

OCEAN COUNTY COLLEGE
COURSE PROPOSAL FORM #7100-1
DEPARTMENT OF SCIENCE OF SCIENCE AND ENGINEERING

1. Course Number and Title: PHYS 282 General Physics II
2. Semester Hours: 4 s.h. Contact Hours: (3 + 2)
Lecture Lab
3. Catalog Description: A continuation of Physics 281 dealing with waves, electric fields, potential, capacitance, AC and DC circuits, magnetic fields, electromagnetic waves, geometric optics, and interference and diffraction. This course is required for all students planning to transfer to four-year institutions as engineering, physical science, pre-med, and computer science majors.
4. Prerequisites: PHYS 281, MATH 265

Co-requisites: MATH-266
5. Maximum Class Size: 24 Course Fee Code: 3 Differential Funding Category: A

Course Type for Perkins Reporting: ___ vocational X non-vocational

6. Justification

- a. Describe the need for this course.

This course will contribute to the fulfillment of the Lab Science general education requirement for graduation and transfer. The course is required for all students planning to major in engineering, physical science, pre-med, and computer science. PHYS 281 and PHYS 282 will replace PHYS 271, 272, and 273, which together transfer as two 4-credit courses. PHYS 271, 272, and 273 will be rendered obsolete.

- b. Relationship to courses within the College:

- i. Does this course satisfy a general education requirement? X yes ___ no
If yes, mark with an "x" the appropriate category below.

___ Communication ___ Social Science X Lab Science
___ Mathematics ___ Humanities

- ii. Does this course satisfy a Group A or Group B Humanities/Literature requirement for the AA in Liberal Arts degrees? ___ yes X no

If yes, mark with an "x" the appropriate category. ___ Group A ___ Group B

- iii. If the course does not satisfy a general education requirement, which of the following does it satisfy:

___ Program-specific requirement for the following degree program:

___ Elective

- iv. Does this course satisfy the diversity requirement for the AA in Liberal Arts degree?
___ yes X no

[The diversity requirement is defined as “any course whose primary purpose is to help students analyze the implications of the commonalities and differences among culturally diverse people(s). This requirement may include courses in gender studies or in non-western history and thought.”]

If yes, please explain: _____

- v. Does this course satisfy the computer literacy requirement? ___ yes X no

c. Related courses in other institutions:

[NOTE: The two charts below need to be completed when submitting a new course proposal. They do not need to be completed for most course revisions, unless an Official Course Description is so old that the course’s transferability needs to be reconsidered, as in the case of an obsolete course which may be reactivated.]

- i. List any comparable course(s) by completing the table below. Insert “None” if there are no comparable courses.

Comparable Courses at NJ Community Colleges				
Institution	Course Title	Course Number	Number Of Credits	Comments
Brookdale CC	General Physics II	122	4	“introductory physics for students majoring in science or engineering. The student will employ the calculus in the development of the basic concepts of electrostatics, DC circuits, magnetism, magnetic induction, AC circuits, light and optics.”
Mercer CC	University Physics II	217	4	“Second course in a three-semester calculus-based sequence. Covers principles of electricity and magnetism: Coulomb's Law, the electric field, electrical potential, dielectrics and capacitance, resistivity, magnetic force and magnetic field, induction, accelerators, the magnetic properties of matter, DC and simple AC circuits. Includes Maxwell's equations and radiation.”

Raritan Valley CC	Engineering Physics II	151	4	“The second semester of a three-semester sequence in introductory physics which is required for students majoring in the engineering sciences. Also highly recommended for transfer students majoring in the physical sciences. Topics studied include electric and magnetic forces and fields, direct and altering current circuits and components, and Maxwell’s equations.”
Burlington CC	General Physics II	212/213	3+1	No description available
Morris CC	Engineering Physics II	133/134	4+1	“This is the second course of a three-semester, calculus-based physics sequence. Topics include simple harmonic motion, waves, electromagnetic theory and applications, Maxwell’s equations in integral form.”
Bergen CC	Physics II	290	4	“This course is the continuation of PHY-280 Physics I, and is primarily a study of electricity and magnetism. It covers electrostatics, electrical circuits, magnetic fields and forces, capacitance and inductance, Maxwell’s equations, and the properties of fluids”

- ii. If “None” was inserted, please explain.
- iii. Complete the table below. The institutions listed comprise the top six institutions queried on NJTransfer by OCC students.

Transferability of Proposed Course				
Institution	Course Code, Title, And Credits	Transfer Category (Major, General Ed., or Elective)	Will NOT Transfer (Place an “x” in box)	Unable to Determine Status (Place “U” in box)
Rutgers- New Brunswick	Phys 204 Gen Phys II	General Ed		
Georgian Court University	PH 122Gen Phys II	Major, General Ed		
Richard Stockton College	Phys 2230 Gen Phys II	Major, General Ed		
Monmouth University	PH 212 Gen Phys w/Calc	Major, General Ed		
Kean University	Phys 2096 Physics II	Major, General Ed		

Rowan University	PH 201 Phys II	Major, General Ed		
NJIT	Phys 121 and 121A Phys II	Major, General Ed		
Rutgers Engineering	Phys II	Phys 124		

- iv. If a “U” was inserted above, document the course transferability by providing either (a) the name of a contact person at the four-year institution, or (b) an email from the contact person (attach to this proposal).
 - v. If not transferable to any institution, explain.
- d. Consistency with the vision and mission statements, the Academic Master Plan, and the strategic initiatives of the College.

This course addresses the College’s vision, mission, and Academic Master Plan by

- (1) Demonstrating the college’s commitment to offer comprehensive educational programs that develop intentional learners of all ages. (Mission Statement)
- (2) Seeking to ensure that students will thrive in an increasingly diverse and complex world. (Vision Statement)
- (3) Preparing students for successful transfer to other educational institutions and/or for entrance into the workforce. (Academic Master Plan)
- (4) Seeking to empower students through the mastery of intellectual and Practical Skills. (Academic Master Plan)
- (5) Challenging students to transfer information into knowledge and knowledge into action. (Academic Master Plan)

- e. Mark with an “x” the General Education goal(s) addressed by this course:

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> 1. Independent Thinking | <input checked="" type="checkbox"/> 5. Science & Social Science | <input checked="" type="checkbox"/> 9. Global Perspective |
| <input checked="" type="checkbox"/> 2. Communication | <input type="checkbox"/> 6. Aesthetic Appreciation | <input type="checkbox"/> 10. Health & Well Being |
| <input checked="" type="checkbox"/> 3. Problem Solving | <input type="checkbox"/> 7. Historical Consciousness | <input type="checkbox"/> 11. Civic Responsibility |
| <input checked="" type="checkbox"/> 4. Ethical Judgment | <input type="checkbox"/> 8. Diversity | <input checked="" type="checkbox"/> 12. Technology |
| | | <input type="checkbox"/> 13. Lifelong Learning |

7. Specific Course Learning Objectives:

Students who successfully complete this course will be able to:

- 1. Explain the fundamental concepts, laws, and relationships of waves, dc and ac circuits, electric and magnetic fields, inductance, light, and geometric optics.
- 2. Demonstrate a working knowledge of the instruments and techniques of scientific inquiry including the calibration, use, and critical analysis of the results.
- 3. Demonstrate the skills necessary for scientific inquiry including the application of mathematics through differential and integral calculus.

8. Methods of Instruction: Lecture/Discussion and Laboratory

9. Instructional Materials:

An appropriate text will be selected. Contact the department for current adoptions.

A pocket calculator with trigonometric functions.

Optional Materials: None

10. Tentative Topical Outline:

Course Week	Topic & Chapter
1	Electric Forces
2	Electric Fields
3	Electric Potential
4	Capacitance
5	Current
6	DC Circuits
7	Magnetic Field & Force
8	Faraday's Law
9	Electromagnetic Induction
10	Electromagnetic Waves
11	Electromagnetic Waves
12	Reflection & Refraction
13	Image Formation
14	Wave Optics
15	Interference & Diffraction

11. Grade Determinants:

The final grade in this course will be the cumulative grade based on the following letter grades or their numerical equivalents for the course assignments and examinations:

A	Excellent	C	Average	I	Incomplete
B+	Very Good	D	Below Average	W	Withdrawn
B	Good	F	Failure	R	Audit
C+	Above Average	P	Passing	NC	No Credit

12. Number of Papers and Examinations:

A minimum of three major examinations and weekly written lab assignments.

APPROVAL PROCESS FOR A REVISED COURSE PROPOSAL (SYLLABUS)

Revision of the Following Items Must Be Sent to the Curriculum Committee	Revision of the Following Items Require No Approval
#1 Course Number & Title	#8 Methods of Instruction
#2 Semester Hours/Contact Hours	#9 Instructional Materials
#3 Catalog Description	#10 Tentative Topic Outline
#4 Prerequisites & Co- requisites	#11 Grade Determinants
#5 Maximum Class Size/Lab Fee Code/ Differential Funding Category	#12 Number of Papers and Examinations
#6 Justification	
#7 Course Objectives	