 9-Sep	Patterns in the Sky: Vocab and Seasons	2.1-2.2
11-Sep	Patterns in the Sky: Moon	2.3-2.4
13-Sep	Moon Phase Simulator - Activity	

(WEEK 3) 16-Sep	Laws of Motion I	3.1-3.2
18-Sep	Laws of Motion II	3.3-3.4
20-Sep	Laws of Motion III	3.4-3.5
(WEEK 4) 23-Sep	Light and Telescopes I	4.1-4.3
25-Sep	Exam 1	
27-Sep	Light and Telescopes II	4.3
(WEEK 5) 30-Sep	The Formation of Stars and Planets I	5.1-5.3
2-Oct	The Formation of Stars and Planets II	5.4-5.6
4-Oct	Inner Solar System I	6.1-6.3
(WEEK 6) 7-Oct	Inner Solar System II	6.4-6.5
9-Oct	Atmospheres I	7.1-7.3
11-Oct	Atmospheres II	7.3-7.5
(WEEK 7) 14-Oct	Giant Planets I	8.1-8.3
16-Oct	Giant Planets II	8.3-8.5
18-Oct	Smaller Bodies I	9.1-9.3
(WEEK 8) 21-Oct	Smaller Bodies II	9.4-9.6
23-Oct	Exam 2	
25-Oct	Fall Break – No Class	
(WEEK 9) 28-Oct	Measuring the Stars I	10.1-10.2
30-Oct	Measuring the Stars II	10.3-10.4
1-Nov	The Sun I	11.1-11.2

(WEEK 10) 4-Nov	The Sun II	11.3-11.4
6-Nov	Low Mass Stars I	12.1-12.3
8-Nov	Low Mass Stars II	12.4-12.6
(WEEK 11) 11-Nov	High Mass Stars I	13.1-13.3
13-Nov	Exam 3	
15-Nov	High Mass Stars and Black Holes	13.4-13.6
(WEEK 12) 18-Nov	Measuring Galaxies I	14.1-14.2
20-Nov	Measuring Galaxies II	14.3-14.4
22-Nov	Dark Matter I	15.1-15.2
(Week 13) 25-Nov	Dark Matter II	15.3-15.4
(WEEK 14) 2-Dec	The Universe I	16.1-16.3
4-Dec	The Universe II	16.4-16.6
6-Dec	Exam 4	
(WEEK 15) 9-Dec	Structure I	17.1-17.3
11-Dec	Structure II	17.4-17.5
13-Dec	Life in the Universe I	18.1-18.4
18-Dec	Final Exam	