

# Physics 2030/2321 & 2040/2341

MSU Denver Physics / UC Denver Physics - Summer 2018

## REQUIRED MATERIALS

Each of these items is required.

LAB MANUAL: Our lab manual is an e-book now. There is no need to purchase. If you need: a hard copy please see John Martinez (jmart353@msudenver.edu). Please do not print the manual in the labs. There will be a laminated copy at each station for use in lab. The lab manuals will be found on the Hayden-Mcneil site found in you class email. PDFs can also be found on our physics lab website (lab 2030 or 2321) [physics.msudenver.edu/manuals/lab1manual.pdf](http://physics.msudenver.edu/manuals/lab1manual.pdf) or (lab 2040 or 2341) [physics.msudenver.edu/manuals/lab2manual.pdf](http://physics.msudenver.edu/manuals/lab2manual.pdf) .

WEBSITE: [www.msudenver.edu/physics/lab](http://www.msudenver.edu/physics/lab)

DROPBOX: Each student must have their own way to archive their own data each week. DropBox.com is free and will allow you to have 2GB of data storage and you can share folders with lab partners. If you follow the simple tutorial, you will see your lab data files on your home PC when you get home. See the lab web site for DropBox instructions. Look for “**Data Archive**” link in header of Physics Lab website. Each institution also uses Outlook 365 which has One Drive associated with each account

## LAB RULES

Please pay careful attention to these rules.

1. A touch-free hand sanitizer dispenser is available for your hands as a courtesy to you. Please be courteous, if you are sick make sure to keep the keyboard and mouse as clean as possible (only in Plaza)
2. No food or drink any where, any time.
3. Even Distribution: Least possible number of people at each station.
4. All packs and coats belong in the cubbies. Leave nothing on the floor nor tables.
5. Please do not move equipment from one station to another.
6. Please leave your table more organized than when you came to class.
7. Do not write on, tape, or abuse any equipment.
8. Turn off all equipment, except the computers.
9. Log out the computer. (Do not turn off the computer)

## CLASS STRUCTURE

Each lab will begin with an introduction to the theory and procedure at hand. You will perform the lab while recording all necessary data. The instructor will need to initial your data as verification that you performed the lab. This piece of paper either must be within your write-up as the final data table or placed at the very end as justification of the final data table.

# GRADES

Grades will be awarded for both schools (MSU Denver and UC Denver) according to the following percentages. (There is no curve.)

**All work is due by end of last lab period.**

	$B+ \geq 87$	$C+ \geq 77$	$D+ \geq 67$	$F < 60$
$A \geq 94$	$B \geq 83$	$C \geq 73$	$D \geq 64$	
$A- \geq 90$	$B- \geq 80$	$C- \geq 70$	$D- \geq 60$	

## SEMESTER GRADE PERCENTAGES

are 10%, 10%, 40%, and 40% AS FOLLOWS:

10% **Punctual Attendance** - Roll will be taken on the first week of each experiment within 5 minutes or less from the beginning of class.

- possibly drop one late or missing - no deadline extension - no excuses

10% **Online PreLabs** - Due before experiment starts

- possibly drop one lowest score - no deadline extension - no make-up

40% **Group Write-Up's** - Due before next experiment - one per Table - possibly drop one lowest score

10% Cover Page Full Information or NO CREDIT

Record your name legibly as First Last name. Please alphabetize names by last name. For example: Zanny Betcher, John Doughnut, Anita Servano

Fill out all information.

Lab Time example is R4 for Thursday, 4pm.

Lab Station Number is found on front of computer on label.

Pages must follow proper order; proper order should be present on cover sheet.

40% Data Table

Description of columns and constants, proper units

If poor data or calculations, then NO CREDIT

Carefully label each column or value with Proper units. Don't trust template for names nor units!

40% Plots - NO PARTIAL CREDIT. RECEIVE FULL OR NO CREDIT

Axes Labelled with Units

Physics Equations (translation of  $y=mx+b$ ), if Linear is appropriate.

Theory Line (if appropriate) with Physics Translation (remember to not add a trend line for theoretically derived data; simply format the data to be a line instead of data points.) If poor data or improper/unnecessary trend fits, then NO CREDIT as well.

10% Picture(s) of Software - Proper Scale and Properly Annotated or NO CREDIT - If computer data collection not done, then 10% is adjusted to Plots or Data Table in that order of precedence.

40% **Online PostLabs** - Due before start of next experiment - possibly drop one lowest score - no deadline extension - no make-up

Individual work. The PostLab is the tool that allows the instructor to see your individual knowledge and presentation of information. It also allows the instructor to assess your individual writing skills. Collaborating on PostLabs is strictly prohibited. No sharing essay answers. Identical or similar essays are considered to be cheating. You are NOT allowed to provide PostLab information to others nor use information from others.

Stated again: Collaborating on PostLabs is strictly prohibited.

0% for entire experiment (prelab/write-up/postlab) if any evidence of cheating; and you forfeit any possible grade drops at the end of the semester; and the instructor may file a report with MSU Denver or UCDenver.

Fail class if caught cheating more than once; and the instructor may file a report with MSU Denver or UCDenver.

PostLabs fulfill writing requirements for this class.

25% loss in credit per answer, if poor grammar or spelling.

25% loss in credit per answer, if not in paragraph format.

No credit per answer that exceeds number of words allowed.

25% loss in credit per answer, if you don't use proper scientific notation.

$\alpha^2$  is not acceptable notation;  $\alpha^2$  is.

There is a toolbar near each essay answer to assist you in formatting your answers with proper scientific formatting.

Near top of quiz page is a button that will tell you about the answer formatting.

To be safe, don't use "/". Use negative exponents:  $[Nkg^{-1}s^{-1}] = [\frac{N}{kg\ s}]$

Beware:  $[N/kg\ s]$  is not equal to  $[\frac{N}{kg\ s}]$ .

All units stated must be in [square brackets].

Calculation (numerical response) or Multiple Choice are worth 1 point.

All others are worth 2 points; where partial credit may be given as half point increments.

You must show accurate, explicit knowledge of the material.

"We plotted the data," is not acceptable. "We plotted force and stretch," is not acceptable.

"We plotted Force *versus* Stretch," is acceptable in y versus x format.

Be aware of contradicting yourself.

Numerical responses must be properly rounded to specified number of significant figures.

Questions might be:

To summarize the experiment in 75 words or less.

Restate equations of data lines. (Must be physics translation; must not be "broken.")

Detail the Measurement and Uncertainties.

Interpret slopes or intercepts.

Analysis Questions

How to further the experiment.

## Drops

The drops listed above will be active at the end of the semester, if you have attended every\* lab and adequately completed each of the assignments for the entire semester. If you miss a lab or do not perform adequately or do not participate well or are found cheating on any of the assignments, then no drops will be awarded. More information about missing labs and participation is below.

## \*SKIPS

You may skip one experiment during the semester due to illness, work, or other personal reasons. Be advised that skips **MUST** be approved prior to missing, or in the case of emergency shortly after missing.

## More About Online Quizzing

You will have detailed instructions on how to purchase and register for you quizzes through Hayden-Mcneil. If you have questions please contact your instructor or the Hayden-Mcneil helpdesk by clicking on the "need help" link at <https://courses.hayden-mcneil.com/local/ecologin/>

**There is no opportunity to submit a late PreLab or PostLab. For your own sake, please do not wait until the last minute.**

The last experiment has the deadline for PostLab at the end of the lab class period. The PostLab cannot be submitted after the end of the last meeting period. Most PostLabs are due one week later; the last PostLab is the one exception.

Please spend some time looking through the Hayden-Mcneil site, clicking the experiment names on your main course name and checking deadlines etc. If you have any questions or concerns please contact your instructor or John Martinez [jmart353@msudenver.edu](mailto:jmart353@msudenver.edu)

Keep in mind that  
PreLabs have only three attempts!  
PostLabs only have two attempts!

### Significant Figures Review

- 3.14 is three sig. figs.
- 0.00314 is also three sig. figs.
- 3.00140 is six sig. figs.
- 314000 is three sig. figs.
- 3.140E+5 is the same number but with four sig. figs.
- 0.0063154 to three sig. figs. is 6.32E-3 because of rounding.

## More About WRITE-UP'S

The Write-up's will be collected in class one week after the lab was scheduled in class. They are due no later than five minutes into the period. 20 points will be deducted from late write-up's. 10 more points per week will be deducted for write-up's turned in after the week in which they are due.

Staple all sheets together in upper left hand corner in the order shown on the cover sheet. Any loose sheets may be lost in the hallway or to my trash can.

Cover Sheet: You should have a cover sheet for each person who wants a paper-record of their grade. The front cover sheet should have all names listed alphabetically by last name. First Name Last Name is required for each person.

### Linear Fits - Physics Equations/Translation of $y=mx+b$

Most often, you will perform a least-squares (linear) fit on the data. Plot the data as well as the fit line. The fit line might have an equation in  $y=mx+b$  form, if generated by a computer. This form must then be rewritten on the plot as the Physics "Translation." or "Representation" or "Physics Model." No matter if the plot is computer generated or hand generated, you must have a physics equation. It looks like  $y=mx+b$ , but substitute the physical names for the  $y$  and  $x$ ; also add units to the slope and intercept values. We call this equation the "Physics Translation/Equation." You should also include a theoretical or a comparison line if applicable with its Physics Equation. Proper labels, units, and a legend are necessary. If any of these things are missing, you will lose all points possible for that plot. Yikes! We care about this; plots are supposed to portray a lot of information.

## WORK LOAD

Some students mistakenly think that a one-credit hour lab should have no work outside the lab. Students will work outside of class for this lab. We require that students read the lab manual before coming to lab.

## MISCELLANEOUS YET IMPORTANT

Failure to turn in an adequate write-up or postlab will result in a zero for that grade. And yes, poor data and lost data are each considered inadequate.

- Missing a lab that is not formally excused, or being consistently tardy, or leaving early, or **NOT ACTIVELY AND PRODUCTIVELY PARTICIPATING IN THE GROUP ARE EACH GROUNDS FOR A ZERO FOR THE ENTIRE LABORATORY GRADE!**
- Using data not your own or plagiarizing will result in a zero for the entire laboratory grade; and you forfeit any possible grade drops at the end of the semester.
- Please know that work that is not your own is regarded as plagiarism. Do not copy from the lab manual, from your partner, from someone else, from other data, from anywhere other than your own original work.

## SAVING FILES

Save data often. Save your files to the desktop. Work from the desktop, not the *flash drive device*. When finished, first quit the Application; then copy the files (by dragging) to your archive device. Be certain to name your files

**MaryHanes\_Atwood.xlsx**

**MaryHanes\_Atwood.ds**

**MaryHanes\_Atwood.pdf**

for MSExcel files, Data Studio, Capstone and pdf files respectively.

Please don't "work" on a file that is stored in an archive location. Only work from the Desktop. This is the safest way to do work on any computer. We have discovered that DataStudio performs better if NO USB storage device is connected to the computer when DataStudio is open.

## PRINTING

With the increased use of computers and online information, we must limit the labs to print WriteUp material only. Please do not under any circumstance print homework material for other classes or personal needs. Please limit your printing only for WriteUp material. And even then, print only one copy for the group to submit. We highly recommend you archive a copy via pdf in the print dialogue for your back-up needs. Keep in mind MSExcel files need to have each **worksheet** within the **workbook** "printed" as a pdf when archiving MSExcel files.

## MAKE-UP LAB

Only one make up with prior approval. A second missed experiment may be grounds for a zero for the lab class.

You may not make-up more than one lab.

You may not make-up any lab except under these conditions:

- You find another section **during the week** of your missing lab and attend that section after doing two things: A) Tell your instructor what you are doing. B) Get permission from the other instructor to sit in his or her lab (Normally, just showing up and introducing yourself is just fine.)
- Your instructor may proctor an individual lab time; though this is not likely to happen. Your instructor is not required to allow you to make-up a lab. If they do allow a special, proctored lab session, then they must be present with you while you take the data.

INCOMPLETES: In-completes are for emergencies during the **last** few weeks of class. In order to be eligible for an Incomplete, you must have completed at least 50% of the course and be passing the course at the time of request. The physics department has a form that must be filled out stating exactly what must be done to remove the Incomplete. If the work is not completed in one year, the grade will be changed to Failing. The work must be completed in another lab section and the labs must be the same as what the sections are performing.

**There are Two Sections below for School Policies. Please find your School's information below. First listed are MSU Denver Policies. Lastly are UC Denver Policies.**

# **MSU Denver SYLLABUS POLICIES**

**(CU Denver policies and deadlines should appear at the end of this syllabus on pages 9 and 10.)**

## **No Credit Withdrawal Policy**

Effective fall 2013 the NC grade notation will no longer be applied to academic records. For information on this and other academic policy changes, please see <http://www.msudenver.edu/advising/student/academicpolicies/>.

Students who have questions about tuition and fees refund deadlines should contact the Office of Student Accounts at 303-556-6188.

## **Accommodations for Students with Disabilities**

The Metropolitan State University of Denver is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this class and are requesting accommodations, then you must first register with the Access Center, located in the Auraria Library, Suite 116, 303-556-8387.

The Access Center is the designated department responsible for coordinating accommodations and services for students with disabilities. Accommodations will not be granted prior to my receipt of your faculty notification letter from the Access Center. Please note that accommodations are never provided retroactively (i.e., prior to the receipt of your faculty notification letter.) Once I am in receipt of your official Access Center faculty notification letter, I would be happy to meet with you to discuss your accommodations. All discussions will remain confidential. Further information is available by visiting the Access center website [www.msudenver.edu/access](http://www.msudenver.edu/access)

## **No Discrimination**

The Metropolitan State University of Denver does not discriminate on the basis of race, color, creed, national origin, sex, age, sexual orientation or disability in admission or access to, or treatment in, its educational programs or activities. Inquiries concerning Title VI, Title IX and Section 504 may be referred to Dr. Percy Morehouse, Director, Equal Opportunity, Metropolitan State University of Denver, 303.556.2939; or to the Office for Civil Rights, U.S. Department of Education, 1244 Speer Boulevard, Suite 300, Denver, CO 80204. Discrimination based on disability in admission to, access to or operation of programs, services or activities of the college is prohibited by the Americans with Disabilities Act.

## **Academic Dishonesty**

Academic dishonesty is a serious offense at the University because it diminishes the quality of scholarship and the learning experience for everyone on campus. An act of Academic Dishonesty may lead to sanctions including a reduction in grade (up to and including a permanent F for the course), probation, suspension, or expulsion. Academic dishonesty includes cheating, fabrication, plagiarism, submitting the same paper or work for more than one class, and facilitating academic dishonesty. For definitions and more information, see the Student Handbook which is available online through Connect U.

## **Class Attendance on Religious Holidays**

Students at Metro State who, because of their sincerely held religious beliefs, are unable to attend classes, take examinations, participate in graded activities or submit graded assignments on particular days shall without penalty be excused from such classes and be given a meaningful opportunity to make up such examinations and graded activities or assignments provided that advance written notice that the student will be absent for religious reasons is given to the faculty members during the first two weeks of the semester.

Nothing in paragraph one of this policy shall require Metro State faculty members to reschedule classes, repeat lectures or other ungraded activities or provide ungraded individualized instruction solely for the benefit of students who, for religious reasons, are unable to attend regularly scheduled classes or activities. However, presentations,

critiques, conferences and similar activities involving individual students shall be scheduled to avoid conflicts with such students' religious observances or holidays provided that reasonable advance notice of scheduling conflicts is given to faculty members. Because classroom attendance and participation is an important aspect of learning, Metro State students should not register for courses if regularly scheduled classes or activities routinely conflict with their religious observances or holidays (e.g., conflicts resulting in weekly absences for an entire semester).

Any Metro State student who believes that an Metro State faculty member has violated this policy is entitled to seek relief under Section V of the Metro State Equal Opportunity Grievance Procedure.