



上海财经大学

Shanghai University of Finance & Economics  
中国上海市国定路777号 邮编200433 777 Guoding Road, Shanghai, 200433, China

## Shanghai University of Finance & Economics

### 2020 Summer Program

### PHY 101 Introduction to Physics with Lab

### Course Outline

**Term: June 01-July 03,2020**

**Course Code: PHY 101**

**Instructor: Roberto Vega**

**Home Institution: Southern Methodist University**

**Office Hours: by appointment**

**Email: rvega@smu.edu**

**Credit: 4**

**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)

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