

Approved Fall 93

Approval Form

Proposal Title: Minor in Physics

Sponsor(s) K. Noyes-Sauer Dept.: Physical Sciences Ext. 6338

Check one: Course Specialization Concentration Minor Achievement Certificate
 Certification Program Major Program Minor Change (please name deletion or credit/title/catalog change)

Undergraduate Graduate Credit Hours

<p>Step 1 (Department)</p> <p><input checked="" type="checkbox"/> Approved <u>2/2/93</u> Date</p> <p><input type="checkbox"/> Not Approved</p> <p>Dept. CC Chairperson</p> <p><input type="checkbox"/> Reviewed</p> <p>Dept. Chairperson</p>	<p>Step 2 (Receipt)</p> <p><input type="checkbox"/> SCC#</p> <p>Proposal Received</p> <p>Date</p> <p>SCC Chairperson</p>	<p>Step 3 (School CC)</p> <p>Reviewed <u>2-22-93</u></p> <p><input checked="" type="checkbox"/> Approved <input type="checkbox"/> Not Approved</p> <p>Comments:</p> <p>School Curr Comm Chairperson</p>
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Step 4 (Academic Dean)

Recommend
 Not Recommend
 Conditionally Recommend (see, comments)

Reviewed 2/23/93
Date

Comments:

Signature, Dean of School

Step 5 (SCC)

Open Hearing 4/2/93
Date

Approved by Senate Curriculum Committee 4/27/93
Date

Returned to sponsor(s) for the following reasons:

Step 6 (Senate)

Presented to Senate 4/30/93
Date

Approved Not Approved

Notification to Executive Vice-President/Provost 4/30/93
Date

Signature, SCC Chairperson

Step 7 (Executive V.P./Provost)

Received _____

If no reasons are as follows _____

Approved: Yes No

Student credit hours _____

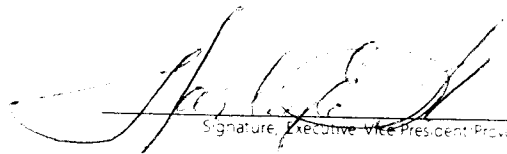
Faculty load hours _____

Equalized credit hours _____

Official copy and approval sheet filed 9/8/93

Date

ACT



Signature, Executive Vice President/Provost

Registrar

Approved course description received 21 Sept 93

Date

Hegis Taxonomy and Course Number assigned 101902

B. L. Tolson

Signature, Registrar

21 Sept 93

Date

Notification forwarded:

- Senate Curriculum Committee Chairperson
- Department Chairperson(s)
- Academic Dean(s)
- Registrar
- Sponsor(s)

Curriculum Proposal to Establish a Minor in Physics

1. ABSTRACT

Minor in Physics

Sponsor: K. Magee-Sauer, H. Ling, and E. Flores Department of Physical Sciences

There are several departments on campus which require their majors to take the Physics I and II sequence. Many students in those departments enjoy physics and wish to pursue disciplines within their major which require advanced knowledge of physics. A Minor in Physics would help document the student's talent and interest in physics, and aid in their selection to graduate school or hiring in industry.

The Physics Program is within the Department of Physical Sciences. The degree programs available are a B.S. in Chemistry and a B.S. in Physical Sciences (Chemistry, Physics, and Physical Science). Students within the B.S. in Physical Sciences could not minor in Physics.

A Minor in Physics would require the student to take the Physics I and II (with or without calculus), Physics III and a choice of 2 upper level Physics electives (19-20 s.h.).

This minor program would not require additional resources since the courses within the minor program are already being taught and would be able to handle additional enrollment.

2. Details

a. Title: Minor in Physics

b. Sponsor: K. Magee-Sauer, Department of Physical Sciences

c. Size of Program: Physics courses are typically populated with Physical Science, Chemistry, Mathematics, Computer Science, Biology, and Pre-engineering majors. Upper level courses are populated with Physical Science, and Pre-engineering students. A few Post-Baccalaureate (Teaching) or MST students occasionally enroll in upper level physics courses as well. At least one upper level Physics course is offered each semester. The sections could handle additional enrollment.

d. Relationship to Curriculum: Physics I and II are General Education Science Courses. Physics III and other upper level physics courses are electives. Physics I and II are required of Biology, Mathematics, Computer Science, and Chemistry.

e. Prerequisites: Physics I and II are prerequisites for all upper level Physics courses. Physics I and II with or without calculus may be taken. However, Calculus (I and II) are prerequisites for all upper level Physics courses. (Computer Science, Mathematics, and Chemistry students are all required to take Calculus I and II as part of their degree programs anyway, Biology majors are required to take Calculus I and would need to take Calculus II or receive permission from the instructor to take upper level physics courses).

f. Implementation time frame: All courses required for the minor are already present.

g. Resources required: No additional resources are required. All courses are already being offered.

3. Rationale:

There are several departments on campus which require their majors to take the Physics I and II sequence. Many students in those departments enjoy physics and wish to pursue disciplines within their major which require advanced knowledge of physics. A Minor in Physics would help document the student's talent and interest in physics, and aid in their selection to graduate school or hiring in industry.

The majors which require the Physics I and II courses are Mathematics, Computer Science, Biology, and Chemistry. Engineering majors will also be required to take Physics.

Computer Science and Mathematics majors may choose the field of applied Physics to focus their analytical learning. Mathematical Physics and the newer field of Computational Physics are

possible career paths that are open to these majors. A minor in Physics at the undergraduate level will help prepare these majors for further study or work in Applied Mathematics or Computer Science.

Biology (Life Science) majors are also required to take the Physics I and II sequence. There are large numbers of Biology majors who wish to pursue medical fields. Medical Physics is a field exploding with opportunities. The demand for Medical Physicists is high and the employment opportunities rich. The field of Radiology (medical imaging) requires a deep understanding of Physics. With a minor in Physics, students wishing to pursue Medical Physics/Radiology would be able to strengthen their foundations in Physics which will help them succeed in medical or graduate school.

Chemistry majors as well would benefit from the minor in Physics. There are several fields in Chemistry where the area between Physics and Chemistry overlaps. Chemists wishing to pursue theoretical and physical chemistry need to have a strong foundation in Physics. Chemistry majors who wish to pursue a more theoretical path would be able to document their interest and talent in the foundations of their theoretical work.

4. Essence of Minor in Physics

a. Goals:

- Provide the opportunity for students in math and sciences to pursue further work in a field related to Physics.
- Encourage deeper study in fundamental science.

b. Objectives:

- For students to achieve an understanding of introductory physics through a survey course of mechanics, heat, waves, electricity and magnetism, and optics.
- For students to achieve an understanding of the Physics of atoms, molecules, and sub-atomic Physics as well as materials through a course in Modern Physics.
- For students to obtain laboratory skills at both the introductory and upper levels.
- Allow maximum flexibility to students to design minor to his/her interests.

c. Summary of Curriculum: To obtain a minor in Physics a student would be required to take:

Physics I (with or without calculus)	4 s.h.
Physics II (with or without calculus)	4 s.h.
Physics III (Modern Physics)	4 s.h.
and choose two upper level Physics electives	
Mechanics	4 s.h.
Electricity and Magnetism	4 s.h.
Optics	4 s.h.
Electric Circuits	4 s.h.

Mathematical Physics

3 s.h.

Quantum Mechanics*

Statistical Mechanics*

*upper level physics courses currently being developed

For a total of 19 - 20 hours of courses in Physics.

d. Administration: The administration of the minor in Physics would be from within the Department of Physical Sciences.

5. Consultations:

Richard Meagher, Chairman, Life Science

Gary Itzkowitz, Chairman, Mathematics

Seth Bergmann, Chairman, Computer Science.

Robert Newland, Chairman, Chemistry and Physics

Pearl Bartelt, Dean SLAS

David Kappel, Dean SERPS

Robert Fleming, Dean Business

Donald Gephardt, Dean FPA



Rowan College of New Jersey

Glassboro, New Jersey 08028-1701

TO: Karen Magee-Sauer

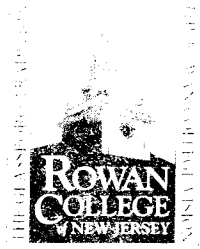
FROM: Pearl W. Bartelt, Acting Dean
Liberal Arts and Sciences

DATE: January 29, 1993

SUBJECT: Minor in Physics

I am happy to provide my support for a minor in Physics. The courses to support the minor are already being offered as part of the Physical Sciences department curriculum. The minor will permit students from areas such as Mathematics, Computer Science, Biology, and Chemistry to graduate with one more credential. I think future engineering students also may be interested in this minor.

c. R. Newland



Rowan College of New Jersey

Glassboro, New Jersey 08028-1701

To: Curriculum Committee
From: Robert Newland, Chair
Subject: Physics Minor
Date: January 25, 1993

RF Newland

The Department of Physical Sciences supports the efforts of its Physics Section in offering a Minor in Physics. Such a Minor should be appealing to Life Science, Computer Science, Chemistry and Mathematics Majors. It will provide an opportunity for interested students to enhance and formalize their study in this fundamental field. The design of the Minor provides flexibility following the fundamentals. This will permit students to focus their interest and aid them in seeking careers.

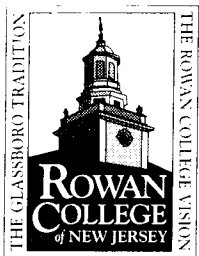


GLASSBORO STATE COLLEGE

Computer Science Department Glassboro, New Jersey 08028-1767 (609) 863-6044

To: Haren Magee-Sauer, Physical Sciences Dept.
From: Don Stone, Computer Science Dept. (Chair) DCS
Date: Feb. 1, 1992
Re: Proposal for a minor in Physics

I have looked over the proposal for a minor in Physics, and I think it will be a valuable addition to the curricular options available to our students. Those who are late enter in scientific computing or who just enjoy studying the sciences are good candidates for the proposed minor. I see no problems with any of the specific details in the proposal; it looks like a good package to me.



Rowan College of New Jersey

Glassboro, New Jersey 08028-1701

January 28, 1993

Dr. Karen Magee-Sauer
Assistant Professor
Physical Sciences Department
Rowan College of New Jersey

Dear Karen:

I, and other members of the Life Sciences Department, have reviewed the proposal sponsored by Eduardo Flores, Hong Ling and you for a minor in Physics.

A minor in Physics at Rowan College is long overdue. The Life Sciences Department wholeheartedly endorses the introduction of a minor in Physics by the Physical Sciences Department.

Sincerely,

A handwritten signature in cursive script that reads "Richard J. Meagher".

Richard J. Meagher, Ph.D.
Professor of Biology
Chairperson,
Life Sciences Department

RJM/ehd

cc: R. Newland

Faculty Senate Curriculum Committee

Rowan Math Department Memo

To: Prof. K. Magee-Sauer
From: Gary Itzkowitz, Chair *GR*
Date: January 26, 1993
Subject: Consultation regarding the Proposed Physics Minor

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I have read your proposal and agree whole-heartedly with the proposal. When I was an undergraduate I wanted very much to study physics in addition to my mathematics, but my College did not have a minor and the physics department went out of its way to make it impossible for me to take advanced courses.

If this proposal gets accepted, and I assume it will, you can be sure that I will plug it with all my advisees. For anyone going into applied mathematics, a physics minor is almost mandatory. I am glad that we will finally have this minor on this campus.

You have my best wishes for its success!

G. Itzkowitz



GLASSBORO STATE COLLEGE

School of Fine and Performing Arts

Glassboro, New Jersey 08028-1777 (609)863-7363

Office of the Dean

January 27, 1993

TO: Karen Magee-Sauer, Assistant Professor, Physical Sciences
FROM: Donald L. Gephardt, Dean of Fine and Performing Arts
RE: Proposed Minor in Physics

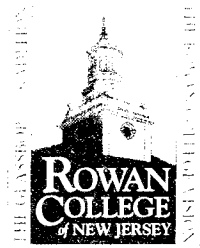
I have received the proposal to initiate a Minor program in Physics. Certainly I agree with the rationale as outlined in the proposal and agree that this program would be attractive for majors in mathematics, computer science and the sciences. Also, it is very appropriate given our movement towards developing an Engineering School at Rowan.

Occasionally, we may have an arts major interested in a more in-depth experience in science. Although you do not offer an acoustics course, some musicians are interested in getting a physics background given the explosion of the uses in electronic technology in this field.

I endorse your proposal and urge its passage.

DLG

jmm



Rowan College of New Jersey

Glassboro, New Jersey 08028-1701

January 28, 1993

To: Dr. Karen Magee-Sauer

From: Dr. Robert S. Fleming, Acting Dean
School of Business Administration

Subj: Minor in Physics Consultation

Thank you for affording me the opportunity to review your proposal for a Minor in Physics. It appears to be a proposal that reflects much research and thought. I believe that there is a market for this program. It would seem that this market might be limited in the beginning but would grow with the start up of the proposed School of Engineering.

While I enthusiastically support your proposal I would acknowledge that it will probably have no significant impact on our programs in the School of Business Administration.

Should I be able to provide any additional assistance with this proposal, please feel free to contact me.