

Fall 2015

## **PHYS 1031**

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**Physics 1031**  
**Introductory Physics**  
**Fall 2015**

**Course:** Introductory Physics (Mechanics and Heat and Thermodynamics)

**Text Book:** Physics 10<sup>th</sup> ed.  
Cutnell and Johnson (John Wiley & Sons, Inc.)

**Instructor:** Dr. Ashok Puri (Office: SC 1039) Email: apuri@uno.edu

**Class Location:** 1001 Science Building

**Class Time:** 8:00 am – 8:50 am (MWF)

**Office Hours:** MWF 9:00 -10:00 (SC 1039) plus by appointment

**Goals:** This course is designed to give Biology/Pre-Med students instruction in the fundamental principles of Mechanics and Heat and Thermodynamics

**Prerequisites:**  
Basic Knowledge in Algebra and Trigonometry

**Topics to be covered:**

1. Mathematical Concepts
2. Motion along a straight line
3. Kinematics in two dimension
4. Forces and Newton's Laws of Motion
5. Centripetal Forces

**TEST #1 (Friday, Sept. 18, 2015)**

6. Work and Energy
7. Impulse and Momentum
8. Rotational Kinematics
9. Rotational Dynamics
10. Simple Harmonic Motion

**TEST #2 (Friday Oct. 23, 2015)**

11. FLUIDS
12. Temperature and Heat
13. Transfer of Heat
14. Ideal Gas Laws and Kinetic Energy
15. Thermodynamics

**TEST #3 (Monday, November 30, 2015)**

**Tests:** Three tests plus a final exam

**Grades:** Tests 100 pts. each (3x100 = 300 pts.)  
Final 200 pts.  
Home works 100 pts.  
Recitation 60 pts.

**Total 660 pts.**

**Grading Model:** 90+ A  
80+ B  
70+ C  
60+ D

- We will use **Sapling Learning** for homework. Home work is due one week after it is assigned. No late home work will be accepted.
- Class attendance is mandatory.
- Recitation is worth 10% of course grade.
- Makeup Tests are not allowed. However, lowest Test grade will be dropped.

**How to Enroll in the Course:** <http://bit.ly/saplinginstructions>

Sapling Learning offers a grace period on payment; for most courses, this is 14 days from the first day of the term. During sign up or throughout the term, if your students have any technical problems or grading issues, please direct them to send an email to [support@saplinglearning.com](mailto:support@saplinglearning.com) explaining the issue.

Academic dishonesty will not be tolerated. UNO judicial code is available online at

<http://studentaffairs.uno.edu/pdfs/AcademicDishonestyPolicy.pdf>

**After successfully completing this course the students will be able to:**

- Solve one and two dimensional kinematics problems.
- Analyze motion of a free falling object, projectile motion, and a particle in circular motion.
- Use Newton's Laws of motion to solve simple dynamics problems.
- Draw free body diagrams to enumerate forces acting on a particle.
- Use the definition of work and the work energy theorem applied to analysis of dynamics problems.
- Use the definition of potential energy and relate it to conservative forces.
- Relate internal energy to the work done by non - conservative forces.
- Use the principle of conservation of energy.
- Use conservation of momentum in the analysis of collisions.
- Solve simple problems involving rotational dynamics.
- Use the conditions for equilibrium applied to solution of problems.
- Solve problems involving simple harmonic motion.
- Understand basics of fluid at rest and motion.
- Relate zeroth law of thermodynamics, Temperature and heat
- Analyze mechanisms of Transfer of Thermal energy.
- Formulate of kinetic theory of gases using ideal gas laws.
- Understand first law of thermodynamics, PV diagrams, apply to heat engines, refrigeration, heat pump
- Relate second law of thermodynamics and entropy.