PHY2053L Syllabus

PHYSICS 1 LAB – SECTION 07D1 (UF ONLINE)
1 CREDIT
SPRING 2018

Section 07D1 is a laboratory section of PHY2053L, where students complete individual investigations remotely, using the same data acquisition techniques and data analysis as students in campus-based sections. Each student will build the experimental apparatus from materials required for purchase, and utilize a sensor cart to collect data for further analysis. Collaboration with lab partners is required during the sense-making stage of the analysis. Some labs will differ from the campus-based sections due to cost of apparatus, although care is taken to match the learning outcomes between alternate investigations.

INSTRUCTORS	DR. SHAWN WEATHERFORD	MS. ALEXANDRIA EDER
ROLE	LEAD INSTRUCTOR	TA
OFFICE LOCATION	NEW PHYSICS BUILDING 2142	NEW PHYSICS BUILDING 2161
PHONE	352-392-8747	392-392-8756
OFFICE HOURS	MW 2:00 – 3:00 PM EST	TBD

Office hours will be held online using Canvas conferences or by phone. Appointments are available for additional office hours during regular business hours, using Canvas or via face-to-face in my office, NPB2142. Email Dr. Weatherford in Canvas for availability.

COURSE WEBSITE: HTTPS://UFL.INSTRUCTURE.COM/COURSES/346292

Questions about lab materials or course content: Please use the **discussion boards in Canvas** for all questions about class mechanics or content. If you have a question about the class or subject material, others probably share the same question and posting it to the discussion boards allows everyone to see the question and answer. If you use email to ask a general class related question, you will be asked to post your question on the appropriate board, and it will be answered there.

Personal questions, problems, or appointments: Please use the **email function in Canvas** to communicate with Dr. Weatherford during the semester, rather than regular university email, except in extreme emergencies. Email, discussion posts, and phone messages will generally receive a reply within 24 hours on the weekdays. Dr. Weatherford will post an announcement when there are times that he is out of reach.

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Technical support: If you experience difficulties with accessing components of the site, including lectures, quizzes or tests, contact the UF help desk *immediately*. **(352) 392-HELP (4357) |** *helpdesk@ufl.edu*

If they are not able to resolve your problem, contact Dr. Weatherford with your help desk ticket number and a description of the problem and steps taken to resolve it. Extensions for due dates will be granted for documented technical problems, as needed.

REQUIRED TEXT: There is no required text for this course. All necessary materials will be available through Canvas or purchased and included in the Lab Materials Kit.

LAB MATERIALS KIT: This course consists of hands-on lab experiments that complement PHY2053. Students are required to purchase a custom lab materials kit consisting of an IOLab cart and other items to complete 10 labs. The kit is available for purchase from the UF Bookstore, where students purchase an access code and may use any available financial aid funds designated for this purpose. The access code is then used during checkout at eScienceLabs.com as a form of payment. Or, students may purchase the kit directly from the vendor and pay at checkout. Either way, students will be directed to eScienceLabs.com, create an account, then search for KIT2400 and complete the checkout procedure.

COURSE DESCRIPTION: Lab for PHY2053

PREREQUISITE KNOWLEDGE AND SKILLS: Basic *a*lgebra and trigonometry; manual dexterity for performing experimental procedures.

PURPOSE OF COURSE:

The purpose of this lab course is to provide students with hands-on experiments that give them the opportunity to:

- observe and make measurements on simple mechanical systems.
- practice performing quantitative analysis of those measurements in order to discover or confirm relationships among the variables involved.
- make predictions about similar systems and make measurements to check those predictions.

- relate the measurements to physical principles in order to determine material constants such as mass density or to determine fundamental constants such as the acceleration due to gravity.

COURSE GOALS AND/OR OBJECTIVES: *By the end of this course, students will be able to:*

- Identify quantitative and qualitative variables in an experimental investigation,
- Design procedures and carry them out to measure quantitative variables systematically,
- Graph and analyze those measurements via linearization and regression techniques, and
- Interpret analysis relative to proposed theoretical principles to determine material and physical constants of the theory.

INSTRUCTIONAL METHODS: This course will consist of 10 labs that give students the opportunity to apply physics 1 concepts. Labs center around data collection with the IOLab, a handheld data-gathering device that communicates wirelessly to its software. Background content will be presented as videos or readings in Canvas. Lab Procedures will be presented as videos or readings in Canvas.

COURSE POLICIES:

ATTENDANCE POLICY: This course is completely remote, but your "attendance" is still important! Because this course is an application course, collaboration with your peers and professor is integral to your success. Timely and engaged responses to discussions and lab work will make the experience easier for everyone. If you wait to the last minute, you may find that help is harder to find.

MAKE-UP POLICY: Generally, all lab work including, IOLab data collection and discussion, and completed lab questions are due on Sundays at 11:59pm. Acceptance of late work is consistent with university policies that can be found at https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

For a foreseeable absence, it is your responsibility to identify yourself as requiring an accommodation at least one week prior to the absence.

COURSE TECHNOLOGY: This course will be offered through the University of Florida's LMS, Canvas. Students will also be required to install the IOLab software and may find the IOLab Mobile App useful. Students will be required to use Microsoft Excel to process data.

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LAB GROUP POLICY: Students will be assigned lab partners by the instructor to assist with the completion of each lab. Students may collaborate in the experimental setup by offering tips and suggestions, but each student must collect his or her own data using the materials found in the lab kit. The process of analyzing and making sense of the gathered data and the experiment are expected to be collaborative. Students will turn in individual assignments and use the discussion boards for all group communication about labs. Lab group communication is expected to be frequent throughout each week.

UF Policies:

UNIVERSITY POLICY ON ACCOMMODATING STUDENTS WITH DISABILITIES: Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

UNIVERSITY POLICY ON ACADEMIC MISCONDUCT: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at http://www.dso.ufl.edu/students.php.

**NETIQUETTE: COMMUNICATION COURTESY: All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats.
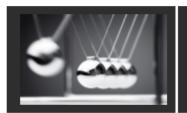
Usually in a lab you have peers around you to collaborate with. For this course, to work and continue being offered, it is important for you to respond to your peers if they have a question.

http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf

GETTING HELP:

For issues with technical difficulties for E-learning in Canvas, please contact the UF Help Desk at:

- Learning-support@ufl.edu

- (352) 392-HELP - select option 2

- https://lss.at.ufl.edu/help.shtml

** Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at http://www.distance.ufl.edu/getting-help for:

- Counseling and Wellness resources

- Disability resources

- Resources for handling student concerns and complaints

- Library Help Desk support

Should you have any complaints with your experience in this course please visit http://www.distance.ufl.edu/student-complaints to submit a complaint.

GRADING POLICIES:

Your overall course grade will be determined by your performance on each of the labs and on your participation within your lab group. There are no exams in this course.

LABS

You will complete 10 labs, each worth a total of 10 points. These points may be divided among submissions of data, excel workbooks, and postings to the discussion board. You will submit evidence of completing the lab in order to earn these points according to your performance and success on presenting the following laboratory elements:

Setup and data acquisition: Showing diligence in setting up apparatus, carrying out suggested procedures and measurements, and collecting raw data. This will be evaluated by the quality and completeness of raw data sets collected and by the display of this data in tables including their physical units, or plots displaying data collected with the IOLab cart. All data submitted

must come from your investigations alone. Students may not use data from other classmates or sources without the explicit approval from Dr. Weatherford.

Data analysis: Showing how data is related to theory and its predictions. This will be evaluated from student's construction of properly-labeled spreadsheet tables of theoretically-motivated derived quantities based on raw data and including units, making graphs and doing regression analysis, or other tools as instructed by Dr. Weatherford.

Conclusions: Showing an understanding of the physical laws involved and how they are applied. This will be evaluated from interpretations of graphing and regression, from answers to comprehension questions and by making predictions and measurements to check those predictions. Practice academic honesty and attribute contributions of others (using names) when conclusions are informed by discussions involving other individuals.

LAB PARTNER DISCUSSIONS

High quality scientific discovery is often completed with colleagues, most of whom are located at different research labs across the world. This remote lab course provides students an authentic experience to collect their own data following a common procedure and use these data sets as a framework for making sense of the data and discussing scientific practice with colleagues.
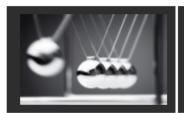
Weekly discussion questions will accompany each lab to mediate this desired outcome of thoughtful discourse based on your experience completing laboratory exercises.

To begin discussions, each student is required to post certain data sets as described in the lab instructions or indicated in weekly announcements to the discussion board. This posting of data is due no later than **11:59pm on the Thursday before the lab is due**.

EVALUATION SUMMARY

Letter grades are assigned based on the total points awarded in the course. These points are indications of your achievement of the course-level learning objectives and are from the following experiences:

Completion of 10 labs (10 pts each)   100 points

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TOTAL   **100** points

Your course grade will not be assigned based on a curve, but based on a 100-point fixed scale rounded to the nearest point (e.g. 84.6 = A, 84.4 = A-):

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
94	90	87	84	80	77	74	70	67	64	60	<59.5

LAB SCHEDULE

Wk #	Release Date	Lab #	Lab Name
1	1/3/18	0	Orientation and Introductions
2	1/7/18	0	Materials and Software Check
3	1/14/18	1	Measurements and Uncertainties Part 1
4	1/21/18	2	Measurements and Uncertainties Part 2
5	1/28/18		
6	2/4/18	3	Position and Velocity
7	2/11/18	4	Velocity and Acceleration
8	2/18/18		
9	2/25/18	5	Passive Forces

10	**3/4/18**		**Spring Break**
11	3/11/18	6	Acceleration and Force
12	3/18/18	7	Impulse and Momentum
13	3/25/18	8	Centripetal Acceleration
14	4/1/18	9	Simple Harmonic Motion
15	4/8/18	10	Standing waves and Resonance

Disclaimer: This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. These changes will be communicated clearly via announcements on Canvas.