Lyon College Course Syllabus Pandemic FA21		
Course:phy241.01,241.02,241.03	Fundamentals of Physics Lab I	**241.01: R 241.02: F 241.03:W 13:00-15:50**
Professor: Stuart Hutton	**Office:** Derby 248	**Office Phone:** ***.307.7560
Email: stuart.hutton@lyon.edu	**Office Hours:** **MWF** 10:00–10:50/AR	
Physics Email: lyonphysics@*****.***	**Physics Web Gateway:** physics.lyon.edu	**Physics SMS:** 307.***.8765

STANDARD POLICIES

Honor Code

All graded work in this class is to be pledged in accordance with the Lyon College Honor Code. The use of a phone for any reason during the course of an exam is considered an honor code violation.

Class Attendance Policy

Students are expected to attend all class periods for the courses in which they are enrolled. They are responsible for conferring with individual professors regarding any missed assignments. Faculty members are to notify the Registrar when a student misses the equivalent of one, two, three, and four weeks of class periods in a single course. Under this policy, there is no distinction between "excused" and "unexcused" absences, except that a student may make up work missed during an excused absence. A reminder of the college's attendance policy will be issued to the student at one week, a second reminder at two weeks, a warning at three weeks, and notification of administrative withdrawal and the assigning of an "F" grade at four weeks. Students who are administratively withdrawn from more than one course will be placed on probation or suspended.

Disabilities

Students seeking reasonable accommodations based on documented learning disabilities must contact Danell Hetrick in the Morrow Academic Center at (870) 307-7021 or at danell.hetrick@lyon.edu.

Harassment, Discrimination, and Sexual Misconduct

Title IX and Lyon's policy prohibit harassment, discrimination and sexual misconduct. Lyon encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to Lai-Monte Hunter, Title IX Coordinator and Vice-President for Student Life, or Sh'Nita Mitchell, Title IX Investigator and Associate Dean for Residence Life, about what happened so they can get the support they need and Lyon can respond appropriately. Lyon is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource (Chaplain, Counselor, or Nurse). As a faculty member, I am required to report possible Title IX violations and must provide our Title IX coordinator with all relevant details. I cannot, therefore, guarantee confidentiality.

College-Wide COVID-19 Policies for Fall, 2021

Masks are mandated for all students in classrooms, laboratories and studios. They remain optional for all persons on the Lyon campus in all other locations and outside. Participation in community surveillance testing in mandatory. Vaccines are STRONGLY encouraged for all faculty, staff, and students. Vaccines are NOT MANDATED for Lyon College community members.

Tentative Syllabus for Physics Lab 241: Fall 2021
Professor: Dr. Stuart Hutton

Office: Derby Center: 248 Research Lab: Derby 219: General Physics lab: 148
SMS: 307.*.8765 /lab email: lyonphysics@<*.com> web: physics.lyon.edu**
Phone: *.307.7560 Email: stuart.hutton@lyon.edu**

Grading

As a general guide to grades, grades will be assigned as follows:

100-90]	(90-80]	(80-70]	(70-60]	<(60
A	B	C	D	F

There are about 10 labs this semester and each lab provides 10 points in your final grade. The particular grade in each individual lab is awarded as follows: 70% of the grade (or 7 points) is awarded for successful completion of the lab awarded contingent upon submission of an acceptable lab report. The other 30% (or 3 points) is awarded for submission of an acceptable report following the guidelines and rubric on the lab website. Note, however, that in the event that an acceptable lab report is not submitted, the lab is considered to not have been done and the final course grade will be lowered by 1 letter grade. **If you fail to submit more than 3 acceptable reports, you will fail the course.** Each student is to submit an individual and independent electronic lab report for each experiment completed and the report must be accepted in order to obtain credit. You will have the opportunity during lab to respond to comments from the received electronic labs and then revise and resubmit your reports. Refer to Student Learning Outcomes for a discussion of minimal course outcome expectations.

Note: If you miss one of the labs when experiments are done and it is not made up, your lab grade will be lowered by one letter grade for each missed lab which is not made up. The full lab, including writeup, must be completed or your grade will be reduced by one letter grade for each lab not fully completed. You must make up any excused absences at the first opportunity.

It is important that you understand what you did during the lab before turning the lab report in to your professor. Your work on lab write-ups will be graded for correctness, clarity and completeness. If you want full credit for a lab, **you must** supply the logical steps that led to the result and the result **must include proper units**. You should supply sample calculations where appropriate. Diagrams and graphs should be included where appropriate. Aside from data tables and graphs, the components required for the proper lab write-up should take about 2 - 3 pages maximum for any given lab. Be sure that each lab starts with a cover page as indicated in the lab write-up guidelines. Make sure that your lab write-up is in the form of paragraphs with correct English grammar as indicated on the lab write-up guidelines. Failure to follow the guidelines will negatively impact your grade.

Phy241 is a separate course from either Phy210 or Phy240.
The grade in Phy241 has no impact upon the grade in either Phy210 or Phy240 except as a co-requisite.

In this course, your grade will depend upon successful completion of lab experiments and reports. **You are also expected to have read the lab before coming to class and to have reviewed the lab material.** You should bring your text, a calculator, and paper to lab. Labs will be completed and submitted during lab. In order to do this, you will need to come to lab on time. Making up the lab for such absences is normally not permitted: it is thus in your interest to show up to lab on time. Additionally, you should **never plan** other activities during the lab period since labs normally will occupy the entire period. Your prime learning resource is the classroom: **punctual** and **complete** class attendance is expected**. Absences will negatively impact your final grade**.

Lab report formats

If you miss a lab for an excused reason, you must make up the lab as soon as possible. If you fail to hand in a lab report late which is accepted, you will lose a minimum of 10% of your grade final grade. Labs must be submitted in **pdf** format electronically. **When including spreadsheet screen captures in your reports, be sure to format tables so they fit on the page. I should be able to read your lab (as a single document in pdf format) without having to change anything. This means, check (proofread) your pdfs before you send them to make sure you can read them. Specifically, you must check your sent email to confirm that any attachments sent were correctly attached, could be opened, and were in pdf format.**

If you miss one or more of the labs without makeup, your lab grade will be lowered by one letter grade for each missed lab which is not made up. Do not submit non-pdf attachments or corrupted files via email and expect to obtain extra time to complete the lab.

Course Description

In this course you will be exposed to the experimental side of physics. Among the topics that we will investigate are mechanics, waves, and thermodynamics.

Course Objectives

As a consequence of this course, you should obtain an enhanced understanding of the experimental nature of physics. In addition, you should come away from this course with an ability to interpret data in a scientifically valid manner and to have increased experience with writing brief technical reports. Refer to Student Learning Outcomes for a discussion of minimal course outcome expectations.

Course Prerequisites

In order to be taking the physics lab, you must be currently enrolled in either physics 210 or physics 240 and therefore you must satisfy the prerequisites for those courses.

Text

The text will consist of handouts in electronic format obtained via the physics gateway at: http://physics.lyon.edu

Academic Integrity

Each student is to submit an individual and independent electronic lab report for each experiment completed and the report must be accepted in order to obtain credit. Students are specifically prohibited from reference to lab reports prepared by other students in the preparation of their own reports.

CLASS SCHEDULE / OFFICE HOURS Fall 2021
Pandemic Part 2 Version

Professor: Stuart Hutton

Monday	Tuesday	Wednesday	Thursday	Friday
8:00-8:50 PHY240.01 Fundamentals of Physics I	8:00-9:15	8:00-8:50 PHY240.01 Fundamentals of Physics I	8:00-9:15	8:00-8:50 PHY240.01 Fundamentals of Physics I
9:00-9:50 PHY210.01 General Physics 1	9:30-10:00	9:00-9:50 PHY210.01 General Physics 1	9:30-10:00	9:00-9:50 PHY210.01 General Physics 1
10:10-10:50 Office Hours	10:00 – 10:50	10:10-10:50 Office Hours	10:00 – 10:50	10:10-10:50 Office Hours
11:00-11:50	11:00-11:50 Phy390.01 Seminar	11:00-11:50	11-11:50	11:00-11:50
12:00-12:50	12:00-12:50	12:00 - 12:50	12:00 - 12:50	12:00 - 12:50 SGA
13:00-15:50	13:00-14:50	13:00-15:50 PHY241.01 Fundamentals of Physics Lab 1 Derby 148	13:00-15:50 PHY241.01 Fundamentals of Physics Lab 1 Derby 148	13:00-15:50 PHY241.02 Fundamentals of Physics Lab 1 Derby 148

Schedule for Phy210, Phy240, and Phy241: Fall 2021: Revision 01

labs	Worksheet Number	Date	210: Cutnell: 8th ed. Assignment Reading : Homework	240:Serway 4th ed Assignment: Reading: homework
WRF Lab 00: intro lab	Class Initialization	W August 18	Chapter 01: Units, vectors, math and trig	Chapter 01 Introduction and Vectors
	Worksheet 01 units trig	F August 20	Chapter 01:H01	Chapter 01:H01
	Worksheet 02 1d motion	M August 23	Chapter 02:H02: 1d motion	Chapter 02:H02 1d motion
WRF Lab 01: Forces & Vectors	Worksheet 03 free fall	W August 25	Chapter 02:H03	Chapter 02:H03
	Worksheet 04 2d motion1	F August 27**UQ01**	Chapter 03:H04: 2d motion	Chapter 03:H04: 2d motion
	Worksheet 05 2d motion2	M August 30	Chapter 03:H05	Chapter 03:H05
WRF Lab 02: 1 and 2 D motion Problems	Worksheet 05 2d motion2	W September 01	Chapter 03:H05	Chapter 03:H05
	Worksheet 06 force1, fbd	F September 03**UQ02**	Chapter 04:H06: Forces, fbd	Chapter 04:H06 Forces, fbd
	Labor Day Holiday	**M September 06**		
WRF: Lab TBA	Worksheet 07 force 2, fbd	W September 08	Chapter 04:H07	Chapter 04:H07
	UnTest#1	**F September 10**	**Chapter 04**	
	Test 1:coverage: ws01-ws07	**M September 13**		
WRF Lab 03: Planes & Friction	Worksheet 08 inclined plane	W September 15	Chapter 06:H08: work and energy	Chapter 06:H08 Energy and Energy Transfer
	Worksheet 09 inclined 2	F September 17**UQ03**	Chapter 06: H09	Chapter 07:H09 Potential Energy
	Worksheet 10 energy 2	M September 20	Chapter 07:H10: impulse, momentum	Chapter 08:H10 Momentum and Collisions
WRF Lab 04: Atwood's, mechanical advantage, work & Energy	Worksheet 11 spring energy	W September 22	Chapter 07: H11	Chapter 08:H11
	Worksheet 12 collisions1	F September 24**UQ04**	Chapter 05:H12: Uniform Circular Motion	Chapter 10:H12 Rotational Motion
	Worksheet 13 collisions2	M September 27	Chapter 08:H13: Rotational kinematics	Chapter 10:H13
WRF Lab 05: Centripetal Force & Hooke's Law	Worksheet 14 ucm 1	W September 29	Chapter 08: H14	Chapter 10:H14
	Worksheet 15 acc frames	F October 01**UQ05**	Chapter 09:H15: Rotational dynamics	Chapter 10:H15
	Fall Break	**October 02 – October 05**		
WRF Lab 06: Static Equilibrium	Worksheet 16 non ucm	**W** October 06	Chapter 09: H16	Chapter 10:H16
	UnTest#2	**F October 08**		
	Test 2	**M October 11**		
WRF Lab 07: Simple Harmonic Oscillation	Worksheet 17: Rotate2 energy	W October 13	Chapter 09: H17	Chapter 10:H17
	Worksheet 18 Torque, L	F October 15**UQ06**	Chapter 09: H18	Chapter 10:H18
	Worksheet 19 statics	M October 18	Chapter 10: H19 Simple Harmonic Oscillation	Chapter 12:H19 Oscillatory Motion
	Service Day	**W October 20**		
RF: Lab TBA	Worksheet 20 osc1:spring	F October 22**UQ07**	Chapter 10: H20	Chapter 12:H20
	Worksheet 21 osc2:pendulum	M October 25	Chapter 10: H21	Chapter 12:H21
WRF Lab 08: Standing Waves and Vibrations	Worksheet 22 string waves1	W October 27	Chapter 16:H22 waves and sound	Chapter 13:H22 Mechanical Waves
	Worksheet 23:string waves2	F October 29**UQ08**	Chapter 16:H23	Chapter 13:H23
	Worksheet 24 sound waves	M November 01	Chapter 17:H24: wave superposition	Chapter 14:H24 :Superposition and Standing Waves
WRF Lab09: Archimedes' Principle & Pressure	Worksheet 25 beats, Doppler	W November 03	Chapter 17: H25	Chapter 14:H25
	UnTest 3	**F November 05**		
	Test 3	**M November 08**		
WRF Lab TBA	Worksheet 27 therm 01	W November 10	Chapter 12: Temperature and Heat	Chapter 16: Temperature and the kinetic theory of gasses
	Worksheet 28 therm 02	F November 12**UQ09**	Chapter 13:H27: transfer of heat	Chapter 16:H27
	Worksheet 29 therm 03	M November 15	Chapter 14:H28: IDG and kinetic theory	Chapter 17: H28:Energy in Thermal Processes: 1st law of thermo
WRF Lab 10: Thermodynamics	Worksheet 30 therm 04	W November 17	Chapter 15::H29: thermodynamics	Chapter 18: H29: Heat Engines, Entropy, and the 2nd law of thermo
	Worksheet 30 (continued)	F November 19	Chapter 15: H30 Chapter 11: H31: Fluids	Chapter 18:H30
	Untest #4	**M November 22**		
	Thanksgiving	**November 24 – November 28**		
	Test 4	**M November 29**		
WRF: No Lab	Worksheet 26 Archimedes Worksheet 31 Fluids 1	**W December 01**	Chapter 17:H26	Chapter 15: H26:Fluid Mechanics :Sections 15.1 – 15.4 Chapter 16: H31:Fluid Mechanics: Sections 15.5-15.9
	Course Review / last day	**F December 03**		
	Final Exams	**December 06-December 10**		\

Notes on the lab write-up for physics labs Fall 2021

Your first (cover) page should include the following information:
Your Name, Date, Partners, Title of Experiment and the abstract.
(Then insert a page break)

Each lab must be the unique written effort of the student submitting the report. You may NOT reference or use lab reports (prepared by others) in your report preparation although you are most certainly encouraged to talk to your lab colleagues.

Lab reports must be electronically submitted to the appropriate address as a single pdf document.

Title: Concise wording that describes the essence of the lab.

Abstract - a summary of your research including general methods and major conclusions. This is usually one paragraph long and should convince someone to read your paper. Include a statement of your hypothesis here and if data supported it.

Introduction: An overview of your experiment, statement of hypothesis, what you did and what the theory was behind the experiment.

Methods: - A brief discussion of experimental techniques. Diagrams are usually appropriate in this section.

Results -written usually in the past perfect tense or passive voice; describes your findings, data collected, and includes data tables, graphs, general trends, derived formulas, etc. All work and data tables must be shown here. In general, you need to have a copy of your original data with you but the data included in the lab report can be copied from your original data. Data should be absent of obvious errors (since you would have tracked down these items).

Discussion and analysis - tense can vary, describes your results in relation to other data, discusses problem associated with the lab, postulates trends in the data, predicts results given different circumstances, suggests sources of error, etc. Discuss how the data supports, or does not support your hypothesis and how well such support is in terms of error analysis such as percent differences. **Be sure to include sample calculations in this section.**

Literature Cited - a list of books, articles, etc., that you used to assist you in presenting your data and which were referred to in the write-up. **When citing a reference from the internet, you MUST include the URL that points directly to the document so that a single click of the mouse will bring up that exact document. Every lab report will have at least 1 citation or the report will not be accepted.**

Your presentation of the lab is important. Be sure it is grammatically correct and neatly typed. Be careful of tense changes within a paragraph. Data collected during a lab must be authentic. "Fudging" is unacceptable and unnecessary.
Lab write-ups should be as **concise** as possible within these guidelines. I am not looking for exhaustive tomes of work in a lab write-up.

Physics Lab Grading Rubric Fall 2021

Note: Each student has the opportunity to revise deficient portions of the lab report during the lab period except for teamwork, arrival and departure.

	1	0.5	0
Scientific Thought	Hypothesis in abstract and introduction. Supporting evidence (or non-supporting) discussed in conclusion.	Hypothesis in abstract and introduction but not relevant and supporting evidence (or non-supporting) not discussed in conclusion.	Hypothesis absent in abstract and introduction; Supporting evidence (or non-supporting) not discussed in conclusion
Critical thinking	Correct discussion of experiment, and how results relate to hypothesis.	Incomplete discussion of experiment iand how results relate to hypothesis	poor of absent discussion of experiment, and how results relate to hypothesis.
Inquiry and Analysis	Complete discussion of experimental technique and data results	incomplete discussion of experimental technique and data results	poor or absent discussion of experimental technique and data results
Informational Literacy	Correct physical terminology contained in report. At least one reference present.	incomplete physical terminology contained in report. Reference present but not correct.	incorrect or absence of physical terminology contained in report. Reference not present.
Quantitative Literacy	Correct usage of calculations including spreadsheets	correct usage of calculations including spreadsheets but something significant missing	Absent or incorrect usage of calculations including spreadsheets
Teamwork	Successful team completion of lab		Unsuccessful team completion of lab
Arrival	on time		tardy or absent
Departure	Work space returned as it was when arriving		Workspace left in disorder upon departure
Overall report	All required elements present		Required elements missing.
Quality	experimental results presented without obvious errors		experimental results presented with obvious errors

Safety regulations for General Physics Labs
Fall 2021 Pandemic Version

At all times in the labs, students must properly wear face masks.

Correct social hygiene must be practiced at all times in the lab. Students are responsible for sanitizing work areas (including equipment) before and after lab.

(1) Anytime springs are used in lab, safety goggles must be worn.
(2) Anytime boiling water is used in lab, safety goggles must be worn.
(3) You should not look at laser light or point it towards other people.
(4) In the event of a spill (which will be water), dispense a towel from the spill kit (aka towel dispenser) and wipe up the spill.
(5) Food and drink are not permitted in lab.

College-Wide COVID-19 Policies for Fall, 2021

(6) Masks are mandated for all students in classrooms, laboratories and studios. They remain optional for all persons on the Lyon campus in all other locations and outside. Participation in community surveillance testing in mandatory. Vaccines are STRONGLY encouraged for all faculty, staff, and students. Vaccines are NOT MANDATED for Lyon College community members.

Attach this form to your email (as an extra attachment today) when you send in your introductory lab report. In your lab report, right below your name, you should say this:
I have read the safety regulations attached to this email.

Student Learning Outcomes for the Physics Program at Lyon College FA2021

1. Students who complete the physics 210/220, 240/250, 241/251 sequence are able to

1a. Articulate the basic principles of physics.
1b. Apply the basic principles of physics to solve a variety of qualitative and quantitative problems at the introductory physics level.

This can be measured with portions of exam problems.

General Education learning outcomes for Phy 210/Phy240/ Phy241/Phy220/Phy250/Phy251

Critical thinking: 210,240.241,220,250,251
Inquiry and analysis: 241.251
Quantitative literacy: 210,240.241,220,250,251
Scientific thought and Information literacy: 210,240.241,220,250,251

Portions related to Phy241,Phy251 will be evaluated for **1** selected labs with rubric data recorded. Since students are allowed to submit revised reports, the initial submission will normally serve as the indicator. Portions related to 210,240,220/250 rubric will have results recorded from exams.

Critical thinking is regularly evaluated in 210,240.241,220,250,251. It is evaluated in terms of starting with correct physical principles applicable to a given situation and being able to follow it through to completion. It is evaluated by use of exam problems. In 241/251, it is part of the process of scientific thought and is evidenced by use of supporting data for a hypothesis as is required by the lab rubric.

Inquiry and analysis is regularly evaluated in 241/251 as part of the required element of completed lab writeups. It is evidenced by student explanation of the experiment and is a required element by the rubric.

Quantitative literacy is evidenced primarily in 210/240/220/250 by successful completion of physical problems with correct units and correct numerical operations. It is evaluated by use of exam problems. Quantitative literacy is exhibited in 241/251 by students being able to follow through with calculations partially enabled by spreadsheet examples and being able to interpret the results and by sample calculations. This is evidenced by the writeup and is a required element by the rubric.

Scientific thought and information literacy is regularly evaluated in 241/251 and is evidenced by use of hypothesis with supporting evidence (or not supporting evidence) based upon experiment as is required by the lab rubric for **1** selected lab and no lab report is accepted without proper the required elements. Information literacy is regularly evaluated in 241/251 and is evidenced by correct physical terminology in lab reports as required by the lab rubric. It is also a significant portion of 210/240/220/250 and is evidenced by student success in using the basic physical terminology enabling students to correctly initiate quantitative solutions to physical situations.