

# Academic Offerings

This section contains descriptions of programs, majors, minors, areas of concentration, fields of specialization, and courses. Semesters following course titles indicate when each course is normally offered. On rare occasions, a course may not be available when indicated because of low enrollment or unexpected staffing changes.

Courses listed as Fall Odd and Spring Even are scheduled to be offered during the 2011-2012 academic year. i.e., fall 2011-2012 is Fall Odd, spring 2011-2012 is Spring Even.

## Physics

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**General Major-** Physics 201, 202, 203, 325, 326, 331, 335, 336; Physical Science 201; Chemistry 103, 104; Mathematics 152, 153, 201, 204; two courses (including at most one 200-level Mathematics course) chosen from the following list: Physics 206, Chemistry 333, Engineering 202, Mathematics 203, 206, 209, 212, 304, 311, 315.

**General Minor-** Physics 201, 202, 203; one course from Physics 325, 326, 331, 335. (Note: Mathematics 152, 153 are pre- or corequisites for Physics 201, 202, 203; Mathematics 201, 204 are pre-requisites for Physics 325, 326, 335; Chemistry 103, 104 are prerequisites for Physics 331.)

For descriptions of SECONDARY majors, minors, and teaching endorsements, see pages 111-134, Teacher Education Program.

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- 115 **General Physics I (4)** ..... Fall  
An introduction to the study of the physical aspect of reality. Topics covered include mechanics, kinetic theory, heat, and thermodynamics. Three lectures and one laboratory per week.
- 116 **General Physics II (4)** ..... Spring  
Continuation of Physics 115. Waves, sound, light, electricity and magnetism, and topics in modern physics, e.g., quantum theory, relativity, physics of the atomic nucleus. Three lectures and one laboratory period per week. Prerequisite: Physics 115.
- 201 **Introductory Physics I (4)** ..... Fall  
An introduction to the study of the physical aspect of reality for students intending to continue in the physical sciences and engineering. Linear and rotational kinematics and dynamics, statics, and gravitation will be covered. Three lectures and one laboratory period per week. Pre- or corequisite: Mathematics 152.
- 202 **Introductory Physics II (4)** ..... Spring  
Continuation of Physics 201. Topics covered include fluid, oscillations, waves, heat and thermodynamics, and electricity. Three lectures and one laboratory per week. Prerequisite: Physics 201. Pre- or corequisite: Mathematics 153.
- 203 **Introductory Physics III (4)** ..... Fall  
Continuation of Physics 202. Topics covered include magnetism, Maxwell's equations, optics, quantum physics, and topics in modern physics. Three lectures and one laboratory per week. Prerequisite: Physics 202.
- 206 **Linear Circuits and Electronics (4)** ..... Fall  
Assumes a prerequisite knowledge of DC electrical circuits, including the definitions of electrical quantities, circuit elements (sources, resistors, capacitors, inductors), understanding of Kirchhoff's laws and basic concepts in AC

circuits such as frequency and phase. Topics in this course include: general linear circuit analysis including Norton's and Thevenin's theorems; superposition; nodal and loop analysis; natural and forced responses in RLC circuits; and sinusoidal steady state analysis. The course also gives introductions to operational amplifier circuits, single stage BJT transistor circuits, and steady-state balanced 3-phase power calculations. The lab includes a formal design project. Prerequisite: Engineering 104 or Physics 116 or 202; Corequisite: Mathematics 204. [Cross-listed: Engineering 220]

- 281- **Service-Learning (1-3)** .....Fall, Spring, Summer  
 283 See page 161, Individual Studies
- 325 **Classical Mechanics (4)** ..... Fall Even  
 Lagrangian and Hamiltonian dynamics, general rigid body motion, theory of vibrations and waves, planetary motion, and chaos are studied. Prerequisites: Physics 202; Mathematics 201, 204.
- 326 **Electromagnetic Theory (4)**.....Spring Odd  
 Review of vector calculus; divergence, curl, Gauss' and Stoke's theorems; electro- and magneto-statics; polarization; boundary conditions; Laplace and Poisson equations; magnetic vector potential; energy; Maxwell's equations for time varying fields; wave propagation; and Poynting's theorem. Prerequisites: Physics 203; Mathematics 201, 204. [Cross-listed: Engineering 326]
- 331 **Thermodynamics and Statistical Mechanics (3)**.....Fall Odd  
 Heat, the laws of thermodynamics, thermodynamic generating functions, Maxwell's relations, kinetic theory, partition functions, and classical and quantum statistics. Prerequisites: Chemistry 103, 104; Mathematics 152, 153; Physics 115, 116 or Physics 201, 202, 203. [Cross-listed: Chemistry 331]
- 335 **Modern Physics I (4)**.....Fall Odd  
 Developments in modern physics: special relativity, atomic nature of matter and electricity, wave and particle aspects of electrons and light, quantum theory and applications. Three lectures and one laboratory period per week. Prerequisites: Physics 203; Mathematics 201, 204.
- 336 **Modern Physics II (3)** .....Spring Even  
 Continuation of Physics 335. A continuation of quantum theory and applications to the study of atomic and molecular structure, condensed matter physics, particle and nuclear physics. Three lectures per week. Prerequisites: Physics 335; Mathematics 201, 204.
- 341- **Special Topics (3)** .....Occasional  
 348 These courses cover areas in physics not already discussed in other courses. They are special interest courses offered on the basis of student demand and instructor background and availability. The prerequisite(s) will depend on the topics covered.
- 391- **Individual Studies (1-3)** .....Fall, Spring, Summer  
 393 See page 161, Individual Studies