

# Physics 111: Introductory Physics I Syllabus

Fall 2013

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Office Hours: Monday 9-12  
Tuesday 9-10  
Wednesday 9-11  
Thursday 10-11

**Text:** University Physics, 13<sup>th</sup> edition by Young and Freedman, ISBN# 0321696867

**PLEASE DO THE ASSIGNED READINGS PRIOR TO CLASS-** this will allow you to become familiar with the terms and topics and have questions about the material prepared before lecture

## Course Description:

An introduction to the fundamentals of physics, specifically heat and thermodynamics, waves and oscillations, and mechanics in one and two dimensions, including kinematics, dynamics, rotational motion, energy and conservation laws and statics.

## Course Goals:

The main goal of this course is for students to gain a comprehensive understanding of basic concepts and laws of physics. Students will develop a mathematical ability to describe these laws using formulas and equations that allows the student to perform calculations and solve problems relating to the course. The lab element of the course will provide a hands-on methodology of testing and analyzing these principle through laboratory work.

## Grading:

Your letter grade is determined by a minimum weighted average which is as follows: A/93, A-/90, B+/87, B/83, B-/80, C+/77, C/73, C-/70, D+/67, D/63, D-/60, F/0. The breakdown of the grading will be as follows:

Exam 1	10%
Exam 2	10%
Exam 3	10%
Homework	15%
Attendance	5%
Quizzes	10%
Labs	25%
Final	15%

## Course Materials:

All course materials will be made available on blackboard. These materials include this syllabus, laboratory procedures, practice problem sets, practice exams, and any solutions I may provide.

## Exams and Quizzes:

There will be three exams during the semester. Each will be 50 minutes long. There will also be a final exam which will be cumulative. The exams will include problem solving questions, but there will also be conceptually based questions to be answered with words. You will be able to use an equation sheet that will be provided for you. You will not be allowed to use any outside materials (notes, books or cell phones) during exams. **The final exam will be cumulative.** Ten minute quizzes will be given on a regular basis. They will be based on exam questions and will be given under the same conditions as exams. The same equation sheet used for exams will be used for quizzes.

## Homework:

Homework assignments will be given weekly and will be **due at the beginning of class on Fridays** (or as specified in the syllabus). You can receive full credit up until 7:50 AM the day the assignment is due. Until the day of the final, any late assignments may be submitted and earn up to 50% of the credit. You

are encouraged to work with other students on the assignments, but each student must complete and submit their own work. Time will be available for questions about homework during the problem solving sessions if you are having trouble with the homework questions. Homework is very important. There is a strong correlation between completing the homework assignments and doing well on quizzes and exams.

### **Attendance:**

Attendance is mandatory and counts towards your final grade. If you cannot attend class for any reason, it is your responsibility to contact me with the reason for your absence and to obtain any material you missed. An absence will be considered excused and not count against your attendance grade if it is due to reasons such as illness, death in the family, etc. **Makeup quizzes and exams will only be given in the event of excused absences.**

### **Important Notes:**

Education is all about open communication. My responsibility is to communicate information and problem solving techniques to you. However, communication works both ways. You must also communicate to me if are having trouble with or questions about any material. Your questions are always welcome. I do not know what you do not know. The explanations and examples I give make perfect sense to me, but you may need further clarification. To that end, please feel free to email me or attend my office hours with any questions you may have. If you cannot attend any of the available office hours, please email me and we can schedule another time to meet.

The summaries at the end of the chapters are an excellent resource to help you keep in mind the important concepts and equations covered in each chapter.

The equation sheet will only help you if you know the meaning of all the variables and the proper context in which a specific equation can be used. *E* does NOT always mean energy and velocity may be determined using different equations in different situations. It is very important that you review and become familiar with the equation sheet before any quiz or exam.

## **Lab Schedule**

<b>Date</b>	<b>Topic</b>
8/26-8/30	Introduction to Labs, Graphing Using Graphical Analysis and Error Analysis Exercise
9/2-9/6	Graph Matching
9/9-9/13	Picket Fence Free Fall
9/16-9/20	Newton's Second Law of Motion
9/23-9/27	Conservation of Energy of the Simple Pendulum
9/30-10/4	Ballistic Pendulum
10/7-10/11	Conservation of Momentum in Two Dimensions
10/14-10/18	<b>FALL BREAK</b>
10/21-10/25	Kepler's 3 <sup>rd</sup> Law: Determining the Mass of Jupiter
10/28-11/1	Simple Harmonic Motion
11/5-11/8	Speed of Sound from Resonance Tube
11/11-11/15	Standing Waves on a String
11/18-11/22	Liquid Viscosity
11/25-11/29	Calorimetry
12/2-12/6	Boyle's Law

# Class Schedule

Date	Topic	Reading before class	Due
8/26	Motion in 1-D: Displacement, Speed, Velocity		
8/28	Motion in 1-D: Acceleration and Free Fall	2.1-2.6	
8/30	Vector Review	1.7-1.10	
9/2	LABOR DAY BREAK		
9/4	Motion in 2-D: Vectors and Projectile Motion	3.1-3.3	
9/6	Motion in 2-D: Circular Motion and Relative Velocity	3.4-3.5	HW 1
9/9	Newton's Laws: Forces and Newton's 1 <sup>st</sup> and 2 <sup>nd</sup> Laws	4.1-4.3	Quiz 1
9/11	Newton's Laws: Mass /Weight, 3 <sup>rd</sup> Law and Free Body Diagrams	4.4-4.6	
9/13	Newton's Laws: Equilibrium	5.1	HW 2
9/16	Newton's Laws: Dynamics and Frictional Forces	5.2-5.3	Quiz 2
9/18	Newton's Laws: Dynamics of Circular Motion	5.4-5.5	
9/20	Work and Energy	6.1-6.3	HW 3
9/23	<b>EXAM 1</b>	<b>CH 1, 2, 3, 4</b>	
9/25	Work, Energy, and Power	6.4	
9/27	Potential Energy and Conservation	7.1-7.4	HW 4
9/30	Momentum, Impulse and Conservation	8.1-8.2	Quiz 3
10/2	Momentum Conservation and Collisions	8.3-8.4	
10/4	Center of Mass and Rocket Propulsion	8.5-8.6	HW 5
10/7	Gravitation: Newton's Law of Gravitation, Weight, Potential	13.1-13.3	Quiz 4
10/9	Gravitation: Satellite Motion and Kepler's Laws	13.4-13.5	
10/11	Catch-up/Exam Review		
10/14	FALL BREAK		
10/16	<b>EXAM 2</b>	<b>CH 5, 6, 7, 8</b>	
10/18	Periodic Motion: Oscillation and Simple Harmonic Motion	14.1-14.2	HW 6
10/21	Periodic Motion: Energy of Harmonic Motion and Applications	14.3-14.4	Quiz 5
10/23	Periodic Motion: Simple Pendulum and Wave Introduction	14.5, 15.1-15.2	
10/25	Mechanical Waves: Wave Speed and Wave Energy	15.3-15.5	HW 7
10/28	Mechanical Waves: Interference, Standing Wave & Normal Mode	15.6-15.8	Quiz 6
10/30	Sound: Waves, Speed, and Intensity	16.1-16.3	
11/1	Sound: Standing Waves, Resonance and Interference	16.4-16.6	HW 8
11/4	Sound: Beats and Doppler Effect	16.7-16.8	Quiz 7
11/6	Fluids: Density and Pressure	12.1-12.2	
11/8	Fluids: Buoyancy and Flow	12.3-12.4	HW 9
11/11	<b>EXAM 3</b>	<b>CH 13, 14, 15, 16</b>	
11/13	Fluids: Bernoulli's Principle and Viscosity	12.5-12.6	
11/15	Thermodynamics: Temperature and Temperature Scales	17.1-17.3	HW 10
11/18	Thermodynamics: Thermal Expansion and Heat	17.4-17.5	Quiz 8
11/20	Thermodynamics: Calorimetry, Phase Change, & Heat Transfer	17.6-17.7	
11/22	Thermodynamic Properties	18.1-18.3	HW 11
11/25	Laws of Thermodynamics: Thermodynamic Systems and Work	19.1-19.2	Quiz 9
11/27	THANKSGIVING BREAK		
11/29	THANKSGIVING BREAK		
12/2	Laws of Thermodynamics: States, First Law and Processes	19.3-19.5	
12/4	Laws of Thermodynamics: Internal Energy and Ideal Gases	19.6-19.8	HW 12
12/6	Review/ Catch up		Quiz 10

**What to Do if You Have Questions or Need Help:**

- ✿ Ask me before or after class
- ✿ Visit my office hours
- ✿ Email me at [malendar@moravian.edu](mailto:malendar@moravian.edu)
- ✿ Ask another student
- ✿ Work in a group
- ✿ Get at tutor (I can help you get in contact with a tutor)

**Disabilities and Medical Conditions:**

Moravian College adheres to the principles and mandates of the Americans with Disabilities Act of 1990 and the Rehabilitation Act of 1973.

Students who wish to request accommodations in this class for a disability should contact Elaine Mara, assistant director of learning services for academic and disability support at 1307 Main Street, or by calling 610-861-1510. Accommodations cannot be provided until authorization is received from the Academic Support Center.

Special classroom set-ups, alternate testing, physical plant (campus) alterations, and other accommodations for students with documented disabilities are available on a case-by-case basis. It is the responsibility of students with disabilities to self-identify and request accommodation through the appropriate office.

It is the responsibility of the student to request accommodation well in advance of the need in order to give the College a reasonable amount of time to evaluate the documentation and implement the request. Classroom accommodation requiring notification to faculty must be requested for each semester for which it is needed.

Please see Disability Support Services in the Campus Offices and Services section elsewhere in the Moravian College Student Handbook for further information, and check the College's website for periodic updates concerning services for students with disabilities.

**Academic Honesty Statement:**

Academic integrity is the foundation on which learning at Moravian College, Moravian Theological Seminary, and the Comenius Center is built. Students are expected to perform their academic work honestly and fairly. In addition, students should neither hinder nor unfairly assist the efforts of other students to complete their work successfully.

In an academic community, students are encouraged to help one another learn. Because no two students learn in exactly the same way or absorb exactly the same things from a lecture, students are encouraged to study together. The boundaries on what is or is not acceptable work may not always be clear; thus, if at any point in academic work at Moravian, students are uncertain about their responsibility as scholars or about the propriety of a particular action, please see Academic Honesty in the Academic Life section elsewhere in the Moravian College Student Handbook for further information, and check the College's website for periodic updates.