



KENTUCKY STATE
UNIVERSITY

OVERVIEW

Department of Biological and Physical Sciences

Inquiry into the nature of physical phenomena is among the most persistent of human concerns. During the past century, both the scope and pace of such inquiry have broadened and accelerated, and its influence on our civilization has become pervasive. The discoveries and consequences of scientific inquiry have profoundly affected the human race—both in daily life and in practically all domains of intellectual life. The Department of Biological and Physical Sciences believes that an understanding of the sciences is an indispensable part of a sound education. Coursework in the Department provides students with instruction that addresses fundamental issues in the broad range of scientific inquiry. The Department seeks to instill in students an appreciation of critical thinking as well as knowledge of specific subjects. Students who decide to major in one of the disciplines of the Department undertake specialized study and research in their selected fields.

The Department offers majors in Biology and Chemistry and minors in Biology, Chemistry, and Physics.

Note: Students must complete all prerequisite courses in the Department of Biological and Physical Sciences with a grade of “C” or better before they may attempt the next course in a course sequence.

Pre-health and Allied Health Careers

The Department of Biological and Physical Sciences offers programs related to the health professions. Students interested in medicine, optometry, physical therapy, pharmacy, or other allied health fields should consult with Pre-health professions advisors, the chairperson of the School of Nursing and Health Sciences. The following section of this Catalog describes allied health career requirements and provides other information relevant to these fields.

Many health careers require graduate degrees earned after completing a baccalaureate degree. The Department offers coursework that prepares students for admission to graduate programs in several allied health fields. Requirements for some health-related graduate programs are described below:

Medicine

There are allopathic and osteopathic medical schools, and students should appreciate both tracks. To enter one of these schools, students must complete at least one year of biology with laboratory, one year of general chemistry with laboratory, one year of organic chemistry with laboratory, one year of physics with laboratory, one year of college mathematics or one semester of calculus, one year of English, and other courses that will help assure success, such as those in advanced communication skills, logic, or computer science, and psychology. In addition, pre-medicine students are advised to take Cell Biology, Biochemistry, Statistics, Psychology, and Sociology. Content from these

additional courses appears on the entry exam for medical school (MCAT – Medical College Admission Test).

Pre-Health Professional academic advisors at Kentucky State University work closely with pre-medical students to ensure that they fulfill all of the requirements for admission to professional schools in a timely manner. Shadowing physicians, volunteer work and summer research work are highly valued for admission. Students will apply through a special website, AMCAS (American Medical College Admission Service) and/or AACOMAS (American Association of Colleges of Osteopathic Medicine Application Service), one year before they desire admission. Students who need more information about a pre-med track should consult the Pre-Health Professions advisors as early in their academic careers as possible.

Dentistry

To apply to dental school, students must complete at least two years of biology with laboratory, one year of general chemistry with laboratory, one year of organic chemistry with laboratory, one year of physics with laboratory, one year of college mathematics or one semester of calculus, one year of English, and other courses that will help assure success, such as those in advanced communication skills, logic, or computer science, and psychology.

Pre-Health Professional academic advisors work closely with pre-dental students to ensure that they fulfill all of the requirements for admission to professional schools in a timely manner. Each applicant is required to take the Dental Admission Test (DAT), which is designed to measure general academic ability and scientific knowledge of pre-requisite courses. Shadowing dentists, volunteer work and summer research work are highly valued for admission. Students will apply through a special website, ADEA Associated American Dental Schools Application Service (AADSAS), one year before they desire admission. Students who need more information about the pre-dental track should consult the Pre-Health Professions advisors as early in their academic careers as possible.

Optometry

Optometry is the profession of examining the eyes for defects and faults of refraction and prescribing corrective lenses or exercises. The Commonwealth of Kentucky sponsors a program that enables 15 qualified pre-optometry students who are Kentucky residents to gain admission each year to the Southern College of Optometry in Memphis, Tennessee, and the optometry schools of Indiana University and the University of Alabama at Birmingham. Eight entering spaces are reserved at Southern, four at Indiana University, and three at the University of Alabama at Birmingham.

Students must complete one year of biology with labs, one year of advanced biology (Human Anatomy and Human Physiology are suggested), Microbiology with lab, one year of general chemistry, one or two semesters of Organic Chemistry with lab (varies by school), Biochemistry, Calculus I, one year of Physics with lab, Psychology, and Statistics. The Biochemistry requirement varies by school.

Each applicant is required to take the Optometry Admission Test (OAT), which is designed to measure general academic ability and scientific knowledge of pre-requisite courses. Many schools also require a minimum number of hours in observation of a practicing optometrist. Students will apply through a special website, OptomCAS (Optometry College Application Service), one year before they desire admission.

Pharmacy

Pharmacy is the profession of providing direct input into overall patient drug management. The pharmacist reviews updated patient medication profiles on a daily basis and is increasingly involved with direct patient care. Pre-pharmacy courses include: two years of biology (general biology, human anatomy, physiology and microbiology), one year of general chemistry with labs, one year of organic chemistry with labs, calculus I (some schools require calculus II as well), statistics, one year of physics with labs (some schools no longer require physics), and medical terminology. Economics (most prefer microeconomics), psychology and/or sociology are also required. Biochemistry, cell biology, genetics are recommended as additional courses of value. An undergraduate degree is not required for admission to pharmacy school.

Each applicant is required to take the Pharmacy College Admission Test (PCAT), which is designed to measure general academic ability and scientific knowledge of pre-requisite courses. Many schools also require observation of a practicing pharmacist. Students will apply through a special website, PharmCAS (Pharmacy College Application Service), one year before they desire admission. Interested students should maintain close contact with the Department's Pre-Health Professions advisors or the chairperson of Department of Biological and Physical Sciences .

Physical Therapy

Physical therapy is a profession dealing with the development and administration of programs of care to restore motor function, relieve pain, and prevent disability in individuals whose abilities are threatened by disease, injury, loss of a body part, or conditions existing at birth. A licensed physical therapist requires a doctoral degree (DPT, Doctor of Physical Therapy). In order to be admitted to the doctoral program, the student should complete the following pre-requisites: one year of general chemistry with labs, one year of physics with labs, one year of general biology (can include zoology), human anatomy, physiology, pre-calculus (or higher math), one year of psychology (general and an advanced course – some schools are specific about the advanced psychology course) and statistics.

Additional suggested courses of value include sociology, exercise physiology, biochemistry, medical terminology, and management courses. In addition, interested students must document 50-100 clock hours of work or volunteer experience directly related to physical therapy. Specific requirements vary by institution, so students should consult the websites of schools that are of interest.

Many schools require that students take the GRE (Graduate Record Exam) as part of the admission process. Students may also be asked to apply through a special website, PTCAS (Physical Therapist Centralized Application Service), one year before they desire admission. Interested students should maintain close contact with the Department's Pre-Health advisors.

Veterinary Medicine

No colleges or universities in the Commonwealth of Kentucky offer training in veterinary medicine. However, the Kentucky Council on Postsecondary Education administers a Southern Regional Education Board Program in Kentucky through which qualified Kentucky resident students may be accepted to the veterinary medicine schools of Auburn University and Tuskegee University. (At the time of publication of this Catalog, the Council had contracted for 36 entering spaces annually: 34 at Auburn and two at Tuskegee.)

Students accepted under the regional plan are relieved of the obligation of paying out-of-state fees, and their expenses are identical to those of in-state students. Formal applications must be filed through the Council on Postsecondary Education, which re-views these applications and submits those selected to Auburn or Tuskegee for admission approval. Any student interested in veterinary medicine should have completed 80 semester credit hours of pre-professional training with a minimum grade-point average of 2.5; however, preference is given to those students who have satisfied the requirements for a baccalaureate degree. Interested students should consult the Chairperson of the Department of Biological and Physical Sciences.