product spaces, and quotient spaces; separation axioms; connectedness; compactness; and continuous functions. Prerequisite: Mathematics 2310. Offered on demand.

4750–4753 Selected Topics in Advanced Mathematics (1, 2, 3, or 4 sem. hours). A study of an area of mathematics not covered in regular departmental offerings that require a high level of mathematical sophistication. Prerequisite: consent of the instructor.

4800 Graph Theory (4 sem. hours). A theoretical study of trees, connectivity, eulerian graphs, hamiltonian graphs, planarity, colorability, and extremal graph theory. Prerequisite: Mathematics 2310. Offered in alternate years.

4810 Complex Analysis (4 sem. hours). Topics include complex numbers, sets, and functions; limits and continuity; analytic functions; cauchy theorems and integrals; taylor and laurent series; residues; and contour integration. Prerequisite: Mathematics 2310 and Mathematics 2240 or consent of the department chair. Offered in alternate years.

4902–4912 Senior Seminar (2 - 2 sem. hours). Reading and research in advanced mathematics; group and individual presentations both oral and written; preparation for comprehensive examination; opportunities to expand understanding of topics of interest to the individual student. Prerequisite: senior standing or consent of the instructor.

Physics

Associate Dean of Sciences:
George J. Bey III, Chair

Associate Professor:
Asif Khandker, Ph.D.

Requirements for major: Students may complete a major in physics with ten courses, including General Physics I and General Physics II, General Physics Laboratory I and II, Modern Physics, Classical Mechanics, Electromagnetism, Thermal Physics, Quantum Mechanics, Advanced Physics Laboratory, Electronics for Scientists, Similarities in Physics, and Senior Seminar. Students must receive a C or better in all of the required physics courses. Prospective majors should take General Physics I and II and General Physics Laboratory I and II no later than the sophomore year.

Requirements for minor: Students may elect a minor in physics with three courses beyond General Physics I and II, and General Physics Laboratory I and II. The courses must be approved by the department chair.

Mathematics Requirements

Students interested in maintaining the option of study in physics or related fields (e.g., pre-engineering) are urged to begin their mathematics course work at Millsaps as early as possible and at the highest level possible. It is required that a minimum of Calculus I, II, III, and Differential Equations be taken by all physics or pre-engineering majors.

Courses

1001 General Physics Laboratory I (1 sem. hour). Experiments to accompany General Physics I dealing mainly with mechanics and wave motion. Corequisite: Physics 1003.

1003 General Physics I (3 sem. hours). A broad introduction to general physics for students who have taken an introductory calculus course. Main areas covered are mechanics and waves. Specific topics include vectors, kinematics, Newton's laws of motion, rotation, equilibrium, wave motion, and sound. Prerequisite: Mathematics 1220 or consent of instructor. Corequisite: Physics 1001.

1011 General Physics Laboratory II (1 sem. hour). Experiments to accompany General Physics II dealing mainly with electromagnetism and optics. Corequisite: Physics 1013.

1013 General Physics II (3 sem. hours). The continuation of General Physics I. General topics covered are electricity, magnetism, and optics. Specific topics include electrostatics, current electricity, magnetostatics, time varying fields, and geometrical and physical optics. Prerequisite: Physics 1003. Corequisite: Physics 1011.

1201 College Physics Laboratory I (1 sem. hour). Experiments to accompany College Physics I dealing mainly with mechanics, waves, and heat. Corequisite: Physics 1203.

1203 College Physics I (3 sem. hours). Fundamentals of mechanics, waves, fluids, and selected topics in thermal physics. A noncalculus course intended primarily for majors in the biological and health sciences. Prerequisite: Mathematics 1100. Corequisite: Physics 1201.

1211 College Physics Laboratory II (1 sem. hour). Experiments to accompany College Physics II dealing mainly with current electricity, optics, and modern physics. Corequisite: Physics 1213.

1213 College Physics II (3 sem. hours). The continuation of College Physics I. Fundamentals of electrostatics, current electricity, magnetism, optics, and selected topics in modern physics. Prerequisite: Physics 1203. Corequisite: Physics 1211.

2000 Modern Physics (4 sem. hours). An introduction to the special theory of relativity and its consequences. Black body radiation and the particle aspects of electromagnetic radiation. Fundamentals of quantum physics, introduction to the Schrodinger equation, and simple applications. Prerequisite: Physics 1013.

2750–2753 Special Topics or Laboratories in Physics (1, 2, 3, or 4 sem. hours). This course deals with areas not covered in other physics courses or laboratories. It is intended primarily for sophomores and juniors at an intermediate physics level. Prerequisite: consent of instructor.

3100 Classical Mechanics (4 sem. hours). Dynamics of a single particle, including Newton's laws, momentum, energy, angular momentum, harmonic oscillator, gravitation, and central force motion. The Lagrangian and Hamiltonian formulation will also be emphasized. Prerequisite: Physics 1013. Corequisite: Mathematics 3540. Offered in alternate years.

3110 Electromagnetism (4 sem. hours). Fields, conductors, dielectric media, and Laplace's and Poisson's equations. Direct and alternating currents, magnetic induction and forces, electromagnetic energy, and Maxwell's equations with applications. Prerequisite: Physics 1013. Corequisite: Mathematics 3540. Offered in alternate years.

3120 Thermal Physics (4 sem. hours). An introduction to equilibrium statistical mechanics with implications for thermodynamics and the kinetic theory of gases. Topics include density of states, entropy and probability, partition functions, and classical and quantum distribution functions. Prerequisite: Physics 2000. Offered in alternate years.

3130 Optics (4 sem. hours). Geometrical optics: reflection, refraction, ray tracing, and aberrations. Physical optics: wave theory, absorption, dispersion, diffraction, and polarization. Properties of light from lasers, photo detectors, and optical technology. Includes laboratory. Prerequisite: Physics 1013 or consent of instructor. Offered occasionally.

3140 Quantum Mechanics (4 sem. hours). Postulates of quantum mechanics, operators, eigenfunctions, and eigenvalues. Function spaces, Hermitian operators, and time development of state functions. Schrodinger's equation in one dimension, harmonic oscillator, rectangular potential barrier, and the WKB approximation. Problems in three dimensions, angular momentum, hydrogen atom, and theory of radiation. Matrix mechanics and spin. Prerequisite: Physics 2000, Mathematics 3540. Offered in alternate years.

3210 Advanced Physics Laboratory (4 sem. hours). Experiments of classical and contemporary importance selected from various fields of physics. Experiments often deal with topics that have not been treated in other courses. Some areas of experimentation include interferometry, microwaves, X-rays, and nuclear physics. Prerequisite: Physics 2000 or consent of instructor.

3300 Electronics for Scientists (4 sem. hours). The emphasis of this course is on analog electronics, including DC and AC circuit analysis, diode circuits, semiconductor devices, amplifier circuits, operational amplifiers, and oscillators. Includes laboratory. Prerequisite: Physics 1013 or consent of instructor. Offered in alternate years.

3750–3753 Directed Study (1, 2, 3, or 4 sem. hours). The student may begin to study topics of interest through readings and research. Prerequisite: consent of instructor.

3700–3703 Undergraduate Research (1, 2, 3, or 4 sem. hours). The student may continue to study topics of interest through readings and research. Prerequisite: consent of instructor.

3760–3763 Advanced Special Topics or Laboratories in Physics (1, 2, 3, or 4 sem. hours). Deals with areas not covered in other physics courses or laboratories. Aimed primarily at juniors and seniors at the intermediate or advanced level. Prerequisite: consent of instructor.

3850–3853 Internship (1, 2, 3, or 4 sem. hours). Practical experience and training with selected research, educational, governmental, and business institutions. Prerequisite: consent of instructor.

4902 Similarities in Physics (2 sem. hours). Analysis of the similarities that occur in many diverse fields of physics by oral and written presentations. Also includes presenting information processed from physical literature. Prerequisite: consent of instructor.

4912 Senior Seminar (2 sem. hours). A continuation of the theme in Similarities in Physics. Emphasis is placed on a unified approach to problem solving. Prerequisite: consent of instructor.

Political Science

Professor:
Richard A. Smith, Ph.D.

Associate Professor:
Iren Omo-Bare, Ph.D., Chair

Assistant Professor:
Michael Reinhard, Ph.D.
Ashleigh S. Powers, M.A.

Requirements for major: Students may complete a major in political science with a minimum of ten courses from departmental offerings or courses of study approved by the department. These courses must include the following: Introduction to American Government, Comparative Government, Political Theory, International Relations, Research Methods in Political Science, Senior Seminar, and any other four courses.

Requirements for minor: Students may elect a minor in political science with five courses, including Introduction to American Government, Comparative Government or International Relations, and any three other courses in the department.

General Information

No grade lower than a C will be accepted in any course to fulfill a major or minor in political science.

Internship, directed readings, and fieldwork courses may be used to fulfill no more than two of the four departmental electives (no more than one from each category).

Political science majors who choose to concentrate on foreign area studies may use courses taken in approved study abroad programs to fulfill up to a maximum of three of the required ten courses.

One Core 6 (Social and Behavioral Science) IDST course may be counted toward the major or the minor in political science with permission of the chair of the department. In general, Introduction to American Government is a prerequisite for all other courses in American politics, namely Political Science 2010, 2100, 2120, 2130, 2150, 3140, 3150, 3200, and 3250. Comparative Government is a prerequisite for all other courses in comparative politics and international relations, namely Political Science 2400, 3300, 3310, 3350, 3400, 3410, 4300, 4400, and 4500. Exceptions by permission of the instructor.