The College of New Jersey  
Office of Records & Registration  
P.O. Box 7718, Ewing, NJ 08628-0718  
609-771-2141

INDEPENDENT STUDY OR MENTORED RESEARCH ENROLLMENT FORM

<table>
<thead>
<tr>
<th>NAME:</th>
<th>ID #:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Last</td>
<td>First M.I.</td>
</tr>
<tr>
<td>PHONE:</td>
<td>EMAIL:</td>
</tr>
<tr>
<td>ADDRESS:</td>
<td></td>
</tr>
<tr>
<td>Street</td>
<td>City</td>
</tr>
</tbody>
</table>

This Independent Study Enrollment form must be submitted to the Office of Records and Registration at the time of registration. Registration will not be permitted if the form is incomplete or signatures are missing.

Do not use this form to establish a course to be taught on TBA basis. Independent study is not to be substituted for a regular course.

SEMESTER: Fall ___ Spring ___ Summer ___ Year: _______

COURSE ID: ______________ SECTION ID: __________ (for Records & Registration only)

INSTRUCTOR: ______________ DEPARTMENT ______________

NUMBER OF UNITS: _____ (Undergraduate – not to exceed 1.5 Units) (Graduate – not to exceed 9 credits)

GPA: _______ (Undergraduate – must be 2.5 or greater, Graduate – 3.0 or greater)

UNDERGRADUATE ONLY: TOTAL EARNED COURSE UNITS: _______ (Undergraduate -- must have completed at least 14 Units – At least 3.75 units must be from TCNJ)

INDEPENDENT STUDY SUMMARY PROPOSAL: (Full proposal documenting course of study must be filed with the Instructor only)

Independent Study Counts as: ___ In-major Requirement for requirement  
___ General Education for requirement  
___ Elective Credit

Please sign and date where indicated. All signatures must be completed before registration will be processed:

STUDENT: __________________________ DATE: _________

INSTRUCTOR: __________________________ DATE: _________

DEPARTMENT CHAIR (or Designee): __________________________ DATE: _________

DEAN (or Designee): __________________________ DATE: _________

Revised 02/10/11
THE COLLEGE OF NEW JERSEY
DEPARTMENT OF PHYSICS
Project Proposal for PHY 493 - Independent Research II

NAME: ____________________________ PAWS ID: ________________________

Fall, Spring, Summer 20_______ GPA: __________

MAJOR: ___________________________ JR/SR LOCAL PHONE # ________________

TOTAL COURSE LOAD (INCLUDING IND RES) ________ COURSE UNITS

PHYSICS DEPARTMENT GUIDELINES:
■ At the conclusion of the Independent Research, all students will submit a written report and give an oral or poster presentation.
■ Students must meet with their faculty mentor at least once a week.
■ A minimum of twelve hours of effort per week (per course unit) is expected for successful completion of the Independent Research.

See reverse side for the TCNJ Statement of Independent Research Criteria.

-----------------------------------------------------------------------------------------------------------------------

1. State the specific problems, questions, or goals you intend to pursue in this study.

2. Describe the procedures you intend to use.

THIS APPLICATION IS FOR ______ COURSE UNITS OF CREDIT.

Student Signature ______________________ DATE Faculty Supervisor ______________________ DATE

________________________________________
Department Chairperson Approval DATE

REV 02/10/11
I. Basic Course Information

PHY 493 is a writing intensive, upper level course in the physics curriculum open to all students in their junior year with at least a 2.5 overall GPA. To register for this course students must obtain permission from a faculty mentor, the Chairperson of the Physics Department and the Assistant Dean of Science. Independent Research experiences are expected to produce new knowledge by the student in collaboration with a faculty member and/or with fellow student researchers and a faculty member.

The subject matter of the research experience will be agreed upon by a faculty mentor and the student. The experience will involve laboratory or observational experiences or complex calculations beyond what is covered in a lecture/laboratory course. It is expected that the research will build upon the knowledge gained by students in courses offered by the Department.

II. Learning Goals

1. A deeper understanding and application of the scientific method.
2. To enhance a student’s ability to obtain and analyze data, find correlations between variables, and draw conclusions.
3. To write a research quality paper based on the outcomes of the project.

III. Students Assessment

Students will be continuously assessed, by the faculty mentor, based on their weekly progress. Furthermore, weekly meetings between the student and the faculty mentor will insure that a high quality product will be the outcome of the experience. At the end of the semester students must present orally or via a poster the results of their research to the faculty members and students of the Physics Department. Students will be required to produce a research quality paper concerning their project.

The required paper will include an abstract and sections on theory, methodology, results and discussions, and a summary or conclusions. The sections will be presented to the faculty mentor, throughout the semester, for feedback and corrections. Several iterations are expected before a final paper is delivered at the end of the semester.

IV. Learning Activities

The learning activities will be decided by the faculty mentor and will be specific to each faculty-student designed research experience. Examples of these activities include:

1. Laboratory, field, or observatory experiences, computer modeling of physical systems, application of spectroscopic and microscopic techniques.
2. Data analysis using advanced mathematical techniques or correlation methods.
3. Presentation of results using Power Point or other audio visual techniques.
4. A paper that has a writing style dependent on the specific field of research chosen.