

New non-gen-ed courses
Astronomy Research I-IV

1. Details:

- a. Course Titles: Astronomy Research I, Astronomy Research II, Astronomy Research III, and Astronomy Research IV
- b. Sponsor: E. J. Guerra and the Department of Chemistry & Physics
- c. Credit Hours: variable - 1 s.h., 2 s.h., or 3 s.h.
- d. Course Level: Astronomy Research I – 1911.211,
Astronomy Research II – 1911.212,
Astronomy Research III – 1911.311,
Astronomy Research IV – 1911.411
- e. Prerequisites: faculty approval
- f. **Spring 2004 implementation.** Courses offered every term.
- g. Curricular Effect: These courses will be an integral part of a proposed astronomy minor and will be a restricted elective for physics majors. In effect, Physics Research I-IV is being split into two sets of courses. Physics Research I-IV will still be offered with the same frequency, but students who work with astronomy faculty will sign up for Astronomy Research I-IV instead.
- h. Current resources and staff are adequate. No additional staff or resources needed. Space will be adequate in the new science building.
- i. See attached library form.

2. Rationale:

Astronomy research differs from research in other subfields of physics. Student research in other subfields of physics often involves the design, building, and running of novel experiments on campus. However, research in astronomy typically involves the collection of large data sets from shared telescope facilities off campus. A great deal of student effort is required to reduce and analyze astronomical data to determine meaningful results. Also, the phenomena being studied in astronomy are on a much larger size scale than in any other subfield of physics.

A separation of the Physics Research I-IV course into Physics Research and Astronomy Research is proposed. This is necessary to acknowledge the different skill sets and knowledge acquired by students in these two types of research. Also, Astronomy Research I-IV will be an integral part of a proposed astronomy minor. Rowan has a vibrant program of research in astronomy and these newly designated courses will increase the visibility of these research efforts. This visibility will aid in the recruitment of talented science students to our campus as we open the new science building.

3. Essence of the Courses:

- a. Objectives: The objectives of these courses are to deepen the student's knowledge of astronomy, familiarize students in the use of telescopes, instruct students in the use of computers to process astronomical data, and improve the student's ability to communicate science.

4. Results of Consultations:

No consultations needed. These courses have no curricular impact on any other department.

5. Additional Comments:

The choice of Hegis number assumes that the related proposal to change the Hegis number of Methods and Techniques in Astronomy (from 1911.211 to 1911.231) is approved. This insures that the Hegis numbers for Astronomy Research I-IV are parallel to Physics Research I-IV.

Students have the opportunity to take Astronomy Research up to four semesters. The first term students take Astronomy Research I, the second term will be Astronomy research II, etc.. Students will take 3 to 6 units of Astronomy Research to fulfill the requirements of the physics major or astronomy minor programs. The sequence allows students to fulfill their requirements in a flexible manner (i.e., as their schedule allows).

6. Catalog Descriptions:

Rowan University
LIBRARY RESOURCES
 to

SUPPORT A NEW COURSE or NEW PROGRAM PROPOSAL

The purpose of this form is to provide a channel of communication between the library and faculty designing new courses/programs. The information will be used to assess the resources available in the library, and to identify resources the library should acquire to support the course/program. The information will also provide rationale for institutional support for library acquisitions

This form should be completed in a coordinated effort between the course sponsor(s) and the academic department liaison librarian.

- The sponsor(s) complete parts A & D
 If assistance is required to complete parts A & D, please notify the liaison librarian.
- Forward this form to the librarian who will complete parts B, C, & E

This form must be completed and attached to the original curriculum proposal before being approved by the Senate Curriculum Committee

A. College Liberal Arts & Sciences Department Physics & Astronomy

Proposed by: E. J. Guerra Date: June 25, 2003

Course Title: Astronomy Research I-IV

Anticipated Date for Course/Program Offering: Spring 2004

B. Describe the resources available in the library to support this course/program, including reference, monographic, electronic databases, audio-visual materials, etc. A summary statement is sufficient.

Recent reference works include the Oxford Astronomy Encyclopedia (2002) and the four volume Encyclopedia of Astronomy and Astrophysics (2001). There are both recent and older astronomical almanacs, dictionaries, and star atlases. Approximately 36 shelves of circulating monographs and oversize atlases are in the stacks on the fourth floor. We have online access to such databases as Academic Search Premier, WebSPIRS, JSTOR, and Science Direct. Taken together, these databases provide access to thousands of articles on astronomy and astrophysics, many full-text and some full-image. Our collection of audiovisual materials in astronomy consists of two shelves of videotapes of Stephen Hawking and NOVA-type programs on PBS, but in view of the rapid development of multimedia coverage of the subject, future acquisition of materials should be close behind satellite and space discoveries, perhaps delivered via Internet.

C. List key periodicals available in the library to support this course/program.

We subscribe to print issues of Astronomy, Astronomical Journal, NASA tech Briefs, and Sky & Telescope. Other periodicals are available from online databases as noted above.

D. List specific resources that should be acquired to support this course. None

E. Librarian comments and recommendations:

A review of government funded research by federal agencies available free or at nominal cost might be indicated. The National Science Foundation and the National Aeronautics and Space Administration are sources for published and online information, which occasionally is of such value as to be cataloged for the general collection if in print form, or linked to library resource pages if online.

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1911.211 1-3 s.h.

Astronomy Research I

(Prerequisite: faculty approval)

This course introduces and/or develops modern research techniques used in astronomy. Research is performed in collaboration with astronomy faculty. Emphasis will be placed on developing research skills, developing technical writing skills, and the development of skills needed for scientific presentations.

1911.212 1-3 s.h.

Astronomy Research II

(Prerequisite: faculty approval)

This course introduces and/or develops modern research techniques used in astronomy. Research is performed in collaboration with astronomy faculty. Emphasis will be placed on developing research skills, developing technical writing skills, and the development of skills needed for scientific presentations.

1911.311 1-3 s.h.

Astronomy Research III

(Prerequisite: faculty approval)

This course introduces and/or develops modern research techniques used in astronomy. Research is performed in collaboration with astronomy faculty. Emphasis will be placed on developing research skills, developing technical writing skills, and the development of skills needed for scientific presentations.

1911.411 1-3 s.h.

Astronomy Research IV

(Prerequisite: faculty approval)

This course introduces and/or develops modern research techniques used in astronomy. Research is performed in collaboration with astronomy faculty. Emphasis will be placed on developing research skills, developing technical writing skills, and the development of skills needed for scientific presentations.