PROCESS C NEW Programs - MAJOR Program Revisions - PROGRAM Name Changes

NOTE: LIBRARY RESOURCE FORM REQUIRED FOR THESE PROPOSALS **CURRICULUM PROPOSAL** SCC #02-03- #13

Deadlines:
Regular proposals: October 18, 2002 to be implemented Fall 2003; Short-Term proposals: December 6, 2002 to be implemented Fall 2003
Regular proposals: February 14, 2003 to be implemented Spring 2004; March 21, 2003 short-term courses to be implemented Spring 2004

PROPOSAL TITLE: A New Minor in Astronomy " Spr 04

Sponsor(s): Eddie J. Guerra E-Mail: guerra@rowan.edu Ext: 3276
E-Mail: Ext.
E-Mail: Ext.
E-Mail: Ext.

DEPARTMENT: Chemistry & Physics

COLLEGE: Liberal Arts & Sciences

If Liberal Arts & Sciences CHECK : ___ History/Humanities ✓ Math/Sciences ___ Social/Behavioral Sciences

✓ UNDERGRADUATE ___ GRADUATE

THE ATTACHED ***NEW PROGRAM – MAJOR PROGRAM REVISION – PROGRAM NAME CHANGE*** IS BEST DESCRIBED BY THE ITEM(s) CHECKED.

___ New degree program
___ New Major
___ New Major
✓ New Minor
___ Quasi curricular change
___ New concentration, specialization, or track
___ New Certificate of Graduate Study Program
___ Major changes to degree requirements, major, minor, or certificate program
___ Changes to College name, School name, Department name or Degree

The following signatures REPRESENT APPROVAL:

Department Chair: Date: 2/14/03
Department Curriculum Chair: Charles W. Schultz Date: 2-14-03
Academic Dean: Date: 2-14-03
College Curriculum Chair: Date: 3-27-03
~~College~~ Senate Curriculum Committee OPEN HEARING Date: 4/30/2003 Approved X Not Approved

UNIVERSITY CURRICULUM COMMITTEE

Senate Curriculum Chair Signature: 6/4/2003 Date: Senate Announcement/Vote: 6/10/2003
Comments:

EXECUTIVE VICE PRESIDENT/PROVOST Signature: Date: 7/17/03

✓ Approved ~ Not Approved due to the following: ___ Student Cr Hrs ___ Faculty Load Hrs ___ Equalized Cr Hrs

Date: ___ Official Copy & Approval Sheet Filed

REGISTRAR

9/22/03 Course Description Received & Approved ~ Hegis Taxonomy & Course #:
OFFICE OF THE PROVOST
Registrar Signature:
JUL 29 2003
ROWAN UNIVERSITY

NOTIFICATION FORWARD

✓ SCC Chair ✓ Academic Dean ✓ Department Chair ___ Registrar ___ Sponsor(s)
9-25-03 CAP & I R. Sent to 9/26/03

A New Minor in Astronomy

Sponsored by E. J. Guerra, Physics & Astronomy

An astronomy minor is proposed. Students with a strong interest in astronomy would benefit from a more cohesive program of study. Currently, students at Rowan learn about astronomy by taking certain courses or participating in research with faculty. These students would benefit if these two types of learning experience were fused into a program of study. Also, an astronomy minor increases the exposure of our astronomy program to prospective students and the public. The astronomy minor would be an ideal complement to math, science, and engineering majors.

Astronomy has a strong presence in the recently formed Department of Physics & Astronomy. There are three faculty actively engaged in astronomical research that involve undergraduates. The astronomy curriculum has grown in the last few years and continues to do so. The new science building has two prominent facilities, the planetarium and observatory, used for astronomy education and community outreach. The excitement of our astronomy program helps recruit students to our physics major.

The foundation of the minor is the 200-level astronomy courses currently offered. Astronomy & Astrophysics (1911.241) is a survey of the field with an emphasis on stellar astrophysics and cosmology. Exploration of the Solar System (1911.221) is course that deals with planetary astronomy in greater depth and it complements Astronomy and Astrophysics. Methods & Techniques in Modern Astronomy (1911.231) gives students hands on experience with telescopes and other equipment (such as image processing software and the planetarium). Optics & Light (1902.315) is a physics course that gives students the necessary theoretical background to understand telescopes and light in greater detail. These courses are designed to prepare the student for Astronomy Research (1911.211, 232, 311, 411). Finally, there is one elective course that a student will choose with approval from the astronomy minor advisor. In some instances, a student will need a math or computer science course to gain skills before undertaking Astronomy Research. In other cases, students may choose a course in another discipline that relates to their interests in astronomy. Also, students with strong backgrounds may opt to take an additional physics course or Astronomy Research.

This minor will be implement Spring 2004. Students currently taking the available courses that fulfill the minor could graduate with a minor if they took Astronomy Research in Spring 2004. No additional staffing or funds are required. The only new course, Astronomy Research, requires no additional staffing (see related course proposal). Equipment in the new science building will be sufficient for this program.

2. Details:

a. A New Minor in Astronomy
b. Sponsor: E. J. Guerra and the Department of Chemistry & Physics
c. 24 to 48 astronomy minors at any given time once the program is established. These numbers assume that existing courses do not need to be offered more often.
d. The minor will consists of three 200-level Gen-Ed astronomy courses that provide the astronomical background to pursue research or independent study in astronomy. There are two advanced core classes in physics and astronomy. The one elective has the option for students to take courses from other departments such as Mathematics and Computer Science. These elective choices will have no significant effect on enrollment in these courses. Students minoring in astronomy will most likely be taking these courses as part of their own major programs and the number of students who will be approved to take electives from other departments will be limited to several students.
e. Astronomy Minor Prerequisites:
Students must take Calculus I (1701.130) before taking Astronomy & Astrophysics (1911.241).
f. Minor to be **implemented Spring 2004.** There should be no more than 12 new minors in any given year. Current course offering have sufficient capacity for astronomy minors. No additional sections of courses are needed. Current staffing is adequate to handle such demand.
g. Equipment and space in the new science building is adequate. Current staffing is adequate. No additional resources are required.
h. Current library resources are adequate.

3. Rationale:

Students with a strong interest in astronomy would benefit from a more cohesive program of study. Currently, students at Rowan learn about astronomy by taking certain courses or participating in research with faculty. These students would benefit if these two types of learning experience were fused into a program of study.

Students with an interest in a career in astronomy are encouraged to major in physics. The physics major supplies the deepest background for careers in astronomy-related fields and graduate programs in astronomy. A physics major who wants to specialize in astronomy would be a natural candidate for the astronomy minor. Students in other majors that have a serious interest in astronomy could use the astronomy minor as a way to apply the skills from their discipline (e.g., math, chemistry, computer science) to pursue study and research in astronomy.

Astronomy has a strong presence in the recently formed department of Physics & Astronomy. There are three faculty actively engaged in astronomical research that involve undergraduates. The astronomy curriculum has grown in the last few years and continues to do so. The new science building has two prominent facilities, the planetarium and observatory, used for astronomy education and community outreach. Astronomy minors will use the cutting-edge technology in the new science building in an impressive and visual display of their technical skills. An astronomy minor will increase the exposure of our astronomy program and the university to prospective students and the public.

4. Essence of the Minor
   a. The goal of this program is to teach students the current knowledge of astronomy, the theoretical physics that underlies astronomical phenomena, how to use modern telescopes and other equipment to observe celestial objects, and how to use their analytical skills to conduct astronomical research.
   b. Specific objectives of the program.

c.

	Astronomy Minor Requirements	**21-22 s.h.**
1911.221	Exploration of the Solar System	3 s.h.
1911.231	Methods & Techniques in Astronomy (Observational Astronomy)	4 s.h.
1911.241	Astronomy & Astrophysics	4 s.h.
1902.315	Optics and Light	4 s.h.
1911.231, 232, 311,411	Astronomy Research I-IV (for a total of 3 s.h.)	3 s.h.
	Approved Astronomy, Physics, Math, Computer Science, or Natural Science Elective	3-4 s.h

SEQUENCE:

Lower Level (in suggested order):

1911.221 3 s.h.
Exploration of the Solar System
In the study of planetary science, the students will explore geology, chemistry, physics and astronomy in their applications to the composition, dynamics, atmospheres, surfaces, and magnetospheres of objects within the solar system.

1911.231 4 s.h.
Methods and Techniques in Modern Astronomy (Lecture and Lab)
(Prerequisite: 1701.130 or permission of instructor)
This course surveys current methods in modern astronomy research and education. The topics include, but are not limited to, modern telescopes (optical and radio), CCD cameras, astronomical data, imaging software, solar observing, and planetarium operation.

1911.215 4 s.h.
Astronomy and Astrophysics (Lecture and Lab)
(Prerequisite: 1701.130 or permission of instructor)
This course is an overview of astrophysics, with an emphasis on the relevant physics in modern astronomy. Topics include properties of stars, stellar structure and evolution, supernovae, white dwarfs, neutron stars, black holes, the Milky Way galaxy, star formation, interstellar medium, normal galaxies, active galaxies and quasars, and Big Bang cosmology.

Upper Level (order to be suggested by advisor):

1902.315 4 s.h. ok per E. Hanna

Optics and Light (Lecture and Lab)

(Prerequisites: 1701.131 and 1902.201 or 1902.203 or permission of instructor.)

This course studies the nature and propagation of light, dispersion, reflection and refraction at plane and spherical surfaces, lenses (thin and thick), aberrations of lenses and mirrors, optical instruments, polarization, diffraction and photometry. It also discusses modern developments and techniques (such as fiber optics, lasers, holography).

1911.211 1-3 s.h.

Astronomy Research I-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.

Astronomy, Physics, Math, Computer Science, or Science Elective 3-4 s.h.

PREREQUISITE:

Students must take Calculus I (1701.130) before taking Astronomy & Astrophysics (1911.241).

d. The Astronomy Minor will be administered by the newly formed Department of Physics & Astronomy. A member of the faculty from this department will be the coordinator and advisor of the minor.

5. Results of Consultation:

Pat Mosto, Biology	Pro
Steve Hartley, Computer Science	Pro
Ronald Czochor, Mathematics	Pro

6. New Course and Related Curriculum proposals:

- Astronomy Research I-IV 1911.231, 232, 311,411
- Hegis number changes to Methods & Techniques in Modern Astronomy and Astronomy & Astrophysics

ROWAN UNIVERSITY

Biological Sciences

TO: Dr. Erick Guerra
FROM: Dr. Patricia Mosto, Chair Biology Department
RE: Creation of an Astronomy Minor
DATE: 10/18/02

The Department has read the document you presented to us regarding the creation of an Astronomy Minor, and the Department support the Physics Department decision to create such a minor. We see an advantage for some of our Biology Majors to have such Minor alternative. We also do not see any problems with suggesting the election of a Natural Science class within their requisites for completion.

If you need further assistance, please don't hesitate to contact me.

201 Mullica Hill Road • Glassboro, New Jersey • 08028-1701 • Phone (856) 256-4833 • Fax (856) 256-4921

Erick,

We approve of your Astronomy Minor and like the idea of Rowan students having this option available to supplement their education.

Our only concern is, as you state in your letter of consultation request, that given our current staffing levels, we might not be able to offer enough sections of the approved computer science courses if the minor turns out to be popular.

We will assume that if the Provost approves the Astronomy minor, then we will receive funding for an increase in staffing should the minor prove popular.

Thank you for soliciting our comments.

Steve Hartley
Chair, Computer Science Curriculum Committee

ROWAN UNIVERSITY

Mathematics Department

MEMO

TO: Erick J. Guerra
Physics and Astronomy

FROM: Ron Czochor, Chair
Mathematics Dept

DATE: March 28, 2003

RE: Consultation on proposal for a Minor in Astronomy

Thank you for the opportunity to comment on your proposed Minor in Astronomy. I have read the proposal carefully and I am in support of the proposal to provide an opportunity for our students to minor in astronomy. As you know, mathematics is a discipline that provides enormous benefit in its application to other disciplines and the availability of a minor dedicated to astronomy would broaden our students' choices for application of their mathematics degree.

I think the structure of the program is well designed and I am encouraged by the flexibility it provides students to tailor their programs relative to their major interests. This should be a beneficial addition to Rowan's group of minors and concentrations. It will produce no additional costs for the mathematics department and should not affect our curricular offerings.

ROWAN UNIVERSITY

Office of the Executive Vice President / Provost

September 12, 2003

Judith K. Winn,
Chair Academic Issues Committee
400 Paramus Road
Paramus, NJ 07652-1595

Dear Dr. Winn,

Please be advised that at the September 10, 2003 meeting of the Rowan University Board of Trustees the following was approved:

- Minor in Astronomy

A copy of the Rowan University Board of Trustees' resolution is attached.

Sincerely Yours,

Helen Giles-Gee

Helen Giles-Gee, Provost

rw
c: Commission on Higher Education
Dept. of Military and Veterans Affairs

enclosure

201 Mullica Hill Road • Glassboro, New Jersey • 08028-1701 • Phone: (856) 256-4108 • Fax: (856) 256-4435

RESOLUTION #6

APPROVAL OF MINOR IN ASTRONOMY

WHEREAS, the academic program, Astronomy has been developed and approved by the Department of Chemistry & Physics, and

WHEREAS, there is demonstrated interest for this field of study as evidenced by the enrollment of students in astronomy and their requests for the program, and

WHEREAS, this program has been approved by the Dean of the College of Liberal Arts & Sciences, the University Senate and the Provost, and

WHEREAS, this program has been reviewed and approved by the Academic Affairs Committee of the Board of Trustees

THEREFORE BE IT RESOLVED that the academic program Minor in Astronomy be approved for implementation beginning in Spring 2004.

SUMMARY STATEMENT

By this resolution the Board of Trustees approves the offering of the Minor in Astronomy and authorizes the President to proceed with the offering of this Minor beginning Spring 2004 and to advise the New Jersey Commission on Higher Education of this addition.

9/10/03

Refer

minor in Astronomy associate with Degree in Physics + Physical Science

~~= a bachelor of Science in Physic~~

" " " " in Physical

offered b[illegible] Physics + Astronomy

RESOLUTION #6

APPROVAL OF MINOR IN ASTRONOMY

WHEREAS, the academic program, Astronomy has been developed and approved by the Department of Chemistry & Physics, and

WHEREAS, there is demonstrated interest for this field of study as evidenced by the enrollment of students in astronomy and their requests for the program, and

WHEREAS, this program has been approved by the Dean of the College of Liberal Arts & Sciences, the University Senate and the Provost, and

WHEREAS, this program has been reviewed and approved by the Academic Affairs Committee of the Board of Trustees

THEREFORE BE IT RESOLVED that the academic program Minor in Astronomy be approved for implementation beginning in Spring 2004.

SUMMARY STATEMENT

By this resolution the Board of Trustees approves the offering of the Minor in Astronomy and authorizes the President to proceed with the offering of this Minor beginning Spring 2004 and to advise the New Jersey Commission on Higher Education of this addition.

9/10/03

ROWAN UNIVERSITY

Office of the Executive Vice President / Provost

hand to Nelda 9/25/03

September 23, 2003

Judith K. Winn,
Chair Academic Issues Committee
400 Paramus Road
Paramus, NJ 07652-1595

Dear Dr. Winn,

Please be advised that at the September 10, 2003 meeting of the Rowan University Board of Trustees the following was approved:

- Minor in Astronomy to be housed in the Physics and Astronomy Department

A copy of the Rowan University Board of Trustees' resolution is attached.

Sincerely Yours,

Helen Giles-Gee

Helen Giles-Gee, Provost

rw
c: Commission on Higher Education
Dept. of Military and Veterans Affairs

enclosure

201 Mullica Hill Road • Glassboro, New Jersey • 08028-1701 • Phone: (856) 256-4108 • Fax: (856) 256-4435

RESOLUTION #6

APPROVAL OF MINOR IN ASTRONOMY

WHEREAS, the academic program, Astronomy has been developed and approved by the Department of Chemistry & Physics, and

WHEREAS, there is demonstrated interest for this field of study as evidenced by the enrollment of students in astronomy and their requests for the program, and

WHEREAS, this program has been approved by the Dean of the College of Liberal Arts & Sciences, the University Senate and the Provost, and

WHEREAS, this program has been reviewed and approved by the Academic Affairs Committee of the Board of Trustees

THEREFORE BE IT RESOLVED that the academic program Minor in Astronomy be approved for implementation beginning in Spring 2004.

SUMMARY STATEMENT

By this resolution the Board of Trustees approves the offering of the Minor in Astronomy and authorizes the President to proceed with the offering of this Minor beginning Spring 2004 and to advise the New Jersey Commission on Higher Education of this addition.

9/10/03

ROWAN UNIVERSITY

Office of the Executive Vice President / Provost

September 12, 2003

Judith K. Winn,
Chair Academic Issues Committee
400 Paramus Road
Paramus, NJ 07652-1595

Dear Dr. Winn,

Please be advised that at the September 10, 2003 meeting of the Rowan University Board of Trustees the following was approved:

- Minor in Astronomy to be housed in Physics

A copy of the Rowan University Board of Trustees' resolution is attached.

Sincerely Yours,

Helen Giles-Gee

Helen Giles-Gee, Provost

rw
c: Commission on Higher Education
Dept. of Military and Veterans Affairs

enclosure

201 Mullica Hill Road • Glassboro, New Jersey • 08028-1701 • Phone: (856) 256-4108 • Fax: (856) 256-4435

RESOLUTION #6

APPROVAL OF MINOR IN ASTRONOMY

WHEREAS, the academic program, Astronomy has been developed and approved by the Department of Chemistry & Physics, and

WHEREAS, there is demonstrated interest for this field of study as evidenced by the enrollment of students in astronomy and their requests for the program, and

WHEREAS, this program has been approved by the Dean of the College of Liberal Arts & Sciences, the University Senate and the Provost, and

WHEREAS, this program has been reviewed and approved by the Academic Affairs Committee of the Board of Trustees

THEREFORE BE IT RESOLVED that the academic program Minor in Astronomy be approved for implementation beginning in Spring 2004.

SUMMARY STATEMENT

By this resolution the Board of Trustees approves the offering of the Minor in Astronomy and authorizes the President to proceed with the offering of this Minor beginning Spring 2004 and to advise the New Jersey Commission on Higher Education of this addition.

9/10/03