Welcome

Welcome to Physics 218! This is the 1st semester of an introductory course in Physics. Physics is the basis of modern science and technology. Mechanics and Astronomy in particular were the starting points for a mathematical description of nature several hundred years ago. Whether you want to calculate the trajectory of a spaceship to Mars, construct a bridge that does not collapse, or understand why a baseball curves, you need Mechanics! I cannot promise that you are ready to send a ship to Mars after you passed this course, but you will have acquired some very useful knowledge about nature that will help you in your future career as an engineer or scientist. This introductory physics class will also teach you some basic skills needed in all fields of science and engineering. This includes problem solving strategies, analytic thinking, and the ability to contribute in a scientific discussion.

Outcomes: By the end of the course, you will be able to describe motion of a body, which means you will be able to

- Translate a problem from plain English into Physics language
- Write the equations of motion:
  - in linear coordinates
  - in polar coordinates
  - for:
    - linear and
    - circular motion
- Solve equations (and systems of equations) of motion for 1-step and multiple-step problems
- Recognize and state initial (and final) conditions
- Draw free body diagrams
- Write and apply the Newton’s laws
- Find the work done on a body and work done by a force, and distinguish them
- Understand and use work-energy theorem
- Write energy conservation equations
- Distinguish when and what energy is conserved
- Write momentum conservation equations
- Write and solve equations for torques. (rotational analogue of Newton’s law)
- Find the center of mass and solve problems using it.
- Write two equilibrium conditions (for forces and torques)
- Write equations of harmonic motion; recognize the initial conditions.

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.

Instructor: Prof. Igor V. Roshchin  
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Phone: 979-845-8520  
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Office hours: TBA, and by appointment (no office hours February 21-March 4)

Web Page: http://faculty.physics.tamu.edu/roshchin/218  
This page will be updated often. It is student’s responsibility to check it often.
Required Material:


Other: iclicker needs to be purchased and requires registration online (see below).

Mastering Physics packet to access online homework, more details below.

A simple scientific calculator (capable of calculating arithmetic and trigonometric functions).

iClicker:

- You should purchase an iclicker at a book store. Note the brand! (also spelled as “i>clicker”)
- You will need to register it (one free registration does it for all classes you may ever need): [http://www.iclicker.com/support/registeryourclicker/](http://www.iclicker.com/support/registeryourclicker/)
  
  Important: Enter your UIN as a student ID during the registration.
- Any student who has previously purchased a competing remote is eligible for a $10 rebate. By going to [http://www.iclicker.com/customers/education/TexasAMU](http://www.iclicker.com/customers/education/TexasAMU), you can get more information on how to get the rebate.
- For additional help on how to register your clicker or how to use iclickers, see instructions linked from the course website.


Final exam: May 8, (Tuesday), 3:30pm – 5:30 p.m..

Class times: (check your schedule in Howdy!)

<table>
<thead>
<tr>
<th>Room in MPHY</th>
<th>Sections</th>
<th>Lectures:</th>
<th>Monday, Wednesday, 4:10pm–5:25pm</th>
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<tr>
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<td>203</td>
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<tr>
<td>Recitations:</td>
<td>Thursday, 11:10 am-12:00 pm</td>
<td>335</td>
<td>Thursday, 02:20 pm-03:10 pm</td>
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<td></td>
<td>Thursday, 04:55 pm-05:45 pm</td>
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<td>Monday, 12:40 pm-01:30 pm</td>
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<td></td>
<td>Monday, 07:10 pm-08:00 pm</td>
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<td>Monday, 08:10 pm-10:00 pm</td>
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<tr>
<td>Labs and extended recitations:</td>
<td>Thursday, 12:10pm-02:00 pm</td>
<td>234</td>
<td>Thursday, 03:20 pm-05:10 pm</td>
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<tr>
<td></td>
<td>Thursday, 05:55 pm-07:45 pm</td>
<td></td>
<td>Monday, 01:40 pm-03:30 pm</td>
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Class participation: (a) You have to be prepared for each class!

(b) If you miss a class due to an authorized excused absence as outlined in the University student rules ( [http://student-rules.tamu.edu/rule07](http://student-rules.tamu.edu/rule07) ), you should contact the instructor no later than the next class meeting following the missed class.

(c) If you missed the class for any reason, it is your responsibility to find out about the material discussed in class, including the homework assignments.

Recitation/Lab: Recitations and Labs start the week of January 23.

No Lab sessions or Reports will be dropped.

If you miss a regularly scheduled laboratory for valid reasons, it is your responsibility to inform your TA immediately and promptly make suitable arrangements. Any missed laboratory that is not remedied will count as a zero towards your final laboratory grade.

Even though the labs worth 6% of your final grade, you MUST achieve a 70% or better grade in the laboratory to pass the course. *Note that if you miss two labs without an excuse, you will not be able to make them up and you will have failed the course.*
Students retaking the course should contact me and Physics Front Office (window at the entrance on the 1st floor of the MPHY building) immediately in order to get credit for Lab if passed in a previous semester with a grade of 80 or better. If the permission is granted, these students will not have to repeat the Labs but they will be required to attend Recitations (including extended ones) and take weekly quizzes.

Homework: Homework assignments will be done online via Mastering Physics http://www.masteringphysics.com. If you have purchased a new book, the Mastering Physics packet is likely included with the book. If you have purchased a used book, you can buy the Mastering Physics packet at the bookstore or you can sign up online with a credit card. You will have to log in and enroll to use this program, see the instructions below.

They are usually due on Monday, 8am, unless specified otherwise.

Homework assignments are for you to practice problem-solving techniques and are critical for your success. Homework assignments (including their due dates, etc.) will be listed in Mastering Physics when you signed up and logged in.

Registration in Mastering Physics: The class ID is ROSHCHIN2012SPRING. When registering, you should use your FULL official university name (as it appears on your University ID card or on your class registration) and Last 4 digits of your UIN as ID. (TAMU zip code is 77843).

Homework score requirement: You will need to obtain a score of at least 70% average on the homework section of the class in order to pass this class (note that multiple attempts or late submission will lead to diminished or no score credit). Less than 70% average automatically triggers a failing grade of F in this class.

Late assignments: Late submission of the homework in Mastering Physics results in 10%-per-day late penalty. (It means that a homework turned in 3 days late will not get more than 70% score.) As a rule, all other late assignments will not be accepted except in the case of University excused absences.

Quizzes: Quizzes will be given during Recitations. Typically, each quiz will test your ability to work one of the assigned homework problems. You are expected to come to each recitation with the majority of the homework completed. Occasionally, a few quizzes may be given during lectures.

Lectures: You will be required to study the material of each chapter in your textbook before it is covered in the lecture. To facilitate this, there will be graded Lecture Quizzes covering the material of upcoming lecture, typically at the beginning of each lecture (you will need to have a registered “iclicker” to submit your answers). These assignments will typically be 1-2 multiple choice questions or short problems on the material to be covered in the lecture. Hints on the content of the quizzes may be announced at one of the previous lectures. Your quiz scores will contribute to your final grade. Additionally, there may be other unannounced pop-quizzes (you will need to have a registered “iclicker” to submit your answers) during the lectures, some of which may contribute to your final grade. For each quiz, participation points will be given. As a rule, no points will be given without answers submitted using clickers.

Exams: There will be three midterm exams and one final exam.
(a) 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 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) You must bring your student ID with you to all exams for identification purposes.
(c) Formula sheets will be provided for each exam and the final.
(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 make-up exam. The make-up exam will be 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.

Exam Grade: Exam grades may be curved depending on special conditions of a particular exam. 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.

Course Grade: The course grade will be determined from the various components of the course in the following way:

- Final: 27%
- 3 mid-term Exams (each): 12%
- Lecture Quizzes: 10%
- Homeworks: 10%
- Recitation Quizzes: 10%
- Laboratory: 7%

If your final exam grade is higher than your 3-exam average, then the final will count 36% toward
your final grade and each of your midterm exam will count just 9% (27% combined).

NOTE: You must pass three parts of this course separately in order to pass the course:
- Lectures (3 midterm exams, final exam, recitation, in-class “clicker” quizzes);
- Homework assignments in which you should obtain the final average of 70% or higher (roughly
speaking you need to get 70% of homework problems right);
- Laboratory (with a minimum score of 70%).

Your Responsibilities: Texas A&M University assumes that all students enroll in its programs with a serious
learning purpose and expects them to be responsible individuals who demand of themselves high
standards of honesty and personal conduct. All students are expected to behave at all times with
respect and courtesy toward their fellow students and instructors and are to have the highest standards
of honesty and integrity in their academic performance. Any behavior which disrupts the classroom
learning environment or any attempt to present work that the student has not actually prepared as
their own work, or to pass an examination by improper means, is regarded as a serious offense. The
minimum penalty for such an offense is a failing grade for this course. Aiding and abetting the above
behavior is also considered a serious offense resulting in equally severe penalties.

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 Disability Services, in Cain Hall, Room B118, or call
979-845-1637. For additional information visit http://disability.tamu.edu.

Academic Integrity: 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.