COLLEGE OF CHARLESTON

HONS 160L–HONORS ASTRONOMY II Lab

Instructor: T. R. Richardson

Spring 2018

Thursday 7:00–10:00 PM
School of Sciences and Mathematics Building Room 245

L a b S y l l a b u s

HONS 160L HONORS ASTRONOMY II Lab

Contact Information:

T. R. Richardson:
Offices: JC Long room 211 & HWWE 108
Lab Location: HWWE 108

Office Phone: (843) 953-8071
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Office Hours:

Check this web link for the latest listing of my office hours. http://richardsont.people.cofc.edu/trr_hours.html

Contacting me:

Contacting me is easy. Email if it is not complicated or time sensitive (I. e. something in the next 36 to 48 hours. Otherwise use the phone. You can try my office but it much is better to call my cell phone. Because of classes and meetings it may be turned off. If I don't answer, text me with your phone number or message. My cell phone for school will not take voice messages, even if it seems to, so please don't try to leave a message. I will do my best to call you back but I am never "it" when it comes to phone tag. Also don't text me without trying to call first unless you are unable to talk at that time. I choose not to text back and forth when a call will be simpler.

Pre-requisite/Co-requisite:

This lab course is designed to accompany HONS 160 and that course is a pre-requisite/co-requisite to this lab. This course also has as the prerequisites HONS 159 (or ASTR 129) and HONS 159L (or ASTR 129L).

Goals:

This course a laboratory section that is a co-requisite with the Honors Astronomy lecture section. As this instructor views the course, it has a number of goals. They are to provide the student with:

1. A broad understanding of the nature, scope, and evolution of the Universe, and where the Earth and Solar System fit into the picture;
2. An understanding of a few crucial astronomical quantities, together with some knowledge of appropriate physical laws;
3. An understanding that physical laws and processes are universal;
4. An understanding that the world is knowable, and that we are coming to know it through observations, experiments, and theory;
5. An understanding of the types, roles, and degrees of uncertainty in science;
6. An understanding of the evolution of physical systems;
7. Some knowledge of related subjects and a set of useful "tools" from related subjects such as mathematics;
8. An acquaintance with the history of astronomy and the evolution of scientific ideas;
9. Familiarity with the night sky and how its appearance changes with time and position on Earth and
10. One last goal is to have a good time accomplishing the previous ones.

Textbooks:

There is no formal textbook for lab; however there are some required materials. Each student will be required to have one of the following: A) the star map found in the College Bookstore known as *The Night Sky* by David Chandler; B) a smartphone app for the sky on their phone or tablet-there is a very good free one available for both iOS and Android systems; C) A desktop planetarium program their personal laptop. Each student will learn how to operate an 8-inch telescope and the telescope operating manual is available online at http://richardsont.people.cofc.edu/shared_folder/CHB.pdf. This manual needs updating for the temporary observing location we are using during building renovation. A calculator is essential for most labs as is the lecture textbook. Some lab groups find a laptop computer helpful, but it is not required for lab. Indeed for labs where a laptop is needed, the department provides one but the student would be wise to bring a flash drive for saving files.

Attendance and Makeup Policy:

Roll will be taken. Attendance in lab is mandatory. Since the work accomplished in lab cannot be duplicated outside of the lab environment, and since we have neither the time, space or staff for extensive department wide lab make-ups, attendance at lab is mandatory. Special circumstances such as extended illness will be handled on a case by case basis. Please do not complicate your life by signing up for an activity or commitment which conflicts with lab meeting times. Doing so will, for the wrong reason, have an adverse effect on your lab grade. Also please note that according to the faculty rules, no professor can require you to miss a scheduled class, such as our lab, to attend some other activity.

Quizzes:

There will be a lab quiz just about every week. The topic will be announced in the previous lab and also posted on the lab web page. Usually the quiz tests knowledge from the previous weeks lab or anticipates knowledge needed for the current week's lab. The quiz is designed to require 10–20 minutes and is offered at the beginning of lab. The lowest quiz grade will be dropped in the computation of the final lab average.

Final Exam:

There will not be a final exam for this course; however, in the last lab the weekly quiz will be on images quiz covering the semester's work. This quiz will consist of photographs of astronomical objects studied throughout the semester. The student will be asked to identify the object's general type and comment on the important astrophysical aspects of the object shown by the image. It will have the same weight as two regular weekly quizzes.

Grading:

The final lab grade has components as follows.

- Weekly quizzes & image quiz 41%
- Lab activities/reports 41%
- Writing assignment 9%
- Formal lab report 9%

The grading scale for this course is listed below.

A	92.5 – 100	B	82.5 – 87.4	C	72.5 – 77.4	D	62.5 – 67.4
A-	89.5 – 92.4	B-	79.5 – 82.4	C-	69.5 – 72.4	D-	59.5 – 62.4
B+	87.5 – 89.4	C+	77.5 – 79.4	D+	67.5 – 69.4	F	0.0 – 59.4

Disabilities and SNAP:

If your situation falls under the guidelines of the programs in the SNAP office, please come to my office so we can talk about how to handle your particular situation. This class is SNAP friendly but sooner is better than later if we have to arrange accommodations.

The College Honor Code:

Every society has its rules that help that society to function. The College Honor Code contains some of the rules all of us are expected to follow for the years we are together here. Every individual has rules of their own to guide their life. Make your rules consistent with the College Honor Code and trust that I have done the same.

Online Resources:

My webpage: http://richardsont.people.cofc.edu/
Course webpage: http://richardsont.people.cofc.edu/16b_h160_lab_f17.html
Telescope handbook: http://richardsont.people.cofc.edu/shared_folder/CHB.pdf

Astronomy Learning Outcomes:

After the successful completion of this class, the students will be able to:

1. Design experiments and carry out measurements based on the guidelines supplied by the instructor .
2. Collect meaningful data with units while applying appropriate significant figures.
3. Use software (Microsoft Excel or Open Office) to tabulate results, plot graphs and report observations.
4. Estimate uncertainties associated with measurements made in lab.
5. Discuss experimental results and compare the results with accepted values.
6. Draw conclusions from observations and measurements.
7. Prepare a lab report following the guidelines given in the instructor's online resources.
8. Apply appropriate methods of safely handling equipment and performing laboratory procedures.
9. Collect meaningful data and tabulate it with units while applying appropriate significant figures.

General Education Natural Science Learning Outcomes:

The following general education learning outcomes will be assessed during this semester in during lab. The assessment will test whether you can:

1. Apply physical/natural principles to analyze and solve problems. This outcome will be assessed on a formal written lab report on one of the labs during the semester. This report will count as a lab in your final lab grade and it cannot be your dropped lab grade.
2. Explain how science impacts society. Assessment will be accomplished with a letter written to a public official about a science related matter of public policy. This exercise will count as quiz in your final lab grade and it cannot be your dropped quiz grade.