Introduction

- Structure of a large (introductory) course in our department
  - Pre-Med Introductory Physics 121/123, 122/124
  - Pre-Sci/Eng Introductory Physics: Three levels, four couplings
    - Physics 125, 126, 127 + Labs Phy 133, 134
    - Physics 131, 132 + Labs Phy 133, 134
    - Studio Physics 131/133 & 132/134
    - Honors Physics 141, 142 + Labs Phy 133, 134

- Laboratory Teaching Assistant’s duties
  - What, when, how
  - Grading practices for labs
  - Help room, proctoring & grading exams
Lectures, Laboratory Sections & Recitations

- **Lectures:** All students meet together in a large class room
  - Principle instructor: Physics & Astronomy (P&A) Faculty

- **Recitation Sections or Workshops:**
  - Recitation Sections: (Smaller groups of ~24)
    - Meet with Physics & Astronomy faculty for about 1 hr per week
  - Workshops: Held in regular class room hours
    - Use of clickers in class rooms or special 1 hr/week

**Students need to take:**

- **Laboratory courses:** Class divided in to groups of ~24-30
  - **YOU will meet these sections weekly**
  - Each Lab Experiment: ~2 - 2.5 hrs per week
  - You will supervise experiments, help students and grade them
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Labs

- You will be assigned two Lab Sections in any of these labs with the principle instructor and others in the department office.
- Labs run from Monday-Thursday.
- Friday is the Change Over Day: Lab director Dr. Bent Nielsen will set up experiments for the following week.
- Friday is also YOUR DAY TO TRY OUT THE LABS:
  - Typically by 12:00 PM labs for following week are ready.
  - All TAs associated with labs will meet in the lab and perform the experiment, understand the issues and discuss the grading criteria with each other (and, when necessary, the principle instructor).
  - Each one of you will get to lead the discussions through the semester - lead TA shows up earlier to exercise the lab and prepare quiz questions.
Pre-Med: PHY 123/124 grade is part of PHY121/122 grade

Scientists & Engineers: PHY 133/134 are letter graded:

Grades will be based on:

1. **An Interview:** Lab TAs interview the students before the lab session starts and decide whether the student came prepared, and has understood what he/she is doing in the lab -> QUIZ

2. **Lab Report:** Students write a lab report and submit it to you for grading
Grading the Labs: Lab Report Method

- This applies to PHY123, PHY124, PHY133, and PHY134 !!!
- Title sheet
  - Name, lab section, TA name, partner name(s), name of experiment, date
- Introduction [10 points]
  - In their own words, brief description of the experiment
  - How to do it with a short sketch and short text
- Procedure [20 points]
  - Describe briefly what has been done during the session
- Data sheet [20 points]
  - Include data taken which has been analyzed, clear and neat
- Analysis of data [40 points]
  - Graphs, calculations, uncertainty estimates
- Conclusions [10 points]
  - Brief summary of results: physics implied by the data
  - Any caveats or comments
Grading the Labs: Lab Report Method

- Convey the message: quality is what counts, not quantity
- Grading philosophy
  1. Start from zero and add points
  2. Start from 100 and reduce points
- “1.” is better: provide the student with a set of tasks and add points for each task performed properly
- Reward is better than punishment
For every lab experiment a set of questions is set up by the TAs

You pick three questions and provide them as quiz to students at the beginning of the session

- You might want to “synchronize” the quiz

Grade the quiz and count it as 20% toward their grade for the lab session
Your Day in the Lab

- **Arrive in the Lab** 10 minutes before the beginning, then students arrive (often late)
- *Distribute the Lab Reports from the previous session*
- 10-15 minutes (max) for Lab introduction
  - The students are supposed to read the laboratory manuals before they arrive at the Lab
- Lab work begins
- *At the end of the Lab, sign the data sheet*
- Go around the Lab and support students
- Students leave
- **You lock the lab when you leave**
Safety & Security

- You are responsible for the equipment in the laboratory
- Do not leave students unattended for long periods of time
- Always lock the doors prior to leaving the laboratory
- Report problems immediately to the Instructional Laboratory Directors (Bent Nielsen)
Important Details ...

- **Numbers should**
  - Have units *(always)*
  - Be legible *(always)*

- **Graphs should**
  - Have axes labels with units *(always)*
  - Have reasonable range selections *(always)*
  - Fill the page
  - Data points should have uncertainty bars *(always)*

- **Writing and grammar should be at university level**
- **EVERY student write their OWN report**
Collecting Lab Reports for Grading

- **After FIRST experiment** *(students need feedback!)*
  - Students are given 48-72 hrs after the end of the Lab Section to write their lab report and submit into mail boxes
  - Lab Collection Cabinets are located in A-131
  - Students deposit their lab reports in the slot for THEIR course and THEIR section during the room’s open hours
    - Mon-Thu 8:00AM to 10:00PM
    - Fri 8:00AM to 04:00PM

- **After that**
  - Students submit their lab reports in the following lab session
Grading Practices

- **Clarity:** Make it clear to students:
  - What you expect in lab report
  - Why they did not receive full credit if they did not
  - How can they do better next time
  - Rubric is very useful -> communicate orally in introduction; provide written form with lab report

- Set high standards
- Be consistent and fair
- Tune your grade to get 70% average
Uncertainty Analysis

- Methods expected may vary in different classes

- Details to be discussed: 
  http://www.ic.sunysb.edu/class/phy122ps/labs/dokuwiki/doku.php?id=phy123on:lab_1

- This is often the 1st time the students are asked to do an uncertainty analysis, and this happens to be the most difficult aspect of the Laboratory experience for them

- While uncertainty analysis is not the purpose of the laboratory, it is one of the important aspects of “measurement” and “our every day experience” – hence important and must not be neglected!
Equipment Failure

- Can and will happen

- Bring broken equipment in to the instructional laboratory for repair

- Label the equipment with a brief description of what is wrong with it
Cheating

- Bad for every one: Make it clear to the students from the beginning

- Students should work in groups
- Similar conceptual mistakes will appear in different reports

- **Identical lab reports (copies) are forbidden**
- Warn students the 1st time, divide points by two

- Consult with your course instructor if the pattern persists
General Remarks

- It is your responsibility to ensure that the Lab Class goes well
  - If for any reason you cannot make it to one lab section (illness, mandatory travel etc.) you
    - MUST find a substitute instructor and
    - Get the absence approved by Course Instructor

- Always make your expectations clear to the students
  - A handout detailing what is expected is much appreciated by students

- Maintain a positive friendly relation and helpful atmosphere in and out of the Lab section
Outlook

is linked to [http://phylabs1.physics.sunysb.edu/~physlab/Fall2016/Main.html](http://phylabs1.physics.sunysb.edu/~physlab/Fall2016/Main.html)

- Every lab experiment has a write-up

  There might (will) be some (or more) flaws in any kind of existing write-ups: Please help us to make it better! Many changes will occur during the semester. But nothing serious.

- Blackboard to be used for
  - Announcements
  - Grading feedback for students
Please be verbose
- If there is any issue let us know
- Communicate with your fellows
- Communicate with your students

Use Blackboard to read and give announcements

Return feedback to your students in timely manner

Keep your grade-sheet and common grade-sheet up-to-date, make backups!

Perform your help-room hours, list to be provided
First Lab Meeting

• PHY123: Introduction and Uncertainty/Error Analysis/Graphing -> NO grade
• PHY124: Introduction and Uncertainty/Error Analysis/Graphing -> NO grade
• PHY133: Introduction and Uncertainty/Error Analysis/Graphing -> NO grade
• PHY134: Introduction and Uncertainty/Error Analysis/Graphing -> NO grade
First Lab Experiments

- PHY123: TBA
- PHY124: TBA
- PHY133: TBA
- PHY134: TBA