Lecture 1: Introduction

Dr. Igor Roshchin
Check, check...

Howdy!

Are you in the right class?

- *Introduction to Classical Mechanics (calculus based)*
- Physics 218
- Sections 513-517 (know your section!)
Getting started...

- I like enjoying class, so I’ll work hard for this to be fun
- I want everyone to do well and get good grades
- I’ll also teach you how to get good grades (Still... it’s a lot of work)
- We’ll take a joke-break during class, and I’ll show funny images or short video clips at the beginning
  - Please send me new material and I’ll do my best to use it in class
Start with our thought for the day...

What it's like to sit in an physics lecture...
Overview of Today’s Class

• Structure of the class

• Organizational issues
  - Instructors, textbooks, meeting times

• Course requirements and grading

• Practical details
  - Exams
  - Homework and quizzes
  - Reading assignments
  - Recitations
Big Picture

• Textbook
  - "University Physics", 13th ed. by Young and Freedman
  - There is both a recitation and a laboratory for this course
  - First lab meeting is next week!
  - Reading BEFORE lab!
Physics 218: Basics

• **Content:**
  - Introduction to Classical Mechanics
  - Concepts, Problem Solving, and Labs
  - Requires high school level calculus

• **Structure:**
  - Lecture (2 per week) - MPHU 203 (here)
  - Recitation (1 per week) - MPHU 335
  - Lab (1 per week) - MPHU 234
Instructors

• Lectures (MPHY 203, M,W, 4:10pm):
  - Prof. Igor Roshchin (me)
  - Email: roshchin@physics.tamu.edu
  - MPHY 459, 979-845-8520 (will not respond to voice messages - use e-mail instead)
  - Office hours: (subject to change!):
    Wed, 2-3pm, and by appointment

• Recitation and labs
  - TA’s will provide contact info at your first meeting next week (remind them!)
Requirements (textbooks)

• **Lectures & Recitations:**
  - "University Physics", 13th ed. by Hugh D. Young and Roger A. Freedman (Addison Wesley)

• **Lab:**

• **Other requirements:**
  - ... (next slide)
Requirements (cont.)

• iClicker2
• Mastering Physics
  - Make sure you get MasteringPhysics kit with it for online homework
  - Otherwise buy one separately.
• May need a simple scientific calculator.
Online Info about PHYS-218

• **My web-page:**
  - [http://faculty.physics.tamu.edu/roshchin/218/](http://faculty.physics.tamu.edu/roshchin/218/)
  - Includes syllabus, schedules, due dates, homework info, these notes and all future announcements

• **PHYS-218 on eLearning.tamu.edu**
  - [http://eLearning.tamu.edu/](http://eLearning.tamu.edu/)
Course Grade

- Grading will be based on the following scales:
  - Final: 27%
  - 3 in-class midterm Exams*: 12% each
  - HW: 10%
  - lecture quizzes: 10%
  - recitation quizzes: 10%
  - Laboratory: 7%

- I will “curve” all scores AFTER the final, but will give you feedback along the way

Most of your grade will be based on your ability to solve problems

* See the schedule in Howdy
Problem Solving
Problem Solving

• The heart of this course is problem solving
• One of the great things about the textbook is the problems
  - They are ALL important
  - Spend your time learning how to solve all of them!
  - They’re hard, but they’re worth it
• Your reward for doing them? You’ll
  - Do well in the course
  - Realize why physics is so interesting
  - Realize why engineering makes you take this course in the first place!
Problem Solving Feedback

This course is designed to help you become an excellent problem solver and give you lots of feedback and help along the way.

Mastering Physics, Recitation and Exams will provide feedback
Exams

• 3 Exams and a Final
• Closed book (formula sheet will be provided to you during the exam)
• No numbers! In general the problems will be formula solutions with variables
• Problems will be reasonably similar in difficulty and complexity to those on homework and recitation
In-Class Quizzes

• Typically, several quick quizzes checking your understanding of the material during lecture using “iclicker2’s”:
  - Some will be for grade
  - Some will be anonymous (no grade)

• Outcomes:
  - Right answer: 3 points
  - Wrong answer: 0 points
  - Answer: “Don’t know”: 1 participation point.
Lecture Assignments/Quizzes

• You will have to routinely read material of each new Chapter before lecture!
  - Think about Discussion questions (end of chapter)
  - I will try to give hints

• In-class quiz at the beginning of lectures using “clickers”:
  - 1-2 multiple choice questions about the material of the lecture
    • Usually will check what you were supposed to read (and understand!) in the textbook

• Pop-up quizzes in the middle of lectures
  - Quizzes are graded (except anonymous) and contribute to your final grade
eLearning/
Vista/Blackboard/WebCT

• You scores:
  - eLearning.tamu.edu

• Possibly: special assignments, quizzes, etc.
Are you ready? (math)

• Studies show that you need to be good at the math to solve physics problems
• Are you ready for this course?
• Math quizzes: Posted online.
  Take (finish!) your math quizzes before Monday
  - Time them! (10 min each); will take at least an hour
  - Bring paper and a pencil
• If less than 9(10) correct answers within 10 minutes, - you NEED HELP!
Howdy Prof. Roshchin,

I believe I made the right decision in dropping your class last semester and waiting for the Fall to take Phys 218. I have about an 85 average in my current class. […] I believe that if I had stayed in your class without first having taken calculus, I would not be able to pass the class. I would recommend students who have not taken calculus before […] to wait a semester to take the course. I would be much better prepared to handle the course this semester, because I am much more comfortable with derivatives and all the rest included in math 151.

Hope this was helpful and please let me know if anything is unclear in my response!

Sincerely,
HW and Recitation Problems

• **Homework:** Will use Mastering Physics to give more feedback

• **Recitation quizzes:** Work with others to solidify your understanding of the material

• **Lecture quizzes:** If you have problems answering them right, you didn’t really understand the chapter you read.
Homework - Ground Rules

• HW assignments will be turned in on Mastering Physics (MP):
  - You have to do all chapter problems! - *in your notebook.* Solve the problems *symbolically* (i.e. without plugging in the numbers), obtain the final equation.
  - Once you are ready, have your calculator ready and start your submission on MP. You will see problems and exercises that you turn in.
  - The deadline for submission (Monday 8am, usually)

• You have to achieve *100%* at least *70%* average on all assignments to pass the course!

• Some HW problems will be in recitation or lecture quizzes or exams.
Homework: MasteringPhysics

- Homework, will all be turned in using MasteringPhysics:
  - www.masteringphysics.com

- Go there and register, you will need:
  - Course ID:
    - ROSHCHIN2012SPRING
  - School Zip Code: 77843
  - Your name **exactly** as on your official university paperwork - **super important!!!**
  - Valid email address
  - ID: use the last 4 (!) digits of your UIN
  - Code from your MasteringPhysics package
    - or buy one online
Homework - Grading

• Your score for HW will be affected by:
  - Late submissions: 10% off for each day past due
    • That means 3 days late with any single homework and you may fail the entire course!
      - Only very serious circumstances will qualify for extensions
  - Incorrect answer submitted: you will have other attempts, but the score will be diminished by
    • 100% for true/false
    • \( \frac{100\%}{(# \text{ of options} - 1)} \) - for multiple choice
    • 3% for other types (until all possible answers are exhausted)
  - You can request hints, but loose 3% for each hint
Recitation Quizzes

• You have to do most of the work on your HW before the recitation
• At recitations, you will have a chance to ask questions about the HW problems.
• Your instructors will walk you through 2-3 problems that attracted most questions
• In the first or last ~10 minutes you will take a quiz
  - One of the problems in the current HW (typically one of the difficult ones)
Labs

- Lab policies are uniform and set by the Department.
- Implementation is in the hands of your TAs and they will inform you of all the details at your first session.
  - As a general rule, no labs are to be dropped and you need an officially recognized excuse to re-do a lab.
  - You need to get at least 70% for labs not to fail the entire course.
- If you are re-taking this course and have received 80+% for labs on your last attempt, I may accept your old score.
  - Several important conditions apply!
Labs

• If you are re-taking this course and have received 80+% for labs on your last attempt, I may accept your old score.
  - You need to submit a written request NOW (talk to people at Physics Front Office Window, 1st floor of MPHY)
  - Even if approved, you still need to attend recitations (including extended and reviews – when no labs), do quizzes, etc. !!!
  - If you qualify, I will offer you a choice:
    • I am very smart and also brave: I want to take the lab again to learn more, and use the resulting score.
    • I am smart to take the lab again, but would like the best of the two scores applied.
    • I am too busy (or lazy) and want old lab score credited
LAB SCORE TRANSFER

TEXAS A&M UNIVERSITY
COLLEGE OF SCIENCE
DEPARTMENT OF PHYSICS

LAB GRADE

TO: ________________________________

(CURRENT PROFESSOR)

STUDENT'S NAME: ____________________________

STUDENT ID#: ____________________________

PREV. SEM./YEAR: ________ COURSE: ________ PREV. PROF. ____________________________

*Please initial that you understand that recitation attendance is required. ________

*Email address: ____________________________

GRADE: ________

OFFICE USE ONLY!

SIGNED BY: ____________________________ DATE: ____________________________
“iClicker2”

- A system that consists of a receiver (for me) and “iclicker2’s” (for you, looks like a TV remote control)
  - Allows to do quick in-class quizzes in real time
- Purchase an “iclicker2” in bookstore
  - If you are required to have one for your other classes (many classes require them), don’t by the second one. You only need one iclicker for all your TAMU classes!
  - Backward compatible with “iclicker”
  - Not compatible with other brands (e.g. CPS)
- Go to [http://www.iclicker.com](http://www.iclicker.com)
  Use your UIN and FULL name to register.
What is Mike’s Name?

A. Mike (3)
B. James (0)
C. Bob (0)
D. Dave (0)
E. I don’t know (1)
Extra credit

- There will be opportunities for extra credit
  - Practice mini-exam
    - Have to complete all prior HWs in order to do it.
  - Other possibilities as they occur
Extra credit

- **Online mini-practice exams** will be made available to you to help study for the in-class exams.

- You will **EARN THE RIGHT** to get 5 bonus points on the exam **if before** the in-class exam you:
  - Have turned in all previous HW assignments with >70% average
  - Turn in the mini-practice exam with a score of >80%

- **Observation**: students who get extra credit due to the mini-practice exam typically do 30 or more points better on the exams than students who don’t take it.
Exam 1 Results from Earlier Semester

- Overall:
  Mean = 52/75 or ~70%

- Green: People who took the mini-practice exam:
  Mean = 56(+5)/75 or ~80%

- Red: People who didn't:
  Mean = 38/75 or ~50%

Advice: Test yourself BEFORE the exam. How? Do the mini-practice exam by yourself with all books and notes closed.

![Bar graph showing exam scores]
How to Pass This Course

In order to pass this course you must:

• Take all the exams and the final
  AND

• Pass the Lab part with >70%
  AND

• Complete each homework assignment with a minimum of 70%
  AND

• Have your total score above the F range (60%)
How to Fail This Course

In order to fail this course you should:

• **Miss one of the exams or the final**

  OR

• **Pass the Lab part with <70% or fail it otherwise**

  OR

• **Fail to get 70% average of the homework assignments**

  OR

• **Have your total score in the F range (<60%)**
How to succeed in this class

• Make sure your math skills are appropriate for this course
  - Take math quizzes from my web-site
  - If those are really hard for you, you may be behind already

• The heart of this course is Problem Solving
  - Not going to be “guess the formula of the two possible ones, plug the numbers and circle correct answer”
  - The key is understanding physics behind the problem, not juggling formulas till you get the answer right
  - Need to spend time learning how to solve the hard problems to do well in this course
  - Homeworks: prepare to spend several (read: many!) hours!
  - Everything in this course is designed to help you become an excellent problem solver and give you lots of feedback and help along the way
Tutoring and Extra Help etc.

- Buying solutions to HW problems will almost certainly lead to failure
- Tutoring:
  - You don’t want the kind of tutoring when they solve HW problems for you
  - A good tutor:
    - will work with you one-on-one, identify concepts you do not understand and help you get them right
    - will use example problems to make sure your line of thought and understanding are correct,
    - will not solve your HW assignments for you
- I guarantee that if you successfully struggle through the HW problems by yourself, you will do very well in the exams
Aggie Honor Code

- 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.
Organizational Issues

• **Contact me in advance if:**
  - You are going to miss an exam (better have a very good reason for that)
  - You will be late with the HW or any other assignment (again, must have a very good and documented reason)

• **Contact me as soon as possible if you could not do it before it happened**

• **It will be much harder for you to obtain extensions or permissions for make-up after the fact**

• **These lecture notes will be stored on**
  [http://faculty.physics.tamu.edu/roshchin/218](http://faculty.physics.tamu.edu/roshchin/218)
  - Check in a couple of days from today
  - Other course information and announcements.

• **Take your own notes!** - Some lecture notes - may not be on the web.
Handouts on my WebSite

http://faculty.physics.tamu.edu/roshchin/218

By the next class you need to read:

• All instructions
• Frequently Asked Questions (FAQ)

You can also find:

• Exam schedule
• Lecture notes
Any Questions?

I’ve compiled a list of frequently asked question and their answers and put it on my web site.

You should read that before next class.

There might be a quiz...
Time Diagram

• **Week 1 (now):**
  - Homework due: none
    • Start: (before Thursday): [Preliminary Course Materials](#)
  - Lecture: Introduction
  - Recitation and Labs: no

• **Week 2:**
  - Homework due (Next Monday): [Mastering Physics Introduction and Math Review](#).
  - Lecture: Chapter 1, 2
  - Recitation: Chapter 1 (*may incl. quiz)

• **Week 3:**
  - Homework due (Monday): Chapter 1
  - Lecture: Chapter 3
  - Recitation: Chapter 2 (*may incl. quiz)

• Etc..
Next Time:

Next lecture:

• **Read Chapter 1**
  - There will be a quiz.
  - Based on Discussion questions (Q1.1 - Q1.26),
  - Hint: special attention to: Q1.5, 10, 13-22, 24-26

• **We’ll cover chapter 1 and may start 2**

For Next Wednesday:

• **Read Chapter 2**
  - There will be a quiz.
Checklist for next time:

Today:
1. Buy iclicker2
2. Make sure your NEO email is working and set up properly (“From”).

Read before next class/lab:
3. Laboratory Manual: Lab 3 and go to your Recitation/Lab next week.
5. Read the Frequently Asked Questions (including Case Studies).

Due Monday 8am:
6. Complete “Introduction” (warm-up assignment) and “Math Review” in Mastering Physics.
7. Complete your math quizzes (course website).

Can’t remember all this? A copy of all my lecture notes are on my website.