POINT LOMA NAZARENE UNIVERSITY
Department of Physics and Engineering

PSC1012 Physics for Teachers

2 units

Fall 2026

Meeting days/times: Monday & Wednesdays 3:00pm - 4:45pm

Meeting location: RS395 [Rohr Science Room 395]

Final Exam: Monday October 19th, 2026 3:00pm RS395

Course Information	Specifics for the Course
Instructor title and name:	**Professor J. Chris McGaugh, Physics & Biology Dept.**
Phone:	**Phone: (619) 849-2219 [STEM Dept]**
Email:	jcmcgaugh@pointloma.edu
Office location and hours:	**Biology Adjunct Office Rm 110**, Rohr Science, 1st floor **Mon & Wed:** 11am to 12pm, no appt necessary!

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.

Department Mission

The Department of Physics & Engineering provides strong programs of study that aid in ensuring our students are well prepared for both graduate studies and careers in a variety of scientific and engineering fields. We emphasize a collaborative learning environment that allows students to thrive academically, build personal confidence, and develop interpersonal skills,

while providing a Christian setting for students to learn values and judgment and pursue integration of modern scientific knowledge and Christian faith

Course Description

This course is an introductory survey of selected principles in Physics with a discussion of related societal and environmental issues with respect to teaching. This course focuses on topics necessary for the California multiple-subject teaching credential (K-8). The goal of the course is to prep future teachers well to understand and teach the principles of Physical Science within the K-8 NGSS framework.
Letter grade. Pre or Corequisite(s): MTH 1013 or equivalent.
Note: Both PSC 1012 and PSC 1022 must be taken to satisfy the GELO1 requirement. Offered as a quad course.

Program and Course Learning Outcomes

1. Explain observations of the natural world in terms of Physics

2. Translate the description of problems into the equations required to solve them using relevant physical principles

3. Find solutions to problems once appropriate equations or techniques are identified

4. Recognize appropriate teaching techniques to convey scientific ideas and practices

5. Develop content expertise in the “Physical Science Disciplinary Core Ideas” as described in the Next Generation Science Standards for K-8.

General Education Learning Outcomes

GELO 1d. Critical Thinking: Students will be able to examine, critique, and synthesize information in order to arrive at reasoned conclusions.
GELO 1e. Quantitative Reasoning: Students will be able to solve problems that are quantitative in nature.
Assessments: Pre-lecture assignments, In-class activities, Daily Quizzes, RB car project assessment, & the Final Exam

Required Texts and Recommended Study Resources

Students are responsible for having the required course materials *prior to* the first day of class.

1. Conceptual Physical Science (**Looseleaf**) by Hewitt, Paul G. / Suchocki, John (9780134082295) - 6th edition, Pearson

2. Conceptual Physical Science (**eBook**) by Hewitt, Paul G. / Suchocki, John (9780134080512) - 6th edition, Pearson

3. Mastering Physics with Pearson eText Access Code (24 Months) for Conceptual Physical Science. Electronic Product by Paul G. Hewitt; John A. Suchocki; Leslie A. Hewitt - 6th edition, Pearson

4. A simple scientific calculator [Best choice: **Ti-30Xa** $10.98 on Amazon]

5. A 3-Ring binder [for the Looseleaf textbook] with binder paper.

6. #2 Pencil

7. 12 inch ruler [get one 3 hole punched and put in binder]

8. **Craft supplies for the Cardboard Car Project [duct tape, hot glue/gun, spray or craft paint, pencils, paper clips, #64 rubber bands, cardboard, boba straw, scissors, etc]. Several supplies can be obtained from Prof. McGaugh on the [*optional*] building days: Monday Sept 7th and Sat Sept 12, 2026. [*Dates subject to change*]. Please purchase what you need to be successful for this contest. [Target, Home Depot, Walmart, Amazon can be helpful]

*All supplemental materials posted on this course site (including articles, book excerpts, or other documents) are provided for your personal academic use. These materials may be protected by copyright law and should not be duplicated or distributed without permission of the copyright owner.

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 2 unit class delivered over 7 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 75 total hours meeting the course learning outcomes. The time estimations are provided in the Canvas modules. Total in class time for this Quad 1 course: 24.5hrs [14 classes x 1.75hrs]. 75 total hours - 24.5hrs = 50.5 total hours *outside of class lectures* in studying and prep for the class. This breaks down to **~7.2hrs of studying and pre-lecture assignment work per week** [*outside of in-class time*].

Assessment and Grading

Grades will be based on the following:

Pre-lecture Assignments:	15%
Daily Quizzes:	15%
In Class Activity Assignments	10%
Rubber Band Car Project [9.23.26]:	20%
Participation/Employability:	10%
Final Exam [10.19.26]:	30%
	100%

Grades are based on the number of points accumulated throughout the course.

Pre-lecture assignments: Carefully read the assigned chapter in the required looseleaf text. Highlight/underline and take good notes. [~1.5hrs]. Open Pearson Mastering Physics on your computer and answer the questions [~1hrs]. All answers are scored/graded by Pearson Mastering Physics. All Pre-lecture assignments are due for submission **prior to 2pm** [1:59:59pm] on the day of class [Mon and Wed]. **No late work accepted**.

Daily Quizzes: Happen *daily* right at 3pm sharp in RS395. Do not be late. The quiz starts promptly at 3pm. There are **no** quiz make ups. [*If you are late* during a quiz, please walk in quietly with pencil and calculator in hand, sit down and do as many questions as you can in the time given]. The content on the daily quiz is based solely on the Pearson Mastering Physics Pre-lecture assignment, book chapter reading, and a few video clips [all noted in the module on CANVAS]. Quizzes are multiple choice and/or work out problem [*show your work*] format, ~10 to 20 questions. You *may* use a simple scientific calculator for calculations, *if desired*. Cell phones, ipads, and computers are NOT allowed for use *at any time* in class for calculations or for any reason [unless directed by Prof. McGaugh for a particular activity].

In Class Activity assignments: Most lecture days there will be some simple group activity that will require collecting data, simple analysis, and reflection. Each person will turn in their own work. There are no make-ups for in class activity assignments. You must be present to do the activity, work together as a team, and turn in your own document with your own writing.

Rubber Band Car Project: This is an outside of class simple hands-on building project completed on your own *and* as a *team*. Grading for the project will be based on your *team's performance* and your uploaded RB Car Project report. Craft supplies will need to be purchased and/or obtained from Prof. McGaugh on the optional building days. Specific project details will be given on day 1 in class. The due date/time for this RB Car project is Wed

9.23.26 at 3pm. No late work will be accepted. You must be present by the due date/time with your own car to participate.

Participation/Employability: Daily attendance and *whole-time* participation [3pm to 4:45pm] in lecture plus in-class activities is mandatory for this course. According to the PLNU TUG attendance policy, if you miss 2 classes [10%], you will receive a written warning via email for de-enrollment. If you miss 3 classes [20%], you will be automatically dropped from the course with an F grade. [The last day to drop the course without recourse is Friday September 4th, 2026.] Being 'Employable' means: 1) you show up on time, in your seat, ready to go by 3pm 2) participate well during lecture and with your group during all activities 3) have a good positive attitude 4) communicate well with Prof. McGaugh if issues arise 5) be respectful *to all* in class [Colossians 3:12] 6) adhere to the rules outlined in this syllabus 7) absolutely **no** cell phone, ipad, tablet, apple watch texting, or computer use *of any kind* during class (*unless directed by Prof. McGaugh for a particular activity*) and 8) possess high integrity by doing *your own* work 100% of the time. Everyone will start off with 100pts in this category. If you have an infraction, points will be taken off.

Grade Scale Based on Percentages

A	B	C	D	F
A 93 to 100	B+ 87 to <90	C+ 77 to <80	D+ 67 to <70	F 0 to <60
A- 90 to <93	B 83 to <87	C 73 to <77	D 63 to <67	
	B- 80 to <83	C- 70 to <73	D- 60 to <63	

Final Examination Policy

Successful completion of this class requires taking the final examination on its scheduled day. The final exam is in **RS395 on Monday October 19th, 2026 at 3pm**. 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 final exams. However, unless you have three (3) or more final exams on the same day, no requests for alternative final examinations will be granted. Note: This situation is *highly unlikely* since this is a Quad 1 course.

General Course Concerns

If you have a concern related to the content or structure of this course, please bring your concern(s) to me, Prof. McGaugh, in a timely manner, so that we have the opportunity to discuss your thoughts and work together toward a solution. I have an 'open door' policy. Please feel free to email me anytime [jcmcgaugh@pointloma.edu], chat in person after class on *any day*, or see me during my office hours [Mon/Wed at 11am to 12pm]. I am 100% here for you. If you have any concern of *any kind*, let's work it out. Colossians 3:12-14.

Late Assignments

I do not accept any late work [Pre-lecture assignments, In-class Activity Assignments, and/or Projects]. Daily Pre-lecture assignments from Pearson Mastering Physics are available to work on and are due ***prior to* 2pm** on Mondays and Wednesdays. The online program will not accept submissions at 2pm onward. It is *your responsibility* to have access to a working computer with internet access to submit prior to 2pm. Do not wait to the last minute to do the work and submit. For each Pre-lecture assignment, you have a **full week** to complete the task [which should take under 1 hour of time].

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 distance education outside 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. Please consult the Academic Honesty Policy in the University Catalog for definitions of kinds of academic dishonesty and for further policy information.

PLNU Academic Behavior Policy

Both faculty and students at Point Loma Nazarene University have the right to expect a safe and ordered environment for learning. Students are expected to take the initiative to learn and conduct themselves in a mature and civil manner in the classroom environment. Any student behavior that is disruptive or threatening is a serious affront to Point Loma Nazarene University as a learning community. Students who fail to adhere to these behavioral standards may be subject to points lost Participation/Employability category, PLNU disciplinary action, including removal from class or further university sanctions. For a full definition of disruptive behavior, response procedures, and the appeal process, please consult the Academic Behavior Policy in the University Catalog.

PLNU Artificial Intelligence [AI] Policy

You are allowed to use Artificial Intelligence (AI) tools (e.g., ChatGPT, Gemini Pro, GrammarlyGo, Perplexity, etc.) to generate ideas, as a learning tool, or in some cases generate portions of work you will submit. I will specify in individual assignments what constitutes appropriate use of AI for that assignment.

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, by email or phone at **619-849-2533**. 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 approved accommodations. Professors are able to view a student's approved accommodations through Accommodate. PLNU highly recommends that students speak with their professors during the first two weeks of each semester/term about the implementation of their approved accommodations in that particular course. Accommodations are not retroactive; as such, 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-related need should contact the EAC as early as possible (i.e., ideally before the beginning of the semester) to assure appropriate accommodations can be provided. In accordance with ADA, accommodations cannot constitute a fundamental alteration to course outcomes; therefore, planning ahead is vital in establishing appropriate accommodations for equal access to this course. 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 eligibility 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 accommodations.

Language and Belonging

Point Loma Nazarene University faculty are committed to helping create a safe and hospitable learning environment for all students. As Christian scholars we are keenly aware of the power of language and believe in treating others with dignity. As such, it is important that our language be equitable, inclusive, and prejudice-free. Inclusive/Bias-free language is the standard outlined by

all major academic style guides, including MLA, APA, and Chicago, and it is the expected norm in university-level work. Good writing and speaking do not use unsubstantiated or irrelevant generalizations about personal qualities such as age, disability, economic class, ethnicity, marital status, parentage, political or religious beliefs, race, gender, sex, or sexual orientation. Inclusive language also avoids using stereotypes or terminology that demeans persons or groups based on age, disability, class, ethnicity, gender, race, language, or national origin. Respectful use of language is particularly important when referring to those outside of the religious and lifestyle commitments of those in the PLNU community. By working toward precision and clarity of language, we mark ourselves as serious and respectful scholars, and we model the Christ-like quality of hospitality.
If you (or someone you know) has experienced other forms of discrimination, you can find more information on reporting and resources via the Nondiscrimination and Anti-harassment Policy.

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. 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 or consult the list of campus pastors.
If you (or someone you know) has experienced other forms of discrimination or bias, you can find more information on reporting and resources via the Nondiscrimination and Anti-harassment Policy.

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 [2 days], Prof. McGaugh will issue a written warning of de-enrollment. If the absences exceed 20 percent [3 days], the student may be de-enrolled without notice until the university withdrawal date or, after that date, receive an “F” grade.

Use of Technology

In order to be successful in the online or hybrid environment, you'll need to meet the minimum technology and system requirements [*outside of class*]; please refer to the Technology and System Requirements information. Additionally, students are required to have headphone speakers, microphone, or webcams compatible with their computer available to use [*outside of class*].

*Problems with technology **do not** relieve you of the responsibility of participating, turning in your assignments, or completing your class work.

Loma Writing Center

Getting feedback from the Loma Writing Center while you're in the process of working on an assignment is a great way to improve the quality of your writing and develop as a writer. You are encouraged to talk with a trained writing consultant about getting started on an assignment, organizing your ideas, finding and citing sources, revising, editing for grammar, and polishing final drafts, and more.

Walk-ins are welcome, but we recommend making an appointment in advance. For information about how to make in-person or online appointments, see Loma Writing Center webpage or visit the Loma Writer Center on the first floor of the Ryan Library, room 221.

- Appointment Calendar
- Website
- Email

LomaBooks Instructions

This course is part of our course material delivery program, **LomaBooks**. The bookstore will provide each student with a convenient package containing all required physical materials; all digitally delivered materials will be integrated into Canvas.

You should have received an email from the bookstore confirming the list of materials that will be provided for each of your courses and asking you to select how you would like to receive any printed components (in-store pick up or home delivery). If you have not done so already, please confirm your fulfillment preference so the bookstore can prepare your **LomaBooks** materials.

To Register for Pearson Mastering Physics for PSC1012:

1. Go to **https://mlm.pearson.com/enrollment/mcgaugh59648** Opens in a New tab.
2. Sign in with your Pearson student account or create your account.
3. Select any available access option, if asked.
    - Enter a **prepaid access code** that came with your textbook from the PLNU bookstore with LomaBooks
    - Issues? Select Get temporary access without payment [*if necessary*] till things are sorted out.
4. Select Go to my course.
5. Select PSC 1012 Physical Science from My Courses.

**Contact Pearson Support if you are having trouble.
---> Give them the course ID: **mcgaugh59648**

To sign in later:

1. Go to https://mlm.pearson.com Opens in a New tab.
2. Sign in with the same Pearson account you used before.

3. Select **PSC 1012 Physical Science** from My Courses.

Assignments At-A-Glance/Canvas Course Summary

Week	Date	Topic	Reading to complete prior to class	Pearson Pre-Lecture Assignment [always due *prior to* 2pm on class day]
1	Mon Aug 31, 2026	Intro/Welcome Day/Good Physics Museum lab	*Just browse/peruse chap 1 - 11 🙂👍*	
	Wed Sept 2nd, 2026	Motion & Equilibrium part 1	Chapter 1 Motion & Equilibrium [1.1 to 1.7]	1. Chap 1a Pre-Lecture Assignment [Motion/Equilibrium]
	Mon Sept 7th, 2026	*Car Building Day 10am to 2pm Sator 105	*Optional - stop in anytime for help	
2	Wed Sept 9th, 2026	Motion & Equilibrium part 2	Chapter 1 Motion & Equilibrium [1.8 to 1.9]	1. Chap 1b Pre-Lecture Assignment [Motion/Equilibrium]
	Sat Sept 12th, 2026	*Car Building Day 10am to 2pm Sator 105	*Optional - stop in anytime for help	
3	Mon Sept 14th, 2026	Newton's Law's	Chapter 2 Newton's Laws	2. Chap 2 Pre-Lecture Assignment [Newton's Laws]
	Wed Sept 16th, 2026	Force due to Gravity & Projectile Motion	Chapter 4 Gravity & Projectile Motion	3. Chap 4 Pre-lecture Assignment [Gravity/Projectiles/Satellites]
4	Mon Sept 21st, 2026	Momentum	Chapter 3 Momentum [3.1 to 3.3]	4. Chap 3a: Pre-Lecture Assignment [Momentum]
	Wed Sept 23rd, 2026	****Rubber Band Car Contest!****	*Just be ready to roll! 🙂👍	
5	Mon Sept 28th, 2026	Energy	Chapter 3 Energy [3.4 to 3.6 & 3.9]	5. Chap 3b: Pre-Lecture Assignment [Energy]
	Wed Sept 30th, 2026	Simple Machines	Chapter 3 Simple Machines [3.7 & 3.8]	6. Chap 3c: Pre-Lecture Assignment [Simple Machines]
6	Mon Oct 5th, 2026	Waves & Sound	Chap 10 Waves & Sound	8. Chap 10: Pre-lecture Assignment [Waves/Sound]
	Wed Oct 7th, 2026	Light	Chap 11 Light	9. Chap 11: Pre-lecture Assignment [Light]
7	Mon Oct 12th, 2026	Static and Current Electricity	Chap 8 Static & Current Electricity	10. Chap 8 Pre-lecture Assignment [Static and Current Electricity]
	Wed Oct 14th, 2026	Magnetism & Electromagnetic Induction	Chap 9 Magnetism & Electromagnetic Induction	11. Chap 9 Pre-Lecture Assignment [Magnetism and Electromagnetic Induction]
8	Mon Oct 19th, 2026	**Final Exam 3pm in RS395**		