

PSC 1004 – Cosmos 4 Units jterm-SP Mini Sp1 2021

PLNU Mission Statement

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.

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Course Dates: Jan 11, 2021 – Feb 12, 2021

Office Hours via zoom: MWF 7:30 AM – 9:30 AM, PST, or by appointment

Zoom Info: Meeting ID: 915 5520 2403 Passcode: DossOffice

Synchronous Zoom Meetings: MWF 13:00-13:50 PST. Zoom Info: Meeting ID: 973 3309 2672 Passcode: PSC1004:)

Video Lectures in Canvas

Main course information site and gradebook on Canvas

Preclasses and HW assignments on Mastering (www.pearsonmylabandmastering.com)

Exam Days & Times: F 1/15, F 1/22, F 1/29, F 2/5 between 13:00 and 13:50 Pacific Time

Final Exam: will be held in two parts, Part 1 W Feb10 and Part 2 F Feb 12, on zoom 13:00-14:00 Pacific Time

Required course material:

- **Textbook:** The Cosmic Perspective Fundamentals by Bennett, Donahue, Schneider, & Voit, 3rd edition, Pearson 2020
- **Access to Mastering Astronomy:**
Course ID: doss39824, Course Name: PSC1004 Jterm SU1 2021
Link to mastering: www.pearsonmylabandmastering.com
- **Note the least expensive route for the book and access is** directly through the Mastering website, which offers a 6 month for about \$60.
- **A scientific calculator** (not a phone app) is also needed for the course. It doesn't need to be fancy. For example a TI-30XIIS is good and only runs about \$15.

Course Description: (4)

An introduction to our place in the universe emphasizing religious, cultural and historic perspectives including modern developments in physics and astronomy. (Meets a general education requirement; does not count toward any Chemistry or Physics majors.)

Prerequisite(s): [MTH 0099](#) or equivalent.

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 cultures.

This course is one of the components of the General Education Program at Point Loma Nazarene University, in support of the general education learning outcome: *Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature.* The purpose of general education is to provide a common educational experience, to develop essential skills, and to provide a broad cultural background for personal and professional growth. PSC 1004 – The Cosmos is an introductory course appropriate for students with an adequate background in high school mathematics.

Student Learning Outcomes: In each section there are a number of smaller learning outcomes, which fit into broader course outcomes. Upon completion of this course you should be able to:

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, solar system, galaxy, and universe;
4. solve quantitative and qualitative problems relevant to introductory astronomy and interpret solutions.

5. discuss how modern science relates to human culture and the origins of cosmology;
6. discuss common views on the integration of science and faith.

Pre-class Assignments: Reading and pre-class questions are due by 11:59 am the day of class, except for the first class. The reviews must be completed by noon of the test day. The pre-class questions are on our class site in Mastering Astronomy at www.pearsonmylabandmastering.com. These usually consist of questions and simple problems related to each section of the reading assignment. Pre-class assignments are 5% of the overall grade. Preclasses are also assigned for exam days and serve as a review of the material.

Homework: Homework assignments are located in Mastering Astronomy at www.pearsonmylabandmastering.com. Homework consists of chapter problem sets in Mastering Astronomy at www.pearsonmylabandmastering.com. These chapter problem sets are worth 15% of your overall grade.

Papers, Projects, Discussions, Group Quizzes: There will be various papers and projects assigned throughout the semester. The description of these assignments will be posted on Canvas. There will also be class discussions and Group Quizzes during each scheduled zoom meeting that is not an exam day. These will total 20% of your overall grade.

Exams: There will be four exams during class scheduled time during the semester comprising 40% of your grade. You must zoom in for these, with camera on, and microphone off. There is also a final exam (worth 20% of your overall grade) that will be given over two class zoom in sessions during the last week. Partial credit for non-multiple choice problems will be given for correct reasoning at any step of a problem, but only if it is communicated clearly enough for me to understand. For problems that call for providing your work or explanation, no credit will be given for an answer alone; the method or reasoning must also be shown. This will require you to solve the problems on paper and upload an image of your work.

Late Work: Late work will not be accepted unless there is a documented emergency. Assignments are due as noted on the syllabus and on Mastering Astronomy. Incompletes are only assigned in extremely unusual circumstances.

You must take ALL the exams and the final in order to pass the class.

Missed Exam Policy: No make-up exams are allowed except for warranted circumstances. Arrangements must be made with me as soon as possible.

Final Exam: Date and Time: 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. Successful completion of this class requires taking the final examination on its scheduled day. For the Jterm we are having the final during our zoom sessions, so to avoid conflict with other finals you will have your final in two parts. **FINAL EXAM:** Final Part 1 (chapters 1-7) on Wednesday, February 10 1:00-2:00 PM, Final Part 2 (chapters 8-15) on Friday, February 12, Zoom in 1:00 PM – 2:00 PM. The final examination schedule is posted on the [Class Schedules](#) site. No requests for early examinations or alternative days will be approved. The final exam is worth 20% of your grade.

Final Course Grade: The points you receive during the course are weighted accordingly:

Component	Weight
Pre-Class	5%
Homework	15%
Papers & Projects, Discussions, Group Quizzes	20%
Tests (4)	40% (equally weighted)
Final Exam	20%

The grade you earn in this course is based on the following scale:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-
S≥ 91.5	91.5	89.5	86.5 >S	82.5	79.5	76.5	72.5	69.5	66.5	62.5
	>S≥	>S≥	≥ 82.5	>S≥	>S≥	>S≥	>S≥	>S≥	>S≥	>S≥
	89.5	86.5		79.5	76.5	72.5	69.5	66.5	62.5	59.5

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.

PLNU Attendance and Participation Policy:

Attendance is expected at each class session. In the event of an absence you are responsible for the material covered in class and the assignments given that day. You cannot make up missed class activities or quizzes.

Regular and punctual attendance at all synchronous class sessions is considered essential to optimum academic achievement. If the student is absent for more than 10 percent of class sessions (virtual or face-to-face), 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 drop date or, after that date, receive the appropriate grade for their work and participation. In some courses, a portion of the credit hour content will be delivered asynchronously and attendance will be determined by submitting the assignments by the posted due dates. See [Academic Policies](#) in the Undergraduate Academic Catalog. If absences exceed these limits but are due to university excused health issues, an exception will be granted.

Asynchronous Attendance/Participation Definition

A day of attendance in asynchronous content is determined as contributing a substantive note, assignment, discussion, or submission by the posted due date. Failure to meet these standards will result in an absence for that day. Instructors will determine how many asynchronous attendance days are required each week.

Class Enrollment:

It is the student's responsibility to maintain his/her class schedule. Should the need arise to drop this course (personal emergencies, poor performance, etc.), the student has the responsibility to follow through (provided the drop date meets the stated calendar deadline established by the university), not the instructor. Simply ceasing to attend this course or failing to follow through to arrange for a change of registration (drop/add) may easily result in a grade of F on the official transcript.

Academic Accommodations:

While all students are expected to meet the minimum standards for completion of this course as established by the instructor, students with disabilities may require academic adjustments, modifications or auxiliary aids/services. At Point Loma Nazarene University (PLNU), these students are requested to register with the Disability Resource Center (DRC), located in the Bond Academic Center. (DRC@pointloma.edu or 619-849-2486). The DRC's policies and procedures for assisting such students in the development of an appropriate academic adjustment plan (AP) allows PLNU to comply with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Section 504 (a) prohibits discrimination against students with special needs and guarantees all qualified students equal access to and benefits of PLNU programs and activities. After the student files the required documentation, the DRC, in conjunction with the student, will develop an AP to meet that student's specific learning needs. The DRC will thereafter email the student's AP to all faculty who teach courses in which the student is enrolled each semester. The AP must be implemented in all such courses.

If students do not wish to avail themselves of some or all of the elements of their AP in a particular course, it is the responsibility of those students to notify their professor in that course. PLNU highly recommends that DRC students speak with their professors during the first two weeks of each semester about the applicability of their AP in that particular course and/or if they do not desire to take advantage of some or all of the elements of their AP in that course.

Credit Hour:

In the interest of providing sufficient time to accomplish the stated course learning outcomes, this class meets the PLNU credit hour policy for any 4 unit class delivered over 5 weeks. Specific details about how the class meets the credit hour requirements can be provided upon request.

Copyright Protected Materials:

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 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. Faculty should follow and students may appeal using the procedure in the university Catalog. See http://catalog.pointloma.edu/content.php?catoid=24&navoid=1581#Academic_Honesty for definitions of kinds of academic dishonesty and for further policy information.

FERPA Policy: In compliance with federal law, neither PLNU student ID nor social security number should be used in publicly posted grades or returned sets of assignments without student written permission. This class will meet the federal requirements by distributing grades and papers individually. Also, in compliance with FERPA, you will be the only person given information about your progress in this class unless you have designated others to receive it in the "Information Release" section of the student portal. See Policy Statements in the undergrad academic catalog.

Tentative Course Schedule – subject to updates. Unless otherwise noted: **Pre-class assignments are due by 11:59 am** the day of class, **HWs are due by 23:59 (11:59 pm)** on listed date. You must zoom in for all exams.

Date	Topics	Assignments due
1/11 M	Welcome – Zoom Meeting Science and Faith, Mini Math review --online Video Lectures 1.1 The Scale of the Universe 1.2 The History of the Universe 1.3 Defining Planets	Preclass 1 (PC1) due 1/11 23:59 HW0 MastAstroHowTo 1/11 23:59 HW1 due 1/11 due 23:59 PC1 due 1/11 due 23:59 --- P0 observations due each night from 1/12 to 2/1, 23:59 P0 final report due Feb 11 23:59 Paper 1 (P1) due 1/22 23:59
1/12 T	--online Video Lectures 2.1 Understanding the seasons 2.2 Understanding the Moon 2.3 The Puzzle of Planetary Motion	PC2 due 11:59 am HW2 due 23:59 Begin observations tonight & each night for the next 21 nights! Observation 1 due 23:59
1/13 W	Zoom Meeting , math, discussions, group quiz --online Video Lectures 3.1 From Earth-Centered to Sun-Centered 3.2 Hallmarks of Science 3.3 The Fact and Theory of Gravity	PC3 11:59 am HW3 23:59 Observation 2 due 23:59
1/14 Th	--online Video Lectures 4.1 Characteristics of the Solar System 4.2 The Birth of the Solar System 4.3 The Age of the Solar System	PC4 11:59 am HW4 23:59 Observation 3 due 23:59 (etc. every night through Feb 1, weekends and holidays too!)
1/15 F	EXAM 1 chapters 1-4 Must zoom in 13:00-13:50 Pacific Time	PC5 (review) 11:59 am P2 – Project 2 details and group assignments on canvas
		Observations still due!
1/18 M	Martin Luther King Day Holiday	Observations still due!
1/19 T	--online Video Lectures 5.1 Terrestrial Surfaces and Atmospheres 5.2 Histories of Terrestrial Worlds 5.3 Global Warming	PC6 11:59 am HW5 23:59 Group Sign Up for P2 by 23:59 Observations still due!
1/20 W	ZOOM Meeting , math, discussions, group quiz --online Video Lectures 6.1 Jovian Planets, Rings, and Moons 6.2 Asteroids, Comets, and the Impact Threat 6.3 Extinction of the Dinosaurs	PC7 11:59 am HW6 23:59 Observations still due!
1/21 Th	--online Video Lectures 7.1 Detecting Planets Around Other Stars 7.2 Characteristics of Extrasolar Planets 7.3 Extrasolar Planets and the Nebular Theory	PC8 HW7 Observations still due!
1/22 F	EXAM 2 chapters 5,6,7 Must zoom in 13:00-14:00 Pacific Time	PC9 (review) P1 due Friday 1/22 11:59 pm Observations still due!
		Observations still due!
1/25 M	Zoom Meeting , math, discussions, group quiz --online Video Lectures 8.1 Properties of the Sun 8.2 Properties of Other Stars 8.3 Visualizing Patterns Among Other Stars	PC10 HW8 P3 – Project 3 details and group assignments on canvas (reminder P0 and see P3) Observations still due!

1/26 T	--online Video Lectures 9.1 Lives in the Balance 9.2 Star Death 9.3 Testing Stellar Models with Star Clusters	PC11 HW 9 Observations still due!
1/27 W	Zoom Meeting , math, discussions, group quiz --online Video Lectures 10.1 White Dwarfs and Neutron Stars 10.2 Black Holes 10.3 Searching for Black Holes	PC12 HW10 Observations still due!
1/28 Th	Catch up, Study, Get P2 done	Observations still due!
1/29 F	Exam 3 Chapters 8, 9, 10 Must zoom in 13:00-13:50 Pacific Time	PC13 (review) P2 due 1/29 11:59 pm Observations still due!
		Observations still due!
2/1 M	Zoom Meeting , math, discussions, group quiz --online Video Lectures 11.1 Our Galaxy: The Milky Way 11.2 Galaxies Beyond the Milky Way 11.3 Seeking Supermassive Black Holes	PC14 HW 11 Observations still due - LAST NIGHT OF OBSERVATIONS
2/2 T	--online Video Lectures 12.1 Measuring Cosmic Distances 12.2 The Implications of Hubble's Law 12.3 Observing Galaxy Evolution	PC15 HW12
2/3 W	Zoom Meeting , math, discussions, group quiz --online Video Lectures 13.1 The Big Bang Theory 13.2 Evidence for the Big Bang 13.3 Inflation	PC16 HW13
2/4 Th	Catch up, study, get P3 done	
2/5 F	Exam 4 Chapters 11, 12, 13 Must zoom in 13:00-13:50 Pacific Time	PC17 (review) P3 due Fri 2/5 by 23:59
2/8 M	Zoom Meeting , math, discussions, group quiz --online Video Lectures 14.1 Evidence for Dark Matter 14.2 Gravity versus Expansion 14.3 Evidence for Dark Energy	PC18 HW 14
2/9 T	--online Video Lectures 15.1 The Search for Life in the Solar System 15.2 The Search for Life Among the Stars 15.3 Evolution on Earth and Beyond	PC19 Work on the review = pc 20 for tomorrow's final chpt 1-7
2/10 W	Final Exam Part 1 chapters 1-7 Must zoom in 13:00-13:50 Pacific Time	PC20 (long review ch1-7 with extra credit – ☺) Final via Zoom HW 15
2/11 Th	REVIEW, Get P0 done and turned in	Project 0 due by 2/11 23:59 Work on the review = pc 21 for tomorrow's final chpt 8-15
2/12 F	Final Exam Part 2 chapters 8-15 Must zoom in 13:00-13:50 Pacific Time	PC21 (long review ch8-15 with extra credit – ☺) Final via Zoom