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Spring 2-1-2016

### PHSX 218N.02: Physics Lab II w/Calculus

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# Physics 218: Physics Laboratory II with Calculus Spring 2016

## Course Information

- Instructor Name: Dr. Benjamin Grossmann
- Office: CHCB 232
- Email: [Benjamin.grossmann@umontana.edu](mailto:Benjamin.grossmann@umontana.edu)
- Lab: Wednesday(Jaylene) or Thursday(Grossmann) 3:10-5:00pm in CHCB 229
- Office Hours: T, R 11:10 am – 1:00 pm, W 11:10 am – 12:00 pm. Please feel free to make an appointment for other times!
- Website: [Moodle](http://umonline.umn.edu) umonline.umn.edu

## Overview

The goal of this class is to give you a sound introduction to classical experimental physics. This will include studying some basic concepts in physics, development of problem solving skills, laboratory techniques and some basic programming skills for data analysis. It is essential that you keep up from the start as the concepts in this course build on each other. Co-requisite to this course is PHSX 217.

## Learning Objectives

The goals of this course are:

- To learn how to properly take measurements and record data.
- To learn how to interpret results both statistically and graphically.
- To experimentally confirm theories presented in lecture.

## Laboratory

There will be 13 two-hour labs during the semester. 12 of those labs will count towards your final grade. You will be required to attend the labs, take measurements, and then write up a full report or take a quiz/turn in brief writeup for each lab. *Each student must hand in their own lab report written in their own words (no duplicates!)* Two of the thirteen labs will require a lab report. The remainder of your lab work will be assessed with Moodle quizzes and brief writeups. *Important: Quizzes are to be done individually.*

Each week, a few days before your lab, you should read the current lab. Students are expected to have read the instructions prior to arriving at the lab, and will be asked to take a brief pre-lab quiz on Moodle.

There will be no make-up labs. If you will miss your lab, contact your instructor *ahead of time* about attending another section that week. Labs are held Wednesday and Thursday 3:10-5:00pm

## Lab Report and Quiz due dates

- Pre Lab Quizzes: On Moodle, open on Friday at 8am and close at 11:59pm the day before your lab section. 60 minutes allowed to take quiz.
- Lab Quizzes: On Moodle, open on Friday at 8am and close on Monday at 11:59pm for all sections. 30 minutes allowed to take quiz.
- Lab Reports: Due at beginning of the following lab meeting.

- Late Penalties for Lab Reports: Late lab reports will be penalized 10% per day late, excluding holidays and weekends. Labs will not be accepted more than one week after their due date.

## Course Guidelines and Policies

### Student Conduct Code

The Student Conduct Code at the University of Montana embodies and promotes honesty, integrity, accountability, rights, and responsibilities associated with constructive citizenship in our academic community. This Code describes expected standards of behavior for all students, including academic conduct and general conduct, and it outlines students' rights, responsibilities, and the campus processes for adjudicating alleged violations. [Full student conduct code.](#)

[http://www.umt.edu/vpsa/policies/student\\_conduct.php](http://www.umt.edu/vpsa/policies/student_conduct.php)

### Course Withdrawal

Students may use Cyberbear to drop courses through the first 15 instructional days of the semester. Beginning the 16<sup>th</sup> instructional day of the semester through the 45<sup>th</sup> instructional day, students use paper forms to drop, add and make changes of section, grading option or credit. PHSX 218 may not be taken as credit/no-credit.

### Disability Modifications

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and [Disability Services for Students](#).

<https://www.umt.edu/dss/default.php> If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or call 406.243.2243. I will happily work with you and Disability Services to provide an appropriate modification. Please feel welcome to come talk to me about any concerns you may have.

### Grading Policy

Generally, final letter grades fall within these ranges:

A or A- = 90-100%. B+, B, or B- = 80-89%. C+, C or C- = 70-79%. D+, D or D- = 60-69%. F = 59% or less.

Your grade will be based on the following:

Pre-Lab quizzes: 10%

Lab quizzes and reports: 90%

## Lab Schedule

Date	Lab	Due
<b>Week 1: Jan 25 – 29</b>	Review and More Python	
<b>Week 2: Feb 1 – 5</b>	Thermal Expansion – full report	Quiz: Review and More Python Pre-lab Quiz: Thermal Expansion
<b>Week 3: Feb 8– 12</b>	Mechanical Equivalent of Heat	Full Report Due: Thermal Expansion Pre-lab Quiz: Mech Eq of Heat
<b>Week 4: Feb 15 – 19</b>	Electric Fields	Quiz and Write-up Due: Mech. Equivalent of Heat Pre-lab Quiz: Electric Fields
<b>Week 5: Feb 22 – 26</b>	NO LAB THIS WEEK	Quiz and Write-up Due: Electric Fields
<b>Week 6: Feb 29 – Mar 4</b>	To Be Determined	NO quiz and write-up due this week Pre-lab Quiz: TBD
<b>Week 7: Mar 7 – 11</b>	Ohm's Law and Simple Circuits	Quiz and Write-up Due: TBD Pre-lab Quiz: Ohm's Law
<b>Week 8: Mar 14 – 18</b>	Slow and Fast RC Circuits	Quiz and Write-up Due: Ohm's Law and Simple Circuits Pre-lab Quiz: Slow and Fast RC Circuits
<b>Week 9: Mar 21– 25</b>	Magnetic Field Mapping Part 1	Quiz and Write-up Due: Slow and Fast RC Pre-lab Quiz: Mag Field Mapping
<b>Week 10: Mar 28 – Apr 1</b>	Ampere's Law	Quiz and Write-up Due: Mag Field Mapping Part 1 Pre-lab Quiz: Ampere's Law
<b>Week 11: Apr 4 – 8</b>	NO LAB – SPRING BREAK	
<b>Week 12: Apr 11 – 15</b>	Magnetic Field Mapping Part 2	Quiz and Write-up Due: Ampere's Law Pre-lab Quiz: Mag Field Map Pt 2
<b>Week 13: Apr 18 – 22</b>	Index of Refraction – full report	Quiz and Write-up Due: Magnetic Field Mapping Pt 2 Pre-lab Quiz: Index of Refraction
<b>Week 14: Apr 25 – 29</b>	Lenses	Report Due: Index of Refraction Pre-lab Quiz: Lenses
<b>Week 15: May 2 – 6</b>	Interference and Diffraction	Quiz and Write-up Due: Lenses Pre-lab Quiz: Int and Diff
<b>Week 16: May 9 – 13</b>	NO LAB – FINALS WEEK	Quiz and Write-up Due: Interference and Diffraction

