Degree Program Description

Physics is the science that studies the structure and properties of matter and transformations of energy. With math as the language and experimental verification as a guide, physical study has established the fundamental laws of nature that are the foundation of all natural science and technology. The study of physics includes learning the general principles and the phenomena that have been discovered and developing the skills that enable such knowledge to be advanced through research. Materials Science is an interdisciplinary field encompassing several disciplines of science and technology. Physics lies at the heart of materials science since it provides a rationale for understanding the mechanical, thermal, optical, and magnetic properties of matter. The emphasis area in materials science prepares students in areas of high demand for the 21st century workforce in the US. Materials scientists are employed by companies who make products ranging from metals, ceramics, and biomedical implants to integrated-circuit chips and superconducting materials. A major concentration of the program is on nanomaterials, which prepares students in areas of nanotechnology and energy-related issues.

Major Program Requirements

Students interested in materials science may choose to pursue a BS in Physics with an Emphasis in Materials Science (the emphasis will show up on the transcript). For this option, students must take the required physics courses (http://catalog.missouri.edu/undergraduategraduate/collegeofartsandscience/physics/bs-physics) for the regular BS degree, physics 4620 Introduction to Materials Science, and four additional physics elective courses. Three of the physics electives must be chosen from the list below:

- PHYSCS 4190 Physics and Chemistry of Materials 3
- PHYSCS 4410 Analysis of Biological Macromolecules and Biomaterials 3
- PHYSCS 4600 Semiconductor Optics 3
- PHYSCS 4650 Modern Condensed Matter Physics 3
- PHYSCS 4110 Light and Modern Optics 4
- PHYSCS 4950 Undergraduate Research in Physics 1-3
- PHYSCS 4960 Senior Thesis in Physics 3

With approval, one materials science related course may be taken from outside the physics program. Only courses in which a grade of C- or above will be counted toward the emphasis area.

Only courses with a grade of C- or above will be counted toward the emphasis area. In addition, students must complete all College of Arts and Science and University graduation requirements (http://catalog.missouri.edu/academicdegerequirements/ universityrequirements), including University general education (http://catalog.missouri.edu/academicdegerequirements/ generaleducationrequirements).