



National Taiwan University of Science and Technology

2019 Summer Program

PHY 101 Introduction to Physics with Lab

Course Outline

Term: July 01-August 02,2019

Class Hours: 16:00-17:50 (Monday through Friday)

Course Code: PHY 101

Instructor: Roberto Vega

Home Institution: Southern Methodist University

Office Hours: TBA and by appointment

Email: rvega@smu.edu

Credit: 4

Class Hours: According to the regulations of Minister of Education, R.O.C, 18 class hours could be counted as 1 academic credit in all universities in Taiwan. This course will have 72 class hours, including 40 lecture hours, professor 10 office hours, 10-hour TA discussion sessions, 2-hour review sessions, 10 laboratory hours.

Course Description: This course will provide an introduction to Classical Mechanics, the precise description of motion and the causes of change of motion.

Course Objectives:

1. Students will be able to develop quantitative models appropriate to problems in Physics.
2. Students will be able to assess the strengths and limitations of quantitative models and methods used in Physics.
3. Students will be able to apply symbolic systems of representation.
4. Students will be able to collect, organize and analyze data from a variety of sources. Students will be able



to formulate structured and logical arguments.

5. Students will be able to test hypotheses and make recommendations or predictions based on results.

6. Students will be able to communicate and represent quantitative information or results numerically, symbolically, aurally, visually, verbally, or in writing.

7. Students will have a basic understanding of the laws of mechanics and Newton's law of gravitation.

Required Textbooks: *Fundamentals of Physics* by David Halliday, Robert Resnick and Jearl Walker

Grading & Evaluation:

Course will be evaluated based on homework 25%, two midterm exams 50%, and one final exam 25%.

Typically, the standard grade assignment will apply, i.e. 95-100 A, 90-94 A-, 88-89.9 B+, 84-87.9 B, 80-83.9 B-, 78-79.9 C+, 74-77.9 C, 70-73.9 C-, 68-69.9 D+, 64-67.9 D, 60-63.9 D-, Below 60 F.

Course Schedule: (Tentative)

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	<ul style="list-style-type: none"> Introduction Units and Dimensional Analysis 	1-d Kinematics: <ul style="list-style-type: none"> Speed Velocity Acceleration 	Constant Acceleration: <ul style="list-style-type: none"> Free Fall 	Lab: <ul style="list-style-type: none"> Free Fall 	TA Session
Week 2	2-d Kinematics: <ul style="list-style-type: none"> Vectors Projectile Motion 	2-d Kinematics: <ul style="list-style-type: none"> Circular Motion 	Dynamics: <ul style="list-style-type: none"> Newton's Laws 	Lab: <ul style="list-style-type: none"> Projectile Motion 	TA Session
Week 3	Exam 1 <ul style="list-style-type: none"> Exam discussion 	<ul style="list-style-type: none"> Centripetal forces Work and Kinetic Energy 	<ul style="list-style-type: none"> Potential Energy Conservation of Energy 	<ul style="list-style-type: none"> Systems of Particles and Momentum 	TA Session
Week 4	<ul style="list-style-type: none"> Rotational Kinematics 	<ul style="list-style-type: none"> Rotational Dynamics 	<ul style="list-style-type: none"> Static Equilibrium 	Lab: <ul style="list-style-type: none"> Newton's Laws- Friction 	TA Session
Week 5	<ul style="list-style-type: none"> Oscillatory Motion 	<ul style="list-style-type: none"> The Law of Gravitation 	<ul style="list-style-type: none"> Kepler's Laws 	Lab: <ul style="list-style-type: none"> Gravitation and Dark Matter 	Exam 2 <ul style="list-style-type: none"> Exam Discussion