

Formalities

If you'll just add the following text at the beginning of all your syllabi, you'll be good to go (this is the PREFERRED method so that any updates propagate to all syllabi):

Standard Lyon College Policies are incorporated into this syllabus and can be found at the following link: <http://www.lyon.edu/standard-course-policies>.

If you really just want to copy and paste all the policies into your syllabi instead (NOT preferred), you can, *but be sure and use the exact wording found at the link above and include all of it.*

Tentative Syllabus for Physics 321.01: Fall 2024
Topic: Research topics in Physics. Topic : astrophotography

Professor: Dr. Stuart Hutton
Office: Derby Center: 248 Research Lab: Derby 219: General Physics lab: 148
Phone: * 307 7560**
Email: stuart.hutton@lyon.edu
To access the Physics Gateway:<http://physics.lyon.edu>

Office Hours

I will schedule several office hour blocks. I will be very close to my office during these times. Otherwise, I will usually be close to my office. If you want to find me outside of office hours, make an appointment so that you will be sure to find me. My schedule is located on the physics home page which you may review to determine office hours.

[Location:Meeting times] =[Derby 148:R 12:00-12:50]

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

You are required in this course to spend **1 hour minimum in documented research time for each credit hour** of the course per week for a minimum of 10 weeks. Weather may delay observations so the times can be switched slightly and 1 hour of observation time excludes time for setup of the telescope. If it is a clear night, and you have time, I really encourage you to not put off the observations. Electronically pledged weekly progress reports will count for 10% of your grade. These will be due on the day each week that we meet for class. **We will be meeting once each week for discussion and instruction; normally this is every Thursday in Derby 148 from 12-12:50. You will also want to front load your work towards the beginning of the semester rather than the end. It starts to get cold at night in November and concerns about rain and cloud cover need to be considered. We do have 15 class meetings scheduled.** You will want to keep a record documenting your laboratory effort as the course progresses since this comprises 10% of your grade for 10 events. You will also be required periodically to provide me with oral progress reports which will count for part of the 70% grouping. You will be required to keep a record (it can be electronic) documenting your weekly laboratory effort. All of these 3 portions should be combined with your final report notebook / portfolio presentation which will be a single pdf document submitted to me. This provides 70% of your grade so you want to take care with this. The various credit percentages are allocated as follows:

Weekly electronic pledged progress reports which show real progress:10% total
10 total (each report is worth 1 points for a total of 10%)

Final report and notebook/portfolio presentation: 70% total

Group construction of poster for scarf for presentation in the spring: 20%

Your portfolio will consist of a minimum of **quality** images of at least 10 different astronomical bodies together with a description of what is being shown. Additionally, at least one additional image must be taken with the ZWO ASI585 MC astrophotography camera (which we will do as a class.) Of the 10 images, 9 must be taken with the telescope. I expect that you will have more quality images in your portfolio than this bare minimum. Your images will also be used with your scarf poster construction. Note that all submitted materials will be due (as in completed) by December 6, 2024.

In this course, you agree to make a team scarf presentation in the spring. If you are not present at Lyon in the spring, you will need to overload on your contributions to the scarf poster. You will be expected to be present for the spring scarf presentation and to actively discuss your work. This poster should be largely completed by December 06, 2024.

Course Objectives and Prerequisites
PHY 321 INDEPENDENT STUDY / 1-3 credits

Directed study on an individual basis covering topics from advanced physics. Prerequisite: PHY 210/240, PHY 220/250 and permission of the instructor. Course may be repeated for up to 3 credits.

Text Book

There is no required text for this course; you are sort-of writing your own textbook in this class. Among the topics which you will learn, based upon my guidance will be the basics of astronomy, and other related topics. **You will get out of this course what you put into it. This is a research course and you are expected to demonstrate independence in your work.** Much of your laboratory will be outside with the telescope and so you will need to provide time in your schedules in the evenings for this; I expect a minimum of 2 hours every 2 weeks and you will document this with your pledged progress report. You should be concerned with quality and improvement. You should be able to discuss astronomy, locate astronomical objects, be knowledgeable about them and be willing and able to teach (and brag a bit perhaps) about astronomy and astrophotography to others. I fully expect that you will also be familiar with the basics of how to align the telescope and to run the clock drive on the scope to enable longer exposures for your faint images. You will also find it extremely useful to learn how to use skymap or a similar app on your phone to help with astronomical identification. I want you to at least initially work with other students in the class. Count the pieces of equipment before you take them out. Count the pieces of equipment when you bring them back. If the two counts do not agree, you have missed something so go find it. Be very careful with the telescope because among other things, I have personal money invested with this and it is used in this class with the understanding that you will not damage it. One very important thing: never point the telescope at the sun. This will destroy the telescope. I do have a solar filter for the telescope but you will not be able to make photos using this solar filter without special equipment which I now have.

Course Description

In this course, you will have an opportunity to gain research experience with advanced topics from physics under the cover of astrophotography.

Course Objectives

As a consequence of this course, you should obtain experience in physics research under the cover of astrophotography. In addition, you should come away from this course with an ability to discuss, among peers fundamental problems involving astronomy and astrophotography.

Punctual and complete class attendance is expected and independent research hours are required. Absences will negatively impact your final grade.

Academic Honesty

If you use reference work, **be sure to include proper references and these references must be visible during your presentation.** It is expected and encouraged that students in this class will work together on homework problems. If you use reference work, be sure to include proper references. On tests, students are required to keep notes and books closed except as instructed. **Your professor will supply all the paper needed for the tests.** Any questions during tests should be directed to the professor only. **CELL PHONES AND OTHER WIRELESS OR NETWORKED DEVICES (INCLUDING COMPUTERS) MAY NOT BE USED DURING TESTS.** If you do use such devices during a test, it will automatically be considered to be a violation of the Lyon College Honor Code.

All graded work in this class is to be pledged in accordance with the Lyon College Honor Code.

CLASS SCHEDULE / OFFICE HOURS Fall 2024

Professor: Stuart Hutton

Monday	Tuesday	Wednesday	Thursday	Friday
8:00-8:50 PHY240.01 Fundamentals of Physics I Derby 007	8:00-9:15	8:00-8:50 PHY240.01 Fundamentals of Physics I Derby 007	8:00-9:15	8:00-8:50 PHY240.01 Fundamentals of Physics I Derby 007
9:00-9:50 PHY210.01 General Physics 1 Derby 007		9:00-9:50 PHY210.01 General Physics 1 Derby 007		9:00-9:50 PHY210.01 General Physics 1 Derby 007
10:00-10:50 Phy335.01 Modern Physics Derby 148	10:00 - 10:50	10:10-10:50 Office Hours	10:00 - 10:50	10:10-10:50 Office Hours
11:00-11:50 Office Hours	11:00-11:50 Phy335.01 Modern Physics Derby 148	11:00-11:50 Phy390.01 Seminar Derby 148	11-11:50	11:00-11:50
12:00-12:50	12:00-12:50	12:00 - 12:50	12:00 - 12:50 Phy321.01 Astrophotography Derby 148	12:00 - 12:50 SGA
	13:00-14:50	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	13:00-15:50 PHY241.03 Fundamentals of Physics Lab 1 Derby 148
14:00-14:50 Phy335.01 Modern Physics Derby 148				
	16:00-16:50 Div Meetings	16:00-16:50 P&T <u>Worthington</u>		

Schedule for Phy210, Phy240, and Phy241: Fall 2024: Revision 01

Meeting	Worksheet Number	Date
00	Class Initialization	August 15
01		August 22
03		August 29
	Labor Day (no classes)	September 02
04		September 05
05		September 12
06		September 19
07		September 26
08		October 03
	Hurkle-Durkle Day	October 04
09		October 10
10		October 17
	Service Day	October 24
11		October 31
12		November 07
13		November 14
14		November 21
	Thanksgiving Break	November 25 - 29
15		December 05
	Last Day of Classes	F December 06

Safety regulations for General Physics Labs Fall 2024

During labs, I may be wearing a face mask except maybe outdoors.

- (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.

Special for phy321: astrophotography: **You are strictly forbidden to direct the telescope towards the sun, or to look at it without properly shielded eyes or proper equipment. Never use the finder scope with your eye to locate the sun.** I have a sun shield for the telescope but they have been known to break. Since you will be using the telescope at night, I recommend that you coordinate your times so that observing can occur together. I do not recommend moving the telescope very far from Couch Garden but you may wish to if you need darker areasx.

Attach this form to your email (as an extra attachment today) and send it today. In your email, you should say this: I have read the safety regulations attached to this email.

PHY 321 INDEPENDENT STUDY / 1-3 credits. Directed study on an individual basis covering topics from advanced physics. Prerequisite: PHY 210/240, PHY 220/250 and permission of the instructor. Course may be repeated for up to 3 credits.

General Education Objectives

- 1. Students can apply critical thinking to pose and answer questions.**
- 2. Students can use the processes and methods of science and mathematics to demonstrate how reproducible results give rise to the discovery of fundamental laws and the development of theories.**
- 3. Students can articulate a basic knowledge of current scientific understanding of the universe and the scientific and mathematical laws that govern it.**
- 4. Students can summarize, interpret, analyze, and critically evaluate data and reports relating to the natural sciences and mathematics.**

Each of these objectives is evidenced by a final portfolio, notebook, scarf poster/presentation.

Topics in Phy321 have varied in the periods it has been taught. During the first time it was presented, the topic was microwave interference, and scattering. The student that participated in this particular course did not complete the course. During the most recent periods, the emphasis has been upon group research projects involving ferroelectric crystals. Presently three students have participated in this course and for Fall 2010, an additional three students will participate. The topics will involve growth and electronic measurement of ferroelectric crystals. As a result of this course, students obtain a more direct self-motivated approach to research typically as part of a team and this course is additionally intended to provide students with experiential learning. Evaluation of the work consists of weekly progress updates showing evidence of research progress, a more formal compilation of results at the end of the course and a formal oral presentation. Because of the very nature of research in the sciences as opposed to research in other areas of liberal arts, it is essential that the research be performed under the direction of a faculty member. For Fall 2024, the topic is astrophotography.