PHYS 111-01 CLASSICAL PHYSICS – FALL 2011

INSTRUCTOR: Dr. Gerry Ruch
Office OWS 160E
651-962-5207
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OFFICE HOURS: Tuesday and 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. Physics 111 and 112 are difficult, not so much because the material is difficult, but due to a combination of things. 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 covers a lot of ground. We have to cover all of this ground to prepare our students for future courses in a variety fields. 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.

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 by 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. As an incentive to keep up with homework, tests will include one problem taken directly from the homework or in-class group exercises. 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.

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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.

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GRADING SCALE

A	92% ≤ X	C+	78% ≤ X < 80%
A-	90% ≤ X < 92%	C	68% ≤ X < 78%
		C-	66% ≤ X < 68%
B+	88% ≤ X < 90%		
B	82% ≤ X < 88%	D+	64% ≤ X < 66%
B-	80% ≤ X < 82%	D	58% ≤ X < 64%
		D-	56% ≤ X < 58%
		F	X < 56%

TENTATIVE SCHEDULE

Day	Date	Topic
Wednesday	Sep 7	FCI, Vectors, Vector algebra
Friday	Sep 9	Rates (derivatives), Velocity
Monday	**Sep 12**	**Quiz 1** - Rates, Acceleration and Velocity together at last
Wednesday	Sep 14	Kinematics, "Kinematics equations", Trajectories
Friday	Sep 16	Review
Monday	**Sep 19**	**Exam 1 – Chapters 1,2,3: Kinematics**
Wednesday	Sep 21	Newton's Laws 1, Forces on a single object
Friday	Sep 23	Newton's Laws 2, Multiple Objects and reaction forces
Monday	**Sep 26**	**Quiz 2,** and Newton's Laws 3, Other forces: Springs and Friction
Wednesday	Sep 28	Uniform Circular Motion
Friday	Sep 30	Review
Monday	**Oct 3**	**Exam 2 – Chapters 4,5: Dynamics**
Wednesday	Oct 5	A new idea: Work, The Dot Product, Path Integrals
Friday	Oct 7	The Work Energy Theorem, Kinetic Energy
Monday	Oct 10	Conservative Forces, Path Independence, Potential Energy
Wednesday	**Oct 12**	**QUIZ 3**, and Conservation of Energy, Spring Potential
Friday	Oct 14	Conservation of Energy
Monday	Oct 17	Lab
Wednesday	Oct 19	Review
Friday	**Oct 21**	**Exam 3 – Chapters 6,7: Work/Energy**
Monday	Oct 24	Center of Mass
Wednesday	Oct 26	Newtons Second Law for Systems
Friday	**Oct 28**	**Midterm Break**
Monday	**Oct 31**	**Quiz 4** Collisions and Impulse
Wednesday	Nov 2	Lab
Friday	Nov 4	Review
Monday	**Nov 7**	**Exam 4 – Chapter 9: Systems of Particles**
Wednesday	Nov 9	Rotational Kinematics
Friday	Nov 11	Moments of Inertia

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Tentative Schedule - Continued

Day	Date	Topic
Monday	Nov 14	Conservation of Energy
Wednesday	Nov 16	Newton's Second Law -Torque
Friday	**Nov 18**	**Quiz 5**, More Torque
Monday	Nov 21	Conservation of Angular Momentum
Wednesday	Nov 23	Lab – Barney's Beneficial Bearing Boutique
Friday	**Nov 25**	**Thanksgiving**
Monday	Nov 28	review
Wednesday	**Nov 30**	**Exam 5 – Chapters 10,11,12: Rotation/Statics**
Friday	Dec 2	The Simple Harmonic Oscillator (SHO)
Monday	Dec 5	Oscillators and Springs
Wednesday	**Dec 7**	**Quiz 6,** Pendulums
Friday	Dec 9	The SHO and Energy
Monday	Dec 12	Damped Oscillators
Wednesday	Dec 14	Review
Tuesday	**Dec 13**	**Exam 6 – Chapter 13: Oscillations (8:00am to 10:00am)**