

# PHYS 111-01 CLASSICAL PHYSICS - FALL 2013

- INSTRUCTOR:** Dr. Gerry Ruch  
Office OWS 160E  
651-962-5207  
email: [gtruch@stthomas.edu](mailto:gtruch@stthomas.edu)
- OFFICE HOURS:** Thursday 1:00pm to 2pm or by appointment.
- WEBSITE:** <http://ida.phys.stthomas.edu/Phys111>
- TEXT:** Essential University Physics Second Ed. by Richard Wolfson  
Pearson Addison Wesley Publishers
- COURSE PHILOSOPHY:** Many students think that Physics is difficult. They are correct, but not necessarily because the material itself is difficult. The goal of Physics is to discover fundamental relationships that quantitatively describe physical phenomena. In Physics 111-112, we learn to apply those relationships to problems that we haven't seen before. This is an inherently difficult thing to do. Additionally, physics is a broad topic. Even the subset of physics that we cover in 111 and 112 is large. Therefore, we have to move through the material quite rapidly leaving little time to ruminate. The single most important factor in success with this course is to **keep up with the material**. We typically cover a chapter every two or three days – this may not sound like much, but it is quite intense. Plan to study **3 hours for each class session**. Don't get discouraged – it may sometimes seem overwhelming, but the confidence and problem solving skills that you acquire will be extremely valuable to you in the future.
- SEATING:** The best way to learn physics is by solving physics problems and the best people with whom to solve physics problems are your peers. To encourage you to work with as many of your peers as possible, we are experimenting with the seating arrangement this semester. On the first day of class, you are free to choose your group. After each exam, you will be assigned to a group. Our hope is that by working with more of your classmates throughout the semester, you will experience a broader range of viewpoints and thereby develop better problem solving skills.
- TESTS & QUIZZES (87.5%):** There are six tests and six quizzes. The six tests together are worth 75% of your grade. The six quizzes are worth 12.5% of your grade. Tests and quizzes must be taken at the scheduled time. Missed tests and quizzes can only be made-up at my discretion. The sixth test is the final exam. The final exam will be cumulative over the semester.
- HOMEWORK & LAB (12.5%):** During the semester we will conduct a variety of laboratory exercises and group problems in class. In addition to the in class work, homework problems are assigned on a daily basis. Homework solutions will be posted by the beginning of the class period after they were assigned. All homework will be collected on the day of the exam.
- HONOR CODE:** In the process of conducting scientific work it is essential that an attitude of trust and honesty is common to all participants. In the Physics Department we have an honor code. We expect you to behave honorably in all aspects of your life. This means that we trust you. Because we take this trust seriously, a breach of the trust has severe consequences. Cheating in any form is grounds for dismissal from the course with a grade of F. When working on homework I expect you to communicate with each other – but all tests are to be conducted entirely on your own.
- Much of what you learn in this course will be forgotten over time but the character you forge will be with you forever.*

# PHYS 111-01 CLASSICAL PHYSICS - FALL 2013

## DISABILITIES

Classroom accommodations will be provided for qualified students with documented disabilities. Students are invited to contact the Enhancement Program – Disability Services about accommodations for this course within the first two weeks of the term. Telephone appointments are available to students as needed. Appointments can be made by calling 651-962-6315 or 800-328-6819, extension 6315. You may also make an appointment in person in O’Shaughnessy Educational Center, room 119. For further information, you can locate the Enhancement Program on the web at:

<http://www.stthomas.edu/enhancementprog/>

## IRB Consent

IRB proposal #A10-131-01

We are conducting a study about student misconceptions and outcomes in Physics courses, which will help us improve this course. You were selected as a possible participant because you are enrolled in this course. Please read this statement and ask any questions you may have before agreeing to be in the study. This study is being conducted by faculty in the Physics Department. The purpose of this study is to identify common misconceptions students have coming into the different Physics courses, and to measure the outcomes of the courses in students’ problem solving skills and conceptual understanding of the material. There is no benefit for participating in this study. If you have questions, you may contact the Physics department chair, at 651 962-5214. You may also contact the University of St. Thomas Institutional Review Board at 651 962-5341 with any questions or concerns. Your consent to participate in this study is implied when you complete any assessment, survey or exam in this course, unless you notify the Physics department chair of your desire to be excluded from this research study.

# PHYS 111-01 CLASSICAL PHYSICS - FALL 2013

## GRADING SCALE

A	$93\% \leq X$	C+	$76\% \leq X < 80\%$
A-	$90\% \leq X < 94\%$	C	$70\% \leq X < 76\%$
		C-	$67\% \leq X < 70\%$
B+	$86\% \leq X < 90\%$		
B	$83\% \leq X < 86\%$	D+	$64\% \leq X < 67\%$
B-	$80\% \leq X < 83\%$	D	$58\% \leq X < 64\%$
		D-	$56\% \leq X < 58\%$
		F	$X < 56\%$

## TENTATIVE SCHEDULE

Day	Date	Topic
Wednesday	Sep 4	FCI, Vectors, Vector algebra
Friday	Sep 6	Rates (derivatives), Velocity
<b>Monday</b>	<b>Sep 9</b>	<b>Quiz 1</b> - Rates, Acceleration and Velocity together at last
Wednesday	Sep 11	Kinematics, "Kinematics equations", Trajectories
Friday	Sep 13	Review
<b>Monday</b>	<b>Sep 16</b>	<b>Exam 1 – Chapters 1,2,3: Kinematics</b>
Wednesday	Sep 18	Newton's Laws 1, Forces on a single object
Friday	Sep 20	Newton's Laws 2, Multiple Objects and reaction forces
<b>Monday</b>	<b>Sep 23</b>	<b>Quiz 2</b> , and Newton's Laws 3, Other forces: Springs and Friction
Wednesday	Sep 25	Uniform Circular Motion
Friday	Sep 27	Review
<b>Monday</b>	<b>Sep 30</b>	<b>Exam 2 – Chapters 4,5: Forces</b>
Wednesday	Oct 2	A new idea: Work, The Dot Product, Path Integrals
Friday	Oct 4	The Work Energy Theorem, Kinetic Energy
Monday	Oct 7	Conservative Forces, Path Independence, Potential Energy
<b>Wednesday</b>	<b>Oct 9</b>	<b>QUIZ 3</b> , and Conservation of Energy, Spring Potential
Friday	Oct 11	Conservation of Energy
Monday	Oct 14	Lab
Wednesday	Oct 16	Review
<b>Friday</b>	<b>Oct 18</b>	<b>Exam 3 – Chapters 6,7: Work/Energy</b>
Monday	Oct 21	Center of Mass
Wednesday	Oct 23	Newtons Second Law for Systems
Friday	Oct 25	***** Midterm BREAK *****
<b>Monday</b>	<b>Oct 28</b>	<b>Quiz 4</b> , Collisions and Impulse
Wednesday	Oct 30	Lab
Friday	Nov 1	Review
<b>Monday</b>	<b>Nov 4</b>	<b>Exam 4 – Chapter 9: Systems of Particles</b>
Wednesday	Nov 6	Rotational Kinematics
Friday	Nov 8	Moments of Inertia
Monday	Nov 11	Conservation of Energy
Wednesday	Nov 13	Newton's Second Law -Torque

