Proposal for a New Course

NOTE: All gray text boxes must be completed (even if you just put N/A into them), otherwise the committee must consider the form incomplete.

1. Department: **Honors College / Physics and Astronomy**

2. Course Number and Title: **HONS 159L; Honors Astronomy I LAB**  
   Number of Credits: 1  
   Total hrs/week: 3  
   Lecture: □  
   Lab: □ Recitation: □  
   Seminar: □

For Independent study courses:  
   Research:□  
   Field experience: □  
   Clinical Practice: □  
   Internship: □  
   Practicum: □  
   Independent Course Work: □

3. Semester and year when course will first be offered:  
   **Fall 2011**

4. Catalog Description (please limit to 50 words):  
   **A laboratory program to accompany Honors Astronomy I.**

5. Check if appropriate: Humanities:□Social Science: □ (meets minimum degree requirements)

6. Check if appropriate: □  
   This course will be cross listed with: **N/A**  
   Rationale for cross listing: **N/A**  
   Please attach letters of support from the chairs of each department indicating that the department has discussed the proposal and supports it.

7. a) Could another department or program also be a logical originator of this course (i.e. History of American Education could originate in both the Teacher Education and the History departments)? If yes, what department/program? Please contact the department chair/program director and request a note or email that they are aware of the proposed new course and include that note with the proposal.  
   **No**

b) Please explain overlap with any existing courses.  
   **This course is the Honors College equivalent of ASTR 129L. It considers some subjects in greater depth with more advanced labs and additional activities outside the classroom and group projects extending over several lab periods.**
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8. Prerequisites (or other restrictions):
   The course assumes a working knowledge of algebra and trigonometry. Honors Astronomy I is a corequisite.

9. Rationale/justification for course (consider the following issues):
   a) What are the goals and objectives of the course?
      The course will support and supplement the lecture by providing the student with hands-on experiences with astronomical materials, equipment and data. It is this component of the course which provides the student with training in:

      Additional goals for the course are to provide the student training in:

      1. The roles of observations, experiments, theory, and models in science;
      2. Analyzing evidence and hypotheses;
      3. Critical thinking, including appropriate skepticism;
      4. Hypothesis testing (experimental design and following the implications of a model);
      5. Quantitative reasoning and the ability to make reasonable estimates;
      6. The role of uncertainty and error in science;
      7. How to make and use spatial/geometrical models;

   b) How does the course support the mission statement of the department and the organizing principles of the major?
      The course provides the Honors College with a needed general education science course in a traditional area.

10. a) For courses in the major, how does the course enhance the beginning, middle, or end of the major?
      Serves as an entry level course.

   b) For courses used by non-majors, how does the course support the liberal arts tradition including linkages with other disciplines:
      When taught as a special topics course, special assignments were made with a linkage to other disciplines in mind. These assignments included attending art exhibits and lectures, Darwin week philosophy lectures, letter writing to publications and government agencies and other related assignments. Coincidently, astronomy was one of the seven original liberal arts, one of the four quadrivium subjects.
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11. Method of teaching:
   Group lab exercises, group research projects, individual research projects, outside readings and discussions.

12. a) Address potential enrollment pattern shifts in the department or college-wide related to the offering of this course:
   None expected as this course has been offered as a special topics course.

   b) Address potential shifts in staffing of the department as it relates to the offering of this course:
   None expected.

   c) Frequency of offering:
      each fall: ☑️ each spring: ☐
      every two years: ☐ every three years: ☐
      other ☐ (Explain): _____

13. Requirements for additional resources made necessary by this course:

   a) Staff:
      N/A

   b) Budget:
      N/A

   c) Library:
      N/A

14. Is this course to be added to the Degree Requirements of a Major, Minor, Concentration or List of Approved Electives?

   a) ☑️ yes  ☐ no

   b) If yes, complete the Change Degree Requirements form(s) and list the name(s) of the major, minor, concentration and/or list of approved electives here:
      _____

15. Paste syllabus, reading lists, or any additional documentation that can help the committee evaluate this proposal (a syllabus is mandatory).

A syllabus from the last time the course was taught as a special topics course is provided at the end of this form.
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14. Signature of Department Chair or Program Director:

________________________________________

Date: __________________________

15. Signature of Dean of School:

________________________________________

Date: __________________________

16. Signature of Provost:

________________________________________

Date: __________________________

17. Signature of Business Affairs Official

________________________________________

Date: __________________________

18. Signature of Curriculum Committee Chair

________________________________________

Date: __________________________

19. Signature of Faculty Senate Secretary:

________________________________________

Date Approved by Senate: __________________________

Completed form should be sent by the Faculty Senate Secretary to the Registrar. After implementation, information concerning the passed course and program changes will be provided by the Registrar to all faculty and staff on campus.
Instructor: T. R. Richardson

SPRING 2011
Hollings Science Center, Room 125
Mondays
7:00 –10:00 PM

Lab Syllabus
HONS 390L—HONORS ASTRONOMY II LAB

Contact Information:

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Office Location: RHSC room 102  
Office: (843) 953-8071;  
Cell: (843) 670-7878;  
email: richardsont@cofc.edu  
Office Hours:  
Mon, Wed, Fri 10:45–11:45 AM and 1–2:30 PM  
Tue, Thu Noon–3 PM  
other times by appointment including some weekends

Contacting me:

Contacting me is pretty easy. Use email if it is not complicated or time sensitive (I. e. something that same day. Otherwise use the phone. You can try my office but it is better to use my cell phone. Because of classes and meetings it is usually turned off, so follow the instructions to send a page with your phone number and I'll call you back. Alternately you could 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.

Objectives:

This course is the laboratory component of a two-semester survey of contemporary astronomy. The course will support and supplement the lecture by providing the student with hands-on experiences with astronomical materials, equipment and data. It has the objectives of providing the student with training in:

1. The observations, experiments, theory, and models of astronomy;
2. The analysis of evidence and the development of hypotheses;
3. Hypothesis testing and experimental design;
4. The application of the concepts of uncertainty and error;
5. The construction and use of spatial and geometrical models;
6. The use of paper and computer based astronomical maps;
7. The use of an 8-inch computer controlled Schmidt-Cassegrain telescope;

Lab Materials:

You will need the rotating star map from the bookstore in you no longer have yours from last semester. In addition a handbook for the operation of the Meade computer controlled telescopes is in progress and portions are now available for use. A link to this resource is found on our course web page. In addition bring your lecture text to each lab meeting and your laptop computer or a flash drive for use with the lab computers.

Attendance:

Attendance in lab is mandatory and roll will be taken. A single class is 8% of the entire course, a significant fraction of the total work for the semester.

Quiz and Lab Grades:

There are weekly quizzes in lab covering the work for the current or previous week. They are announced in advance. Almost every lab will have a graded lab activity.

Panel Discussion Project:

There will be project for your lab group. It will take the form of a panel discussion in which you group will act in the role of role mission designers and engineers for a specific space observatory. The final presentation for this project will take the form of a public forum at which your group makes a short presentation on your observatory and then answer questions from the public (i. e. the rest of the lab class).

Final Exam:

There will be no final exam in lab.

Grading:

The final grade in this course is computed as follows.

- Weekly quizzes 45%
- Lab grades 40%
- Group Project 15%

Disabilities and SNAP:

This course is SNAP friendly. 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 accommodations. Sooner is better than later.
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 at the College of Charleston. 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/h390_folder/

Laboratory Work and the Weather:

Every lab has both inside and outdoor work on the schedule. We will do the inside work every night but the outdoor work depends on the cloud cover, transparency of the sky and temperature. For that reason some observation sessions may be on the schedule several times with the hope that they might be made once. Unless there is a reason, observations will not be made every time they appear on the schedule. However, observations of Venus every week permit us to monitor its phase changes, just as Galileo did, thus we will make them as often as weather permits. This semester's lecture class covers solar system objects; however, observations in lab are restricted by what is visible. This semester's lecture class covers stars, nebula and galaxies; however, observations in lab are restricted by what is visible. We may make some observations this semester of objects studied in lecture class last semester.

Lab Schedule:

**Week 1 January 24**
- Sunset 5:45 PM Lunar age 21 days
- Indoor Plans—Relativistic Mass and Time Travel Computations
- Outdoor Plans—none
- Quiz—none

**Week 2 January 31**
- Sunset 5:51 PM Lunar age 28 days
- Indoor Plans—The Rotation of the Sun from the SOHO Database
- Outdoor Plans—The Orion Connection
- Quiz—Special and General Relativity

**Week 3 February 7**
- Sunset 5:57 PM Lunar age 4 days
- Indoor Plans—Darwin Week Activity
- Outdoor Plans—none
- Quiz—The SOHO Glossary

**Week 4 February 14**
- Sunset 6:04 PM Lunar age 11 days
- Indoor Plans—Nuclear Energy Generation
- Outdoor Plans—none
- Quiz—The Nuclear Power Glossary

**Week 5 February 21**
- Sunset 6:10 PM Lunar age 19 days
- Indoor Plans—Spectral Classification, Space Observatory Group Assignments
- Outdoor Plans—none
- Quiz—The Spectral Classification Glossary

**Week 6 February 28**
- Sunset 6:15 PM Lunar age 26 days
- Indoor Plans—The HR Diagram
- Outdoor Plans—TBD
- Quiz—The HR Diagram Glossary
Week 7 March 14
Sunset 7:26 PM  
Lunar age 9 days  
Indoor Plans—Panel Discussion: Space Observatory #1; Telescope Optics  
Outdoor Plans—none  
Quiz—none

Week 8 March 21
Sunset 7:31 PM  
Lunar age 17 days  
Indoor Plans—Panel Discussion: Space Observatory #2; Messier Objects  
Outdoor Plans—TBD  
Quiz—Telescope Optics

Week 9 March 28
Sunset 7:36 PM  
Lunar age 25 days  
Indoor Plans—Panel Discussion: Space Observatory #3; Cepheid Variables and the Cosmic Distance Scale  
Outdoor Plans—Measuring the Sizes of Nebula and Galaxies  
Quiz—Messier Objects

Week 10 April 4
Sunset 7:41 PM  
Lunar age 1 day  
Indoor Plans—Panel Discussion: Space Observatory #4; The Age of the Crab Nebula  
Outdoor Plans—Measuring the Sizes of Nebula and Galaxies  
Quiz—Cepheid Variables

Week 11 April 11
Sunset 7:46 PM  
Lunar age 8 days  
Indoor Plans—Panel Discussion: Space Observatory #5; Arp Galaxies and the Interaction of Galaxies  
Outdoor Plans—Lunar Observations: Plato and the Alpine Valley; Observations: Saturn  
Quiz—The Crab Nebula

Week 12 April 18
Sunset 7:51 PM  
Lunar age 16 days  
Indoor Plans—Panel Discussion: Space Observatory #6; The Hubble Law and Age of the Universe from the NED Database  
Outdoor Plans—none  
Quiz—Arp Galaxies

Week 13 April 25
Sunset 7:56 PM  
Lunar age 23 days  
Indoor Plans—The Drake Equation  
Outdoor Plans—none  
Quiz—Galactic and Extragalactic Images