Purdue University
Request for Addition, Expiration, or Revision of an Undergraduate Course
(10000-40000 Level)

Department: Physics

Effective Session: Spring 2014

Instructions: Please check the items below which describe the purpose of this request.

- [ ] New course with supporting documents
- [ ] Add existing course offered at another campus
- [ ] Expiration of a course
- [ ] Change in course number
- [ ] Change in course title
- [ ] Change in course credit/type
- [ ] Change in course attributes (department head signature only)
- [ ] Change in instructional hours
- [ ] Change in course description
- [ ] Change in course requisites
- [ ] Change in semesters offered (department head signature only)
- [ ] Transfer from one department to another

PROPOSED:

- Subject Abbreviation: PHYS
- Course Number: 48001
- Long Title: Senior Thesis I
- Short Title: Senior Thesis I

EXISTING:

- Subject Abbreviation: PHYS
- Course Number: 48001
- Long Title: Senior Thesis I
- Short Title: Senior Thesis I

Abbreviated title will be entered by the Office of the Registrar if omitted. (0-20 Characters Only)

Credit Type:
- 1. Fixed Credit: Cr. Hrs. 3
- 2. Variable Credit Range: Minimum Cr. Hrs. (Check One) To
- 3. Equivalent Credit: Yes

Course Attributes:
- 6. Registration Approval Type
- Department: PHYS
- Instructor: [ ]

Course Description (Include Requisites/Restrictions):

Independent research under the supervision of a faculty advisor. Senior Thesis course is required to graduate. It must be taken in the senior year.

Prerequisites: PHYS 34200 & PHYS 34300, or PHYS 34600 and one of the following:

ASTR 36400, ASTR 37000, ASTR 40100, PHYS 22000, PHYS 34500, PHYS 32500, PHYS 36100, PHYS 51500, PHYS 55500

This is the first part of a two-semester course-track that is completed when PHYS 346002 is completed in the second semester.

Course Learning Outcomes:

- The development of critical thinking.
- The ability to carry out independent research.
- The ability to present new material in clear, non-technical language.
- Understanding of the physics underlying the work.

Cross-Listed Courses:

- [ ]
- [ ]
- [ ]

Office of the Registrar
Tentative Syllabus Physics 48001

Senior Thesis I

Fall 2014

Instructor: Thesis adviser
Textbook: None
Credit hours: 3, not repeatable

This is the first part of a two-semester course-track that is completed when PHYS48002 is completed in the second semester. You must receive a “satisfactory” in PHYS48001 and PHYS48002 to graduate.

In this course you will demonstrate your ability to conduct independent research. With the guidance of a faculty member, you will develop, carry out and report on a research topic of your choosing.

At this point in your undergraduate career, you have considerable experience, through The Modern Physics Lab or the Advanced Lab., of independent research. You will be thoroughly familiar with the scientific method and experimental practice. Your mastery of these will be put to the test in this two-semester course.

Plan of Research

Prior to starting PHYS 48001, you will work with your adviser to develop a research plan. It must have:

1) A specific and testable hypothesis,
2) Clear goals,
3) A realistic strategy for achieving them,
4) Discussion of how the data will be gathered and analyzed,
5) Discussion of issues and challenges expected and how you will deal with them,
6) A time-line showing the steps toward completion in the two semesters allowed., and
7) Discussion, with references, of how the proposed project relates to published research your field of study.

Experimental Notebook

You will keep a notebook detailing your progress. This will be periodically examined by your adviser. The journal must include details of experiments, and drawings, diagrams, and photos etc. to illustrate them. It should also include the original hypothesis and all carefully considered modifications to it. In addition, it should include analysis and interpretation of data.
Tentative Schedule

You will complete your research project in the two semesters of your final year.

Present the research plan to your department for review no later than the end of the spring semester prior to your senior year.

Submit an interim report at the end of the first semester.

Present your department with a word-processed thesis at the end of your senior year.

The completed research will be presented at a poster session at IPFW. This requirement may be waived, if you have presented your work at a professional meeting outside of IPFW or submitted the results of your research as a paper to a refereed journal. In any case, you will present your work to the faculty and the other Physics majors at a meeting of the IPFW Society of Physics Students.

Grading

This work will not be graded in the traditional way. You will not receive a percentage or a letter grade. You will receive a pass/fail grade. Your grade will depend on the quality of your research work as shown in your notebook(s). To pass this course you must demonstrate critical thinking, understanding of the physics of your project, the ability to carry out independent research, and the ability to explain your research to an audience of your peers, who are not experts in your field.

Funding

You and your advisor are responsible for the purchase of any special equipment or services required and travel expenses.