Elementary Physics (PHYS 1105)

LAMAR INSTITUTE OF TECHNOLOGY

CREDIT
1 Semester Credit Hour (0 hours lecture, 3 hours lab)

MODE OF INSTRUCTION
Online

PREREQUISITE/CO-REQUISITE:
N/A

COURSE DESCRIPTION
Conceptual level survey of topics in Physics intended for liberal arts and other non-science majors.

COURSE OBJECTIVES
Upon completion of this course, the student will be able to
1. Define basic terminology as related to applied physics.
2. Apply relationships of length, mass, time, and energy to understand various types of motion, forces, and fields.
3. Demonstrate problem-solving techniques related to physics principles including: vectors, motion, mechanics, simple machines, matter, heat, thermodynamics, etc.
4. Answer conceptual level questions related to physics principles including: vectors, motion, mechanics, simple machines, matter, heat, thermodynamics, etc.

INSTRUCTOR CONTACT INFORMATION

Instructor:	Joshua Kamienski
Email:	jkamienski@lit.edu
Office Phone:	N/A
Office Location:	N/A
Office Hours:	Appointments may be requested by email

REQUIRED TEXTBOOK AND MATERIALS
1. *College Physics 2e* by Paul Peter Urone and Roger Hinrichs, 2022 Edition. OpenStax. https://openstax.org/details/books/college-physics
2. Three-ring binder (2 inches recommended) with tabbed dividers.
3. Scientific calculator.
4. Pens or pencils.
5. Connect Online Access For Online Labs For Physics - 1 Semester, 22nd ed., 8220123634544

Approved: Initials/date

ATTENDANCE POLICY

Participation is vital to understanding Physics, so student activity will be recorded weekly in Starfish. Students MUST login each week AND receive a non-zero grade on the weekly Lab Assignment to avoid losing 20 points for Participation for the week. Missing certain Major Assignments will also cause students to lose participation points [as outlined later in this document]. There may be infrequent chances for students to get small amounts of bonus Participation points. **In an online class, absences cannot be excused without documentation covering all 7 days of the week in question.**

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE CALENDAR

Week	TOPIC	READINGS	Start	End
1	Introduction, Kinematics	CH1, CH2	Mo, 01/27	Su, 02/02
2	2-D Kinematics, Dynamics	CH3, CH4	Mo, 01/27	Su, 02/09
3	Applications of Newton's Laws	CH5	Mo, 02/03	Su, 02/09
*	Syllabus Exam [Participation Grade]	N/A	Mo, 02/03	***Tu***, 02/11
4	Circular Motion, Work, Energy	CH6, CH7	Mo, 02/10	Su, 02/16
5	Momentum, Statics, Torque	CH8, CH9	Mo, 02/17	Su, 02/23
6	Rotational Kinematics	CH10	Mo, 02/24	Su, 03/02
*	Project Groups Set [Participation Grade]	N/A	Mo, 02/24	***Tu***, 03/04
7	Fluid Statics, Fluid Dynamics	CH11, CH12	Mo, 03/03	Su, 03/09
8	Temperature, Gas Laws, Kinetic Theory	CH13	Mo, 03/17	Su, 03/23
9	Heat Transfer, Phase Change	CH14	Mo, 03/24	Su, 03/30
*	MANDATORY Midterm Exam	CH1 – CH14	***Sa***, 03/29	***Tu***, 04/01
10	Oscillations, Waves, Sound	CH16, CH17	Mo, 03/31	Su, 04/06
11	Electric Charge, Ohm's Law	CH18, CH20	Mo, 04/07	Su, 04/13
12	Circuits, Magnetism, Induction	CH21, CH22, CH23	Mo, 04/14	Su, 04/20
*	Projects Submissions Due	Various	Mo, 04/14	***Tu***, 04/22
13	Electromagnetic Waves, Relativity	CH24, CH28	Mo, 04/21	Su, 04/27
14	Quantum Physics, Atomic Physics	CH29, CH30	Mo, 04/28	Su, 05/04
15	Radioactivity, Nuclear Physics	CH31	Mo, 05/05	Su, 05/11
*	MANDATORY Final Exam	CH16 – CH31	***Sa***, 05/10	***Tu***, 05/13

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

1. Participation 10%
2. Discussions (15) 15%
3. Quizzes (15) 15%
4. MANDATORY Midterm Exam 20%
5. Project 20%
6. MANDATORY Final Exam 20%

GRADE SCALE

- 90-100 A
- 80-89 B
- 70-79 C
- 60-69 D
- 0-59 F

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at https://lit.edu/online-learning/online-learning-minimum-computer-requirements. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

ARTIFICIAL INTELLIGENCE STATEMENT

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI/ChatGPT in their courses.

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

ADDITIONAL COURSE POLICIES/INFORMATION

0. Students should ALWAYS contact the Instructor IMMEDIATELY with ANY concerns.
1. Safety and etiquette must always be observed in any physical or digital environment. Any student who breaks safety rules and/or does not conduct themselves properly in any situation will be removed from class to ensure the safety and comfort of others.
2. Children and/or guests are not allowed in the lecture classroom, the laboratory room, or the instructor's office at any time. This includes any scheduled/unscheduled lessons or meetings.
3. If class times and/or delivery method are incompatible with any student's needs, then the student is responsible for switching to a different class section in the first week. If no suitable options are available, then the student should consider dropping the course.
4. The following small rounding allowances will be made: 89.4X→90→A, 79.4X→80→B, 69.XX→70→C, 59.XX→60→D. No other exceptions will be made.
5. Each week has several electronic assignments due as indicated in the Course Calendar in this Syllabus. The due dates are set and visible in multiple locations in Blackboard.
6. Students are expected to maintain physical and/or digital copies of all resources and scratch work. Course material is "recycled" throughout the semester, and most Activities provide "hints" for future Quizzes and Exams. [It is a VERY bad idea to throw anything away until after the semester ends…]
7. Individual extensions on Quizzes will need to be made in time so that the student can complete the assignment within 1 week of the original due date. Extended Quizzes will have the grade capped at 70. [An 80 would be adjusted to a 70, but a 40 would not be further penalized.]
8. NO OTHER ASSIGNMENTS CAN BE EXTENDED INDIVIDUALLY. If there will be a scheduling issue, then the student should request to have the assignment opened early.
9. In the first half of each week, students should strive to work through the relevant Textbook Chapters, simulations/software, video content, and Discussion Boards.
10. By the end of each week, students should strive to read other students' responses to Discussion Boards, complete the assigned Quiz, and prepare for any upcoming Major Assignments.
11. Students will be notified by Announcement and/or Email if any policies or dates change.
12. Students will lose 20 Participation points [equivalent to 1 absence] for failing to complete the Syllabus Exam. This is also meant to be practice using Respondus Lockdown Browser, and missing this assignment may leave the student unprepared for future MANDATORY Exams.
13. Students will lose 20 Participation points [equivalent to 1 absence] for failing to join a Project group on time. The student also risks being randomly assigned to any remaining spots and losing the option to select their own partners and/or topics.
14. Participation points can go above 100 with bonus points. This will not be capped. However, if a student technically earns negative Participation points, they will be "rounded up" to zero.
15. To reiterate, the MANDATORY Midterm Exam, Project, and MANDATORY Final Exam cannot be late for any reason. Missing any of these will typically cost 2 Final Letter Grades.
16. Students should typically expect typed communication responses within two business days.

DISCUSSION INFORMATION

Overview:

Each Discussion serves as a repository of student knowledge, as the answers contributed from the responses will directly facilitate subsequent Quizzes and Exams. A Master List of Questions will be provided in the same folder as the Syllabus for the course. [Students should check this often for additional questions and/or updates.] Each student has a responsibility to provide information in a detailed and direct manner that can be easily processed by others. Other students should not need additional resources or reference materials to understand the statements in Discussion posts.

Objectives:

With a successful submission, the student will complete all of the following objectives:

1. Response Structure
    - 1.1 There should be a single main post.
    - 1.2 Three replies [in the correct order] should be made to the main post.
    - 1.3 No posts or replies should be made to other students.
    - 1.4 Posts should be clearly formatted [with complete sentences, line breaks and/or bullet points, etc.] and easy to read.
2. Question Context
    - 2.1 The main post should contain the full Question Number.
    - 2.2 The main post should contain the full Question Text.
    - 2.3 The main post should NOT contain any choices.
    - 2.4 The main post should NOT contain any additional information.
3. Correct Choice
    - 3.1 The full text of the Correct Choice should be listed as “Choice A.”
    - 3.2 The reason this choice is correct should be clearly explained in a full statement. [“Choice A. is correct because …”]
    - 3.3 The explanation needs to be well justified with included formulas, definitions, etc. as needed.
    - 3.4 The Correct Choice evaluation should be the first reply to the main post.
4. Incorrect Choices
    - 4.1 The full text of each Incorrect Choice should be listed as “Choice B.” ; “Choice C.” ; “Choice D.”
    - 4.2 The reason each choice is incorrect should be individually and uniquely explained in full statements. [“Choice B. is incorrect because …” ; “Choice C. is incorrect because …” ; “Choice D. is incorrect because … “ with definite delineation between each statement.]
    - 4.3 The explanations need to be well justified with included formulas, definitions, etc. as needed. [DO NOT just point out how the Incorrect Choice does not match the correct Choice. Clearly explain what is wrong, what alternate question that choice would answer, and/or how the question could be changed to make that choice correct instead.]
    - 4.4 The Incorrect Choices evaluations should be the second reply to the main post.

5. Extra Choice
    5.1 There should be an Extra [incorrect] Choice suggested that is different from the choices provided with the original question. [Be creative.]
    5.2 The reason the Extra Choice *might* seem correct should be explained clearly and with as much detail as possible.
    5.3 The reason the Extra Choice is *actually* incorrect should be explained clearly and with as much detail as possible.
    5.4 The Extra Choice Evaluation should be the third reply to the main post.

Additional Considerations:
For clarity, students should avoid vague statements containing “it” , “the question” , “the concept” , etc. Students should use direct verbiage containing “Newton’s Second Law” , “the definition of force” , “the concept of conservation of energy” , etc. EACH statement should be its own clear idea that could stand on its own. These responses are intended to be a way for students to help each other gather information to prepare for other assignments.

Note:
Word count is not specifically graded, but total contributions of less than 250 words generally do not end up receiving full credit. Missing information may cause the student to lose significant points in multiple categories. Individual extensions are not possible due to software and scheduling limitations. Please make sure to always complete these assignments on time.

Grading:
Each of the five major objectives are weighted equally. Each major objective has four minor objectives that will affect points according to the following schedule:

4 out of 4 Minor Objectives Successfully Completed → 20% credit toward that Major Objective
3 out of 4 Minor Objectives Successfully Completed → 14% credit toward that Major Objective
2 out of 4 Minor Objectives Successfully Completed → 8% credit toward that Major Objective
1 out of 4 Minor Objectives Successfully Completed → 4% credit toward that Major Objective
0 out of 4 Minor Objectives Successfully Completed → 0% credit toward that Major Objective

Additional Penalties:
Answering a question that has already been answered → score halved.
Answering a question from the wrong week → score halved.
Answering a question incorrectly → score halved.
Answering a question that does not match the question number → score halved.
Explaining choices that do not match the question → score halved.
Answering a question that is not on the Master List → score zeroed.
Evidence of cheating, plagiarism, use of AI → score zeroed.

Scores can be halved multiple times [divided by 4, divided by 8, etc.] with multiple errors…
These penalties are meant to be severe to avoid students repeating them.