Minor in Physics

Catalog Description

This minor provides a rigorous foundation in physics for students who choose not to complete the entire physics major. The minor begins with a set of two introductory courses (6 credits) in electromagnetic fields (PHYS 262 or PHYS 272) and waves (PHYS 263 or PHYS 273). As part of this introduction to Physics, the minor also requires a one-credit introductory physics laboratory (PHYS 174, PHYS 261, or PHYS 271) involving techniques of data gathering and analysis. To obtain a deeper understanding of physics, the minor requires three additional upper-level courses (3-4 credits each), which students can select from: intermediate theoretical methods (PHYS 374), optics lab (PHYS 375), quantum physics (PHYS 401, 402), statistical mechanics (PHYS 404), classical mechanics (PHYS 410), electricity and magnetism (PHYS 411), modern optics (PHYS 465), and computational physics (PHYS 474). Other upper level Physics courses can be substituted only with approval from the Department’s undergraduate director and the Faculty Minor Advisor. All courses must be completed with a grade of C or better to be counted towards the minor. No more than 7 credits in this minor can count toward major requirements. Students with more than 7 credits of overlap must substitute non-overlapping 300 or 400 level courses from the above list to reduce the overlap to no more than 7 credits. Students interested in taking this minor program should contact the undergraduate office in the Department of Physics for advising. Physics majors and students majoring in Astronomy are not eligible to complete the Physics Minor due to the large number of overlapping course requirements.

Courses required for the minor are: (7 Credits):

- PHYS 174: "Physics Laboratory Introduction (1)", or PHYS 261: "General Physics: Vibrations, Waves, Heat, Electricity and Magnetism: Laboratory (1)", or PHYS 271: "General Physics: Electrodynamics, Light, Relativity and Modern Physics: Laboratory (1)"
- PHYS 272: "Introductory Physics: Fields (3)", or PHYS 260: "General Physics: Vibrations, Waves, Heat, Electricity and Magnetism (3)"
- PHYS 273: "Introductory Physics: Waves (3)" or PHYS 270: "General Physics: Electrodynamics, Light, Relativity and Modern Physics (3)"

In addition, the student must choose three from the following: (9-12 Credits)

- PHYS 374: Intermediate Theoretical Methods (4)
- PHYS 375: Experimental Physics III: Electromagnetic Waves, Optics and Modern Physics (3)
- PHYS 401: Quantum Physics I (4)
- PHYS 402: Quantum Physics II (4)
- PHYS 404: Introductory Statistical Thermodynamics (3)
- PHYS 410: Classical Mechanics (4)
- PHYS 411: Intermediate Electricity and Magnetism (4)
- PHYS 465: Modern Optics (3)
- PHYS 474: Computational Physics (3)
Oversight and Record Keeping

The Faculty Advisor for the Minor is Professor Theodore Jacobson. Oversight of the minor program will be through the normal academic processes of the Department of Physics. The Department’s Undergraduate Director will be responsible for ensuring that students are properly advised and that records are appropriately kept.

Prerequisites

MATH 140 (4 credits), MATH 141 (4 credits), MATH 241 (4 credits), MATH 240 (4 credits), MATH 246 (3 credits), and Physics 161 (or Physics 171) (3 credits) are prerequisites for some of the courses in this program. However, none of these courses has been included in the requirements for the minor because they are very likely already included in the major requirements for students who will be interested in this minor (mainly students from the College of Engineering). The inclusion of these courses into the minor would create a large number of overlapping credits, as well as confusion, because our target students would not be able to apply them to the minor because of overlap restrictions.

Additional Comments

Note 1: Students majoring in Astronomy are not eligible to complete the Physics Minor due to the large number of overlapping course requirements.

Note 2: Students pursuing the minor in Physics are allowed a maximum of 7 credits of overlap with their major requirements. This is one more credit than the 6 permitted in the guidelines for the creation of a minor.

Note 3: The main students that this Minor is targeted at are in Engineering. In addition, based on the popularity of the Math-Physics double major, we expect to get a significant number of Math majors in the Physics minor.