

# Preliminary Syllabus

## Physics 111 Introductory Physics

Dr. Terrance Worchesky

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**Office Hours:** Monday 3-4, Tuesday 3-4, Wednesday 2-3

Mr. Thomas Smith Physics Room 226 Sections 02, 08, 09

Mr. Edward Strobach Physics Room 226 Sections 05, 06, 07

Mr. Xuyan Wang Physics Room 226 Sections 03, 04

<b>Class Meeting:</b>	Lecture:	Mon-Wed-Fri	1:00-1:50	Admin 101	
	Labs:	Thur	Section 02	2:30-4:20	Physics 109
		Thur	Section 03	5:30-7:20	Physics 109
		Fri	Section 04	8:00-9:50	Physics 109
		Wed	Section 05	5:30-7:20	Physics 109
		Thur	Section 06	11:30-1:20	Physics 109
		Thur	Section 07	9:30-11:20	Physics 109
		Fri	Section 08	10:30-12:20	Physics 109
		Fri	Section 09	2:30-4:20	Physics 109

**Pre-requisite:** Completion of PHYS111 with a C or better.

**Course Overview:** This course is the introductory, algebra-based physics course. In general, this is the intro physics course for life-science majors or for general education credit. The topics covered in this class include: electricity and magnetism, waves, optics and atomic physics. The general learning goals of this course are for you to be able to

- (1) demonstrate an understanding of the content in the topics listed above,
- (2) acquire, analyze, interpret, and model experimental data,
- (3) apply scientific reasoning and mathematical techniques that you practice in the homework,
- (4) communicate your reasoning processes clearly in your homework solutions and on the exams.

I expect you to be able to work with these ideas and apply them to situations by the end of the semester.

We will cover chapters 15-25 and 29 of the textbook in this course. A general schedule of the topics covered and the exam dates is at the end of this document. Please do not schedule something else for the exam dates.

**Textbook:** “College Physics a Strategic Approach” by Knight, Jones, and Field (any edition) (required)  
MasteringPhysics: Electronic Homework for College Physics (required)  
Turning Technologies Clickers & License (required)  
These three items are available at the University Bookstore.  
Laboratory Experiments the write-ups for the labs are available through the Blackboard course website

**Blackboard Site:** I will use the Blackboard course website for most of the teaching material and communications to you. It is available through your myUMBC area under the tab marked Blackboard. You are responsible for checking the Blackboard site daily to look for announcements, material, and assignments. Grades are posted on Blackboard.

<b>Grading:</b>	Lecture participation/clicker	5%
	Lab	10%
	Mastering Physics homework	15%
	Reading quizzes	5%
	Three in-class exams (15% each)	45%
	Final exam (last day of class)	20%

A: 90-100	Excellent mastery of the subject and exceptional achievement
B: 80-89	Good mastery of the subject and good performance
C: 70-79	Acceptable mastery of the subject and expected performance
D: 60-69	Borderline understanding of the subject and marginal performance
F: 0-59	Failure to understand subject and unacceptable performance

There is no grading on a curve in this class. Thus, helping your fellow students does not adversely affect your grade, and in fact helps you through your better understanding of the material. There is no extra credit available at any time in this course. Finally, any issues you have with a grade on any material must be addressed with the TA or the professor within two days of when the grade was available.

**Lectures:** The lectures will highlight concepts addressed in the textbook and develop systematic problem solving skills. The lectures are an active environment with normal questioning and clicker questions at the beginning and during the lecture. You need to bring your clicker to every class. You will be given two “free days” for not using your clicker in lecture and these cover absences and clicker malfunctions.

**Lab Component:** This course has a separate lab component that will count for 10% of your final grade for the entire course. You registered for one of the eight sections and you must attend the section in which you are registered. These labs expand on the main concepts of the course. Your grade for the lab component of the course is based on three parts. There is individual pre-lab homework that is due before the lab (20%) which ensures you are prepared for the lab. Next, there is full participation and completion of the lab activity (40%) with your lab partner. Finally, there is individual lab homework (40%) due at the start of the next lab. Your lab homework will only be accepted if you completed the related lab. Your grade for each lab is based on the pre-lab, full attendance and participation in the lab session, and the lab homework.

**Homework:** This is one of the most important aspects of this class. Although you will learn a lot from my enlightening lectures and from reading the textbook, the only way to learn this material is for you to work through the important material and applying it to various problems. At times, the homework will be challenging. Remember that this is the only time I can have you examine a complicated problem, as there is not enough time for this on exams.

The homework for this course is through the MasteringPhysics online system, that is, electronic homework. To access Mastering Physics you should go to: <http://www.masteringphysics.com>. If you registered for MasteringPhysics before, login in with your previous username and password. If not, click Students under Register and create a user account. You will then enter the access code that came with your bookstore order, or you will purchase an access code online. (Do not do both and pay twice.) **Please make sure that you purchase the correct version of MasteringPhysics, the version for College Physics: A Strategic Approach by Knight, Jones, and Field (3<sup>rd</sup> edition).** If you purchase an incorrect version of MasteringPhysics, including the wrong edition, you will not be able to access the assigned electronic homework. Finally, after you create an account you will need to enroll in the course and login in to it. The course id is **PHYS112F16**.

The homework assignments have particular due dates/times and you are automatically penalized for any late submissions. As takes time to do the homework assignments do not wait until the night that they are

due to start them. When you do the Mastering Physics homework, you should write down the problem, work it out with paper and pencil, and keep this for future studying. There can be several versions of the electronic homework and so do not get nervous if your homework does not exactly match your friends' homework.

I imagine that you will get together on a regular basis in small groups. This is a good tool if used properly and a disaster if used incorrectly. Once you have done your own studying and worked out the problems, it is good to discuss the ideas with others. Please do not use it without working on the problems on your own. Finally, I know that there are websites where you can view solutions to many of the homework problems. First, copying these is cheating and if found it is not tolerated. Next, a large part of understanding the material comes from applying it in the homework problems. This is where you prepare yourself for quizzes and exams. Copying solutions will not help you to learn this material.

**Exams:** Three 50-minute exams are given at 8 am on the Mondays during the semester. The dates are listed in the course schedule. The exams are held in the same room as the lecture, Admin101. If you are not available for an exam due to UMBC sanctioned activities or other reasons, you must contact me at least one week before the exam. The final exam is comprehensive and its date and time is assigned by the Registrar's Office and is listed at: [http://www.umbc.edu/undergrad\\_ed/ai/](http://www.umbc.edu/undergrad_ed/ai/) . There are no make-up or alternate final exam times.

**Academic Accommodation:** If you have any condition that makes it difficult to carry out the work that I assign, you should immediately contact the Office of Student Disabilities Services to receive assistance and any accommodation. If you are receiving any accommodations, you must inform me via email the first week of class. If you are taking the exams with the Office of Student Disabilities Services, you must inform me via email with the details (including your reserved time to take the exam with OSDS) two class days prior to Monday exam.

**Tutoring:** As with many introductory courses on campus, the Learning Resource Center offers free tutoring for this course. You can contact the LRC through their website: <http://www.umbc.edu/lrc/tutoring.php> .

**Office Hours:** Monday 3-4, Tuesday 3-4, Wednesday 2-3 in Physics Room 217

You may also make an appointment to meet at another time by contacting me through email. Please use your UMBC email to contact me, and include Phys112 in the subject line. Please use proper email etiquette and include your full name and section number in your message to me.

**Academic Integrity:** I feel obligated to ensure that students know the repercussions of cheating. If you are found cheating, you will receive a zero for that work. The University has a website that addresses the concept of academic integrity: [http://www.umbc.edu/undergrad\\_ed/ai/](http://www.umbc.edu/undergrad_ed/ai/)

**Preliminary Schedule      PHYS112      Fall 2016**

<b>Week</b>	<b>Date</b>	<b>Textbook</b>	<b>Lecture</b>	<b>Lab</b>
<b>Week 1</b>	M Aug 29	-----	-----	No lab this week
	W Aug 31	20.1-20.2	Intro Charges & Forces	
	F Sept 2	20.2-20.3	Forces & Coulomb's Law	
<b>Week 2</b>	M Sept 5	<b>Labor Day</b>	<b>Vacation Day</b>	Lab 1: Electric Charge
	W Sept 7	20.4-20.5	Electric Field of Point Charges	
	F Sept 9	20.6-20.7	Field of Charge Distributions	
<b>Week 3</b>	M Sept 12	21.1-21.2	Electric Potential Energy & Potential	Lab 2: Electric Field
	W Sept 14	21.3-21.4	Electric Potential Applications	
	F Sept 16	21.5-21.6	Electric Field & Electric Potential	
<b>Week 4</b>	M Sept 19	21.7-21.8	Capacitors	Lab 3: Electric Current
	W Sept 21	21.9	Energy Storage and Applications	
	F Sept 23	22.1-22.5	Electrical Current and Resistance	
<b>Week 5</b>	M Sept 26	<b>Exam 1</b>	<b>Exam 1</b>	Lab 4: Circuit Models
	W Sept 28	22.6	Ohm's Law	
	F Sept 30	23.1, 23.3	Resistors in Series & Parallel	
<b>Week 6</b>	M Oct 3	23.2	Kirkoff's Law	Lab 5: Voltage and Ohm's Law
	W Oct 5	23.4-23.5	Electrical Circuits	
	F Oct 7	23.6-23.7	RC Circuits	
<b>Week 7</b>	M Oct 10	23.8	RC Applications	Lab 6: Capacitors and RC Circuits
	W Oct 12	24.1-24.2	Magnetic Fields of Permanent Magnets	
	F Oct 14	24.3-24.4	Magnetic Fields of Currents	
<b>Week 8</b>	M Oct 17	24.5	Magnetic Force	Lab 7: Action Potential I
	W Oct 19		Motion of Charged Particles	
	F Oct 21	25.1-25.2	Induced Current & Motional EMF	
<b>Week 9</b>	M Oct 24	<b>Exam 2</b>	<b>Exam 2</b>	Lab 8: Action Potential II
	W Oct 26	25.3-25.4	Magnetic Flux & Faraday's Law	
	F Oct 28	25.5, 25.7	Electromagnetic Waves & Spectrum	
<b>Week 10</b>	M Oct 31	25.5	Polarization	Make-up Lab/Open Lab
	W Nov 2	15.1-15.4	Waves	
	F Nov 4	15.5-15.6	Intensity	
<b>Week 11</b>	M Nov 7	15.7	Doppler Effect	Lab Exam
	W Nov 9	16.1, 16.6	Superposition & Interference	
	F Nov 11	17.1-17.2	Interference of Light	
<b>Week 12</b>	M Nov 14	17.5	Diffraction of Light	Lab 9: Interference and Diffraction
	W Nov 16	18.1-18.2	Light Rays & Plane Mirrors	
	F Nov 18	18.6	Spherical mirrors	
<b>Week 13</b>	M Nov 21	<b>Exam 3</b>	<b>Exam 3</b>	Lab 10: Reflection and Refraction
	W Nov 23	18.7	Spherical mirrors	
	F Nov 25	<b>Thanksgiving Break</b>		
<b>Week 14</b>	M Nov 28	18.3	Refraction	Lab 11: Lenses
	W Nov 30	18.5	Thin Lenses	
	F Dec 2	18.7	Thin Lenses	
<b>Week 15</b>	M Dec 5	19.1-19.4	Optical Devices	Lab 12: Human Eye
	W Dec 7	29.1-29.3	Atoms and Spectroscopy	
	F Dec 9	29.4	Hydrogen Atom	
<b>Week 16</b>	M Dec 12	29.8	Molecules	No Lab
<b>Final Exam</b>		<b>Wednesday Dec 21</b>	<b>1:00-3:00</b>	