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

1. Course Number and Title: PHYS 281 General Physics I

2. Semester Hours: 4 s.h. Contact Hours: (3 + 2)
Lecture Lab

3. Catalog Description: Deals with composition of vectors, linear motion, kinematics, Newton's laws, work and energy, momentum, and rotation motion. In addition, equilibrium, gravitation, simple harmonic motion, heat and kinetic theory, and the 1st and 2nd laws of thermodynamics are covered. This course is recommended for students planning to transfer to four-year institutions as engineering, physical science, pre-med, and computer science majors. Four years of high school mathematics and one year of one year of high school physics are highly recommended for students enrolling in this course.

4. Prerequisites: None

Co-requisite: MATH-265

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				
Brookdale CC	General Physics I	121	4	"introductory physics for students majoring in science or engineering. The student will employ the calculus in the development of the basic concepts of vectors; kinematics and dynamics in one and two dimensions; work and energy; momentum; rotational mechanics; oscillating motion; wave motion and sound, heat and thermodynamics"
Mercer CC	University Physics I	117	5	"First course in a calculus-based sequence for engineering and science majors. Topics include kinematics, force, Newton's second law, work, energy, momentum, conservation of energy, conservation of momentum, rotational motion, angular momentum, conservation of angular momentum, statics, simple harmonic motion, waves, gravitation, fluid pressure, and thermodynamics"
Raritan Valley CC	Engineering Physics I	150	4	"The first semester of a three semester sequence in introductory Calculus-based 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 kinematics and dynamics of particles and rigid bodies, Newton's Laws and the nature of forces, momentum and energy, gravity, and fluid mechanics."
Burlington CC	General Physics I	210/211	3+1	No description available
Morris CC	Engineering	130	4	"This is the first course of a three-semester, calculus-

	Physics I			based physics sequence. Topics include particle kinematics and dynamics in one and in two dimensions, work and energy, impulse and momentum, rotational motion, kinematics and dynamics of rigid bodies and elements of thermodynamics"
Bergen CC	Physics I	280	4	"This course is the first semester of a three-semester, calculus based physics sequence, and is a study of mechanics (motion, forces, and the conservation laws). It covers kinematics, dynamics, statics, energy, momentum, oscillations, gravity, and the properties of solid matter."

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 203 Gen Phys I	General Ed		
Georgian Court University	PH 121Gen Phys I	Major, General Ed		
Richard Stockton College	Phys 2220 Gen Phys I	Major, General Ed		
Monmouth University	PH 212 Gen Phys w/Calc	Major, General Ed		
Kean University	Phys 2095 Physics I	Major, General Ed		
Rowan University	PH 200 Phys I	Major, General Ed		
NJIT	Phys 111 and 111A Phys I	Major, General Ed		
Rutgers Engineering	Phys I	Phys 123		

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

i. Demonstrating the college's commitment to offer comprehensive educational programs that develop intentional learners of all ages. (Mission Statement)
ii. Seeking to ensure that students will thrive in an increasingly diverse and complex world. (Vision Statement)
iii. Preparing students for successful transfer to other educational institutions and/or for entrance into the workforce. (Academic Master Plan)
iv. Seeking to empower students through the mastery of intellectual and Practical Skills. (Academic Master Plan)
v. 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:

X 1. Independent Thinking	X 5. Science & Social Science	X 9. Global Perspective
X 2. Communication	_ 6. Aesthetic Appreciation	_ 10. Health & Well Being
X 3. Problem Solving	_ 7. Historical Consciousness	_ 11. Civic Responsibility
X 4. Ethical Judgment	_ 8. Diversity	X 12. Technology
		_ 13. Lifelong Learning

7. Specific Course Learning Objectives:

Students who successfully complete this course will be able to:

a. Explain the fundamental concepts, laws, and relationships of mechanics, motion, and thermodynamics.
b. Demonstrate a working knowledge of the instruments and techniques of scientific inquiry including the calibration, use, and critical analysis of the results.
c. 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
1	Introduction, Linear Motion
2	Motion in 2 Dimensions
3	Newton's Laws
4	Applications of Newton's Laws
5	Work & Energy
6	Potential Energy & Conservation

7	Momentum
8	Rotational Motion
9	Gravitation
10	SHM
11	Waves
12	Fluids
13	Temperature, Heat & Kinetic Theory
14	1st Law of Thermodynamics
15	2nd Law of Thermodynamics

11. Grade Determinants:

The final grade in the 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	