PHYSICS 218: Mechanics (Spring 2006)

Corequisites MATH 151. You are expected to have a working knowledge of plane geometry, trigonometry, and algebra. As the semester progresses you will also be expected to have a **working knowledge** of derivatives and integrals, and be proficient in the use of vectors (addition, subtraction, dot and cross products).

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Homepage http://physics218.physics.tamu.edu for general information
http://faculty.physics.tamu.edu/toback/218 for a better source of information and handouts.

Textbooks "University Physics" 11^{th} ed. by Young and Freedman
Visual Physics 218 Lab Manuals are available at http://visual.physics.tamu.edu/vp218/. Please download and print them before each lab. No manual is necessary for the 1st week.

Visual Physics **Visual Physics** is the Recitation and Laboratory component of Physics 218. It is held in Heldenfels 218, see http://visual.physics.tamu.edu/vp218/ for schedule and other information. No Lab sessions and Reports will be dropped. Attendance is mandatory the first week of class. **Students seeking lab credit from a previous semester should contact me immediately; a grade of 80 or better is required**. Students obtaining lab credit do not have to repeat the Lab but are required to attend Recitation and take weekly quizzes.

Homework and Quizzes **(a) Homework assignments are for you to practice problem-solving techniques.** There are physics homework, homework quizzes and math quizzes which are a required part of the course. You may take as many tries on each as you like, but a perfect score on each is required to pass the course. All are to be turned in/graded by **WebCT** at http://elearning.tamu.edu/, and students should refer immediately after the first lecture to the handouts which can be found at http://faculty.physics.tamu.edu/toback/WebCT/ for more instructions. **(b)** You are expected to work the homework problems each week **before** recitation and there will be a quiz each week in recitation to test your ability to work one (typically the hardest) of the assigned homework problems. After recitation, you will turn in your weekly homework assignments on WebCT. **(c)** You are required to read the material for each class **before** lecture. There will be a short set of **reading assignment questions** for each chapter. Written answers must be turned in at the beginning of the lecture at which they are due

Exams **There will be three midterm exams and one final exam: (a)** Each midterm exam will be given during the regular classroom time and will last 75 minutes, while the final exam is comprehensive and lasts for 2 hours. Each exam will generally consist of problems similar in content and difficulty to the homework. The entire solution will be graded and partial credit given if merited. Your work must show the steps toward the solution; the answer alone is not sufficient. The grader will judge your use of physics in arriving at the solution. Exams may also include examples worked in the lecture but not appearing in the text nor assigned as problems. **(b)** Formula sheets will be provided for each exam and the final. Copies of each are on my web site. **(c)** You will need to bring a calculator to the exams. **(d)** If you miss an exam due to an **authorized excused absence** as outlined in the *University Regulations*, then you must contact me no later than the next class meeting following the missed exam to arrange for a makeup exam. There will be a **single course-wide makeup exam** for those missing an exam. This makeup exam will be written by a committee of Physics 218 lecturers and administered outside normal class time within 7-10 class days following the missed exam. Note: Very few conditions qualify as an authorized excused absence, so avoid missing an exam at all costs. Students typically do worse on makeups than on regular exams. **(e)** You must bring your student ID with you to all exams for identification purposes. **(f)** If you get perfect scores (as required) on all of the math quizzes, associated homeworks and homework quizzes, a mini-practice exam will become available to you to help study for each exam. You may take each mini-practice exam as many times as you like. Students getting a perfect score on it, before the in-class exam, will receive 5 bonus points on their exam

Course Grade

The total course grade consists of 750 points distributed as follows

	Points
3 Midterm Exams	275 (75, 100, 100)
Final Exam	200
Laboratory, Reading Quizzes and Recitation Quizzes	200
Homework, Homework Quizzes and Math Quizzes	75
Total	750

Final grades may be **curved** at the end of the semester depending on the conditions of the exams. In no case will a curve result in a lower letter grade than the standard 90-100% A, 80-89% B, 70-79% C, 60-69% D, and <60% F. **NOTE:** If your final exam grade is higher than your 3-exam average, then the final will count 275/750 points toward your final grade and your midterm exam average will count just 200/750. You must pass both the lecture (3 midterm exams, final exam, recitation & lecture quizzes), Homework (100% on all homeworks, homework quizzes and Math Quizzes) and laboratory ($\geq$70%) parts of the course **separately** in order to pass the course.

ADA Policy The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact the Department of Student Life, Services for Students with Disabilities, in Room 126 of the Koldus Building or call 845-1637.

Honor Code The Aggie Honor Code states, "An Aggie does not lie, cheat, or steal or tolerate those who do." Further information regarding the Honor Council Rules and Procedures may be found on the web at http://www.tamu.edu/aggiehonor .

Tentative Class/Exam Schedule

Week	Chapters (sections) Covered in Lecture	Notes
Jan 16 - 20	1 (1-10)	Introduction; vectors
	No classes 1/16/06	Martin Luther King Jr. Day
Jan 23 - 27	2 (1-6)	Motion along a straight line
Jan 30 - Feb 3	3 (1-5)	Motion in two or three dimensions
Feb 6 - 10	4 (1-6)	Newton's laws of motion
Feb 13 - 17	5 (1-4)	Further application of Newton's laws
	Exam 1 (Chap. 1-3)	
Feb 20 - 24	6 (1-4), 7(1-5)	Work & kinetic energy
Feb 27 - Mar 3	6 (1-4), 7(1-5) cont...	Potential energy
		Force and energy
Mar 6 - 10	8 (1,5)	Momentum and collisions
Mar 13 - 17	Spring Break	No classes
Mar 20 - 24	9 (1-5)	Rotation of rigid bodies
	Exam 2 (Chap. 4-7)	
Mar 27 - Mar 31	9 and 10 (1-7)	Torque
Apr 3 - 7	9 and 10 (1-7) cont...	Dynamics of rotational motion
	11 (1-3)	Static equilibrium
	Last day to drop courses with no penalty	(Q-drop)
Apr 10 - 14	12 (1-5)	Gravitation
	13 (1-8)	Periodic motion
Apr 17 - 21	13 (1-8) cont...	Periodic motion
	Exam 3 (Chap. 8-11)	
	April 21, no classes after 5PM	Muster
Apr 24 - 28	15 (1-8)	Mechanical waves

⋆ **May 8th (Mon), 1-3 PM: Final Exam (Chap. 1-13, 15)**

Homework Assignments

As described above, each week there is a set of homework problems which are assigned. You are expected to work the homework problems each week **before** recitation and there will be a quiz each week in recitation to test your ability to work one (typically the hardest) of the assigned homework problems. After recitation, you will turn in your weekly homework assignments on WebCT. For more instructions on how to turn in your homework on WebCT see: http://faculty.physics.tamu.edu/toback/WebCT/. There are quizzes for each homework set on WebCT as well. If you get perfect scores on all of the math quizzes, associated homeworks and homework quizzes, a mini-practice exam will become available to you to help study for each exam. You may take each mini-practice exam as many times as you like. Students getting a perfect score on it, before the in-class exam, will receive 5 bonus points on their exam. The assigned homework problems are:

- Math quizzes (on WebCT)
- **Y&F Chap 1:** 5,10,13,32,35,40,41,47,50,52,56,72,74,89
- **Y&F Chap 2:** 4,9,11,18,21,36,40,49,50,61,76,80,83,92
- **Y&F Chap 3:** 9,10,18,32,33,38,40,47,52,54,64,81
- **Y&F Chap 4:** 12,14,22,24,31,35,37,44
- **Y&F Chap 5:** 3,8,13,15,30,31,44,49,56,62,84,89,90,111,113,114,115
- **Y&F Chap 6:** 3,18,24,27,34,39,48,61,62,69,70,76,81,82
- **Y&F Chap 7:** 9,14,16,18,29,38,42,46,54,56,62,66,67,69,74
- **Y&F Chap 8:** 4,8,16,27,34,36,40,43,46,47,61,70,94
- **Y&F Chap 9:** 1,6,10,19,25,30,36,37,47,53,85,86
- **Y&F Chap 10:** 1,2,5,8,13,19,22,27,29,34,35,39,41,63,70,91
- **Y&F Chap 11:** 7,10,11,13,14,18,41,42,52,66,73
- **Y&F Chap 12:** 3,5,16,24,29,53,73,75
- **Y&F Chap 13:** 1,2,7,8,12,13,19,27,32,36,41,43,48,49,51,54,63,66,69,88,90
- **Y&F Chap 15:** 1,4,6,7,10,15,20,26,28,31,37,39,43,47,48,49

Numerical answers to the odd-numbered problems may be found at the end of the book; even-numbered problem answers may be found online via http://physics218.physics.tamu.edu