INDIANA TECH

Course Syllabus Cover Page – Spring 2021

Course Number: PH 1100

Course Title: Fundamentals of Physics

Course Description:

Basic mechanics: vectors, kinematics in one and two dimensions, Newton's Laws, work, energy, momentum, rotational motion. Laboratory is incorporated into the course.

Prerequisites: MA1030 and MA1055 or concurrent registration.

Credit hours: 3

Learning Outcomes:

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

1. Units: Be proficient with both SI and US Standard units and conversions between them.
2. 1-D Motion: Solve one-dimensional kinematics problems, particularly those with constant acceleration.
3. Vectors: Add and subtract vectors, both in magnitude/direction form and component form.
4. 2-D Motion: Solve two-dimensional kinematics problems, particularly those involving projectiles without air resistance.
5. Newton's Laws: Understand and be able to apply Newton's Laws of Motion, including explaining the difference between weight and mass, using free-body diagrams to set up and solve problems, and being able to apply the equations describing friction to a problem solution.
6. Work, Energy, and Power: Calculate work for constant forces, apply the Work-Energy Theorem to physical situations, calculate kinetic and potential energy in various circumstances, apply energy conservation principles to a variety of phenomena, and calculate power.
7. Momentum and impulse: Calculate momentum and impulse, apply these to physical problems, and apply the Law of Conservation of Momentum to physical situations including collisions.
8. Circular Motion: Set up and solve problems in rotational kinematics, convert between translational and rotational quantities, and apply the ideas of centripetal acceleration and force to physical problems.
9. Laboratory skills: Perform measurements using rulers, triple-beam balances, and other standard lab equipment., including estimation of uncertainties; calculating mean and standard deviation for a set of numbers; using data acquisition software to perform experiments, and analysis software to analyze data, including performing curve fitting.

INDIANATECH

College of Professional Studies

PH 1100 – Fundamentals of Physics
Online Course Syllabus Content

Instructor Information

Please see Professor Profile at the Blackboard instructional site.

Course Schedule

Please see Course Schedule in the Syllabus & Schedule area of the Blackboard instructional site.

Online Course Policies

All of the online courses taken by students are required to follow the policies posted online at http://online.indianatech.edu/tech-policies/policies/. Please review the posted policies carefully. If you are unable to abide by the policies listed, please contact the Warrior Information Network (WIN) at 888.832.4742 and request to withdraw from this course.

Textbook / Course Resources

Serway & Faughn, *College Physics, 7th Edition.*

Students will complete digital labs through the Hands On Labs website. Information on accessing the labs is provided in the Blackboard course site.

Grading Events & Grading Criteria

Unless otherwise specified, all assignments must be submitted via Blackboard.

Grading Events

Module	Event	Points
1	Course Preparation Quiz	20
1	Lab 01 – Intro to Experiments and Uncertainty	25
1	Homework 01	40
2	Lab 02 – Hypothesis, Laws and Theories	25
2	Homework 02	40
3	Lab 03 – Contact Forces	25
3	Homework 03	40
4	Lab 04 – Propagation of Uncertainty	25
4	Test 01	150
5	Lab 05 – Newton's Law of Motion	25
5	Homework 04	40
6	Lab 06 - Energy	25
6	Homework Set 05	40
7	Lab 07 – Hooke's Law	25
7	Test 02	150
8	Lab 08 – Projectile Motion	25
8	Homework 06	40
9	Lab 09 – Conservation of Momentum	25
9	Homework 07	40
10	Lab 10 – Centripetal Acceleration	25
10	Test 03	150
	Total Points	1000

Grading Criteria

The following grading scale will be used to assign a grade at the end of the course:

Percentage Achieved	Grade	Percentage Achieved	Grade	Percentage Achieved	Grade
90% or above	A	70% or above	C	Below 60%	F
80% or above	B	60% or above	D		

Late Assignments

All assignments and required online activities are due according to the deadline listed in the course schedule. Granting deadline extension is the course instructor's autonomy.

Incompletes

If you are unable to complete the requirements for this course due to extenuating circumstances, an Incomplete grade (I) may be granted if you meet the general guidelines stated below.

General Guidelines for submitting a course incomplete request:

- More than 50% of the course session has elapsed.
- The student has encountered an unexpected situation that is beyond his or her control.
- The student is
    - in good academic standing -- up-to-date on all of the course assignments and has at least an overall passing grade,
    - able to complete all of the remaining coursework within a session (5 weeks for a undergraduate course and 6 weeks for a graduate course) that immediately follows the session the student is currently enrolled, and
    - able to provide support documentations to substantiate the need for extra time should a session is not enough to complete the course requirements.

If an Incomplete is granted, the instructor will set a deadline for all work to be completed. **The deadline cannot go past one (1) session.** All incomplete grades and deadlines are subject to approval by the designated University authority.

Course Related Communication

Online courses are conducted in an accelerated format. Timely communication is very important. When receiving emails from your classmates or instructor, please respond as soon as you can.

Students are REQUIRED to use their Indiana Tech email account for all course related communication. The most direct, and effective, way to email your course instructor and classmates, is by using the Send Email function within the Blackboard course site. When you use the Send Email function, you automatically receive a carbon copy of the email you sent. In the event when you need to substantiate your claim that you did email your classmates or instructor, you can show that carbon copy to the person(s) who requested it.

Please note that Blackboard only permits you to send email, it does not provide you with the check email function. All of the emails your classmates and instructor send to you will be delivered to your Indiana Tech email account. You are strongly encouraged to check your Indiana Tech email account regularly, preferably several times a week, to minimize the likelihood of miscommunication.

The University policy requires each online course instructor to respond to a student's email within 24 hours. Unless there is an extraneous situation that prevents the instructor from following this rule, you can expect to hear from the instructor within 24 hours. If you don't receive a reply within 24 hours, please do not hesitate to follow up with another email or forward the carbon copy of the email you sent to OnlineSupport@IndianaTech.edu with a note "Please help. It's been 24 hours and I have not heard from my instructor" and the University support staff will act on your behalf to contact your course instructor.