Course Title	**:**	**Algebra Based Physics I with LAB**
Course Code	**:**	**PHYS 1230C**
Credit Hours	**:**	**4**
Semester	**:**	**SPRING 2022**
Cap	**:**	**20**

Instructor　: Dr. Abraham Meles　　Office# TECH 305　　Email: ameles@navajotech.edu

Lab Assistant　: Melvin Foster　　Office# TECH 325　　Email: mfoster@navajotech.edu

Office Hours　**:** TR 2:00 PM – 3:20 PM Instructors will be available for LIVE online email questions or zoom and/or google meet.

Class Location: Hybrid (TECH Rm 305 and Online)

Zoom Meeting link: **https://navajotech.zoom.us/j/7292904055**

Meeting Times (HYBRID)　　　**: TR 12:30 PM – 1:50 PM (online using Zoom)**

　　　　　　　　　　　　　F 11:00 AM-1:50 PM (face-to-face Lab at TECH Rm 305)

Online activities include zoom meeting, Google classroom, Google meet, videos, online homeworks will be uploaded on the homework webpage, lecture notes will be uploaded on Moodle, online virtual lab links and weekly tasks will be released by email.

Face-to-face activities are mainly reserved for labs, quizzes and lectures. Weekly emails will list detailed tasks of the week every Monday morning.

Final Exam: May 11, 2021. 10:30 AM – 11:50 AM

Texts　　　　　　　**:** Giancoli, C. Douglas. *Physics: Principles with Applications* Volume I (Chapters 1-15) 7 ed. New Jersey: Pearson Prentice Hall: Pearson Education Inc., 2005. ISBN: 0-321-76242-8.

Homework Websites: https://www.pearson.com/mastering **See the full instruction at the last page of this syllabus**

Tools:

For the online classes to be successful, **every student is required to have a laptop**. Students who don't have laptops, the cost of the laptops will be deducted from their Pell grant and then NTU will purchase laptops for them.

Need Scientific Calculator (NOT PHONE CALCULATOR). Flash Drive is recommended.

Lab Fee: $ 125

Mission Statement

Navajo Technical University's mission is to provide University readiness programs, certificates, associate, baccalaureate, and graduate degrees. Students, faculty, and staff will provide value to the Diné community through research, community engagement, service learning, and activities designed to foster cultural and environmental preservation and sustainable economic development. The University is committed to a high quality, student-oriented, hands-on-learning environment based on the Diné cultural principles: *Nitsáhákees, Nahátá, Íína, Siihasin.*

Course Description

An algebra-based treatment of Newtonian mechanics. Topics include kinematics and dynamics in one and two dimensions, conservation of energy and momentum, rotational motion, equilibrium, and fluids. A series of laboratory experiments associated with the material presented in the course.

Communication

Please obtain your Navajo technical university email at the beginning of this course. E-mails sent to the instructor must have the subject line of the email to read:

SPRING2022-PHYS1230C–YourLastName_FirstName

Assignments are already uploaded on the course webpage and will be opened based on the following schedule.

Week	Chapters	Assignments Due date	Quizzes
1	Introduction, Measurement, Estimating	At the end of the week (Sunday 11:59pm)	
2	Introduction, Measurement, Estimating	At the end of the week (Sunday 11:59pm)	
3	Kinematics 1D	At the end of the week (Sunday 11:59pm)	
4	Kinematics 1D	At the end of the week (Sunday 11:59pm)	**Quiz 1**
5	Kinematics 2D	At the end of the week (Sunday 11:59pm)	
6	Dynamics: Newton's Laws of Motion	At the end of the week (Sunday 11:59pm)	
7	Dynamics: Application - Newton's Laws of Motion	At the end of the week (Sunday 11:59pm)	
8	Circular Motion; Gravitation	At the end of the week (Sunday 11:59pm)	**Quiz 2**
9	Circular Motion; Gravitation	At the end of the week (Sunday 11:59pm)	
10	Work and Energy	At the end of the week (Sunday 11:59pm)	
11	Work and Energy	At the end of the week (Sunday 11:59pm)	**Midterm**
12	Linear Momentum	At the end of the week (Sunday 11:59pm)	
13	Linear Momentum	At the end of the week (Sunday 11:59pm)	
14	Rotational Motion	At the end of the week (Sunday 11:59pm)	**Quiz 3**
15	Static Equilibrium	At the end of the week (Sunday 11:59pm)	
16	Fluids	At the end of the week (Sunday 11:59pm)	
17	**Finals**		**Finals**

Important Dates

Jan 25   Instruction Begins
Jan 27   Last day to add/drop without "W"
Feb 26   Graduation Petition is due
Mar 8-12   Midterm Exams

Mar 15-19	Spring Break
Apr 1	Last day to withdraw with a "W"
May 10-13	Final Exams
May 13	Grades are due to the Registrar
May 14	Graduation

COURSE OUTCOMES

Upon completion of this course, the student will be able to:

1. Demonstrate converting units and other aspects of dimensional analysis in the working of numerical problems.

2. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of particles in one and two dimensions.

3. Apply principles of Newtonian mechanics to predict and account for simple phenomena modeled by the motion of a rigid body in two dimensions.

4. Apply Newton's theory of gravitation to circular orbits and demonstrate understanding of how Kepler's laws of planetary motion provide the empirical foundation for Newton's theory.

5. Apply the mathematics of vectors to the principles of Newtonian mechanics.

6. Apply principles of Newtonian mechanics to the case of static and dynamic incompressible fluids, including Archimedes' and Bernoulli's principles.

COURSE MEASUREMENTS: Complete reading assignments, homework assignments, exams, projects, and quizzes.

Grading Plan:

Tests	35%	A= 100 – 90%
Quizzes	20%	B > 90 – 80%
Homework	40%	C > 80 – 70%
Participation	5%	D > 70 – 60%
		F > 60%

Grading Policy

Each student must do his or her own homework and case studies. Discussion among students on homework and cases is encouraged for clarification of assignments, technical details of using software, and structuring major steps of solutions - especially on the course's Web site. Students must do their own work on the homework and exam. Cheating and Plagiarism are strictly forbidden. Cheating includes but is not limited to: plagiarism, submission of work that is not the student's own, submission or use of falsified

data, unauthorized access to exam or assignment, use of unauthorized material during an exam, supplying or communicating unauthorized information for an assignment or exam.

Participation

Students are expected to attend and participate in all class activities- as listed above, as it is 5% of the grade. Points will be given to students who actively participate in class activities including field trips, laboratories, and ask questions of guest speakers and other presenters.

Cell phone and head phone use
Please turn cell phones off or place them on silence or vibrate mode **BEFORE** coming to class. Also, answer cell phones **OUTSIDE OF CLASS** (not in the classroom). Exercising cell phone use courtesy is appreciated by both the instructor and classmates. Headphones are to be removed before coming to class.

Attendance Policy
Students are expected to regularly attend all classes for which they are registered. A percentage of the student's grade will be based on class attendance and participation. Absence from class, regardless of the reason, does not relieve the student of his/her responsibility to complete all course work by the required deadlines. Furthermore, it is the student's responsibility to obtain notes, handouts, and any other information covered when absent from class and to arrange to make up any in-class assignments or tests if permitted by the instructor. Incomplete or missing assignments will necessarily affect the student's grades. Instructors will report excessive and/or unexplained absences to the Counseling Department for investigation and potential intervention. **Instructors may drop students from the class after three (3) absences unless prior arrangements are made with the instructor to make up work and the instructor deems any excuse acceptable.**

Study Time Outside of Class for Face-to-Face Courses
For every credit hour spent in a class, a student is expected to spend two hours (2) outside of class studying the course materials.

Academic Integrity
Integrity (honesty) is expected of every student in all academic work. The guiding principle of academic integrity is that a student's submitted work must be the student's own. Students who engage in academic dishonesty diminish their education and bring discredit to the University community. Avoid situations likely to compromise academic integrity such as: cheating, facilitating academic dishonesty, and plagiarism; modifying academic work to obtain additional credit in the same class unless approved in advance by the instructor, failure to observe rules of academic integrity established by the instructor.

Diné Philosophy of Education
The Diné Philosophy of Education (DPE) is incorporated into every class for students to become aware of and to understand the significance of the four Diné philosophical elements, including its affiliation with the four directions, four sacred mountains, the four set of thought processes and so forth: Nitsáhákees, Nahát'á, Íína and Siih Hasin which are essential and relevant to self-identity, respect and wisdom to achieve career goals successfully.

Students with Disabilities
The Navajo Technical University and the Science department are committed to serving all enrolled students in a non-discriminatory and accommodating manner. Any student who feels he/she may need an accommodation based on the impact of disability or needs special accommodations should inform NTU in accordance with the procedures of the subsection entitled "Students with Disabilities" under Section 7: Student Support Programs, NTU Student Handbook.

Notes:
The instructor reserves the right to amend this syllabus. Any such amendments will be clearly communicated in class.

Student Registration Instructions

To register for FA2020 Algebra-Based Physics I:
1. Go to https://www.pearson.com/mastering.

2. Under Register, select **Student**.

3. Confirm you have the information needed, then select **OK! Register now**.

4. Enter your instructor's course ID: **melesXXXXX**, and **Continue**.

5. Enter your existing Pearson account **username** and **password** to **Sign In**.

   You have an account if you have ever used a MyLab or Mastering product.

   » If you don't have an account, select **Create** and complete the required fields.

6. Select an access option.

   » **Enter the access code that came with your textbook or that you purchased separately from the bookstore.**
   » If you don't have access code from bookstore,
      • Buy access using a credit card or PayPal.
      • Get temporary access.

   If you're taking another semester of a course, you skip this step.
7. From the You're Done! page, select **Go To My Courses**.
8. On the My Courses page, select the course name **SP22 PHYS-1230C - Algebra-Based Physics I** to start your work.

To sign in later (After you register):

1. Go to https://www.pearson.com/mastering.

2. Select **Sign In**.

3. Enter your Pearson account **username** and **password,** and **Sign In**.

4. Select the course name to start your work.

To upgrade temporary access to full access:

1. Go to https://www.pearson.com/mastering.

2. Select **Sign In**.

3. Enter your Pearson account **username** and **password,** and **Sign In**.

4. Select **Upgrade access** for **the course name**.

5. Enter an access code or buy access with a credit card or PayPal.