Program Coordinator: V. Fitsanakis

The B.S. in Biology encompasses the study of life, in all of its forms. Students interested in a broad understanding and appreciation of botany and zoology are encouraged to consider the General Biology track provided by the department. Students desiring to pursue a career in medicine, pharmacy, biotechnology or biomedical research are encouraged to consider the Cell and Molecular Biology track. The Bioinformatics track will prepare students for graduate school and/or careers in the fields of genomics, informatics, and biostatistics; this track requires that students minor in Mathematics.

A major in biology prepares one for a variety of careers. Most students interested in biomedical or health science careers often major in biology because many employers, and graduate and professional programs, require significant course work in this area. Thus, students with a BS in Biology are well-suited for careers in environmental research, conservation biology, forensic biology, botany or zoology. Additionally, the course work for the Cell and Molecular Biology track is designed to provide students with pre-requisites required for many medical, pharmacy, and graduate programs, including microbiology, veterinary sciences, toxicology, optometry and dentistry. Students are required to take Calculus I to fulfill their requirement in “Quantitative Literacy.” Although not explicitly required, students are strongly encouraged to begin looking for summer internship opportunities the summer after their sophomore year in order to gain experience and verify their suitability for their vocation. This is particularly important for students who want to attend clinical programs, which can require as many as 500-2000 hours of shadowing or patient contact as a prerequisite for admissions. Finally, many graduate programs will not consider applicants who have no research experience.

Students who major in biology are not allowed to double major in Biochemistry, Forensic Chemistry, or Health Sciences Chemistry, due to the overlap already present in these program. If students would like to pursue a double major, they are encouraged to consider other majors that will help them in their chosen careers. Suggestions include Mathematics, Philosophy, Security and Intelligence Studies (SIS), or a foreign language.

Student Learning Outcomes

1. Knowledge of Fundamental Areas of Biology: Students will demonstrate knowledge of fundamental areas of biology.
2. Skills for Appropriate Lab Methodology: Students will develop skills to use appropriate lab methodology to gather data and draw conclusions, and to communicate results in meaningful forms.
3. Written and Oral Communication: Students will be able to write or orally communicate technical information that is suitable for presentation.
4. Progress Toward Science-Related Careers: Identify and participate in experiences (jobs, internships, shadowing, research) related to desired career goals; gain employment in science-related careers or entry into graduate or professional degree programs.
Core Curriculum Requirement

Biology majors should fulfill specified categories of the King Core Curriculum by taking the courses indicated below. See the “The Core Curriculum” section of the catalog for additional details.

**Science**
CHEM 1110
General Chemistry I ................................................................. 4 s.h.

**Quantitative Literacy**
MATH 2350
Calculus I .................................................................................. 4 s.h.

**BS in Biology Major Requirements**
BIOL 2110
General Biology I ................................................................. 4 s.h.
BIOL 2120
General Biology II ................................................................. 4 s.h.
BIOL 3150
Genetics ................................................................................ 4 s.h.
BIOL 3300
Cell Biology ............................................................................. 4 s.h.
BIOL 4010
Comprehensive Assessment ................................................. 0 s.h.
CHEM 1120
General Chemistry II ............................................................ 4 s.h.
CHEM 2110
Organic Chemistry I ............................................................ 4 s.h.
CHEM 2120
Organic Chemistry II ............................................................ 4 s.h.
PHYS 2210
General Physics I ................................................................. 4 s.h.
PHYS 2220
General Physics II ................................................................. 4 s.h.
IDST 4500 (0.5 credits, repeated for a total of four semesters)
Interdepartmental Science and Mathematics Seminar ................. 2 s.h.

**Track Requirements for a BS in Biology**
Students will choose a track in General Biology or Cell and Molecular Biology

**General Biology Track (B.S.)**
BIOL 3100
Plant Biology .............................................................................. 4 s.h.
BIOL 3130
Ecology ...................................................................................... 4 s.h.

**Choose from the following courses**

BIOL 3210
Human and Vertebrate Comparative Anatomy (4 s.h.)
BIOL 3500
Histology (4 s.h.)
BIOL 3560
Clinical Neuroanatomy (4 s.h.)
Choose from the following courses ................................................. 4 s.h.

BIOL 3540
   Neurophysiology (4 s.h.)

BIOL 3600
   Human and Mammalian Physiology (4 s.h.)

BIOL 4670
   Mammalian Toxicology (4 s.h.)

Biology Electives* ................................................................. 8 s.h.

* Two additional upper-division (3100-level or higher) biology electives.

Cell and Molecular Biology Track (B.S.)

BIOL 3100
   Plant Biology ........................................................................ 4 s.h.

BIOL 3130
   Ecology ................................................................................ 4 s.h.

BIOL 3170
   Molecular Biology ..................................................................... 4 s.h.

Choose from the following courses ................................................. 4 s.h.

BIOL 3700
   Biochemistry (4 s.h.)

BIOL 4670
   Mammalian Toxicology (4 s.h.)

Biology Electives* ................................................................. 8 s.h.

* Two additional upper-division (3100-level or higher) biology electives.

Bioinformatics Track (B.S.)
(Minor in Mathematics also required)

BIOL 3170
   Molecular Biology ..................................................................... 4 s.h.

BIOL 3450
   Bioinformatics ........................................................................ 4 s.h.

BIOL 3700
   Biochemistry ........................................................................ 4 s.h.

ITEC 2010
   Introduction to Programming .................................................. 4 s.h.

Choose from the following courses ................................................. 4 s.h.

ITEC 3450
   Database Management (4 s.h.)

BIOL 4690
   Systems Biology (4 s.h.)

PHYS 3500
   Computational Physics (4 s.h.)
Summary of Total Credits
Core Curriculum ................................................................. 46 s.h.
Major Requirements:
  Common Requirements ........................................ (38 s.h.)
  Track Requirements ................................................... (24 s.h.)
Total Major Requirements ................................................... 62 s.h.
Electives/Second Minor/Second Major ........................................ 16 s.h.
Minimum to Earn Bachelor of Science ........................................ 124 s.h.

Pharmacy Dual Degree Program
King offers students interested in pursuing a doctoral degree at Pharmacy School (PharmD) the opportunity to apply after only three years at the undergraduate level. It is anticipated that most students would complete their requirements in three years. It is important that the student realize that following the Pharmacy Dual Degree Program does not automatically guarantee his or her entrance into pharmacy school. Students must still successfully take the PCAT and competitively apply to their intended graduate program(s). Students should also verify lists of required courses for each PharmD program of interest; many pharmacy schools require courses in economics, statistics, and communications, in addition to the courses listed below.

A student completing the requirements in three years and who follows the outlined curriculum will be awarded a Bachelor of Science with a major in Biology from King only after satisfactorily completing the first year of an accredited professional school of pharmacy program. Typically students will apply to schools of pharmacy during the summer before their third year or during the fall of their third year. Transfer students must complete at least 50 hours at King, including 20 hours of required Biology courses.

Core Curriculum Requirements
Pharmacy Dual Degree majors should fulfill specified categories of the King Core Curriculum by taking the courses indicated below. See the “The Core Curriculum” section of the catalog for additional details.

Science
CHEM 1110
  General Chemistry I ....................................................... 4 s.h.
Quantitative Literacy
MATH 2350
  Calculus I ........................................................................ 4 s.h.

Pharmacy Dual Degree Requirements
BIOL 2110, 2120
  General Biology .................................................................. 8 s.h.
BIOL 3150
  Genetics ........................................................................... 4 s.h.
BIOL 3700
  Biochemistry ...................................................................... 4 s.h.
BIOL 4010
  Comprehensive Assessment .................................................. 0 s.h.
CHEM 1120
  General Chemistry II ......................................................... 4 s.h.
CHEM 2110, 2120

Revised May 2016
Organic Chemistry .......................................................... 8 s.h.
MATH 2360
Calculus II ................................................................. 4 s.h.
PHYS 2210, 2220
General Physics ....................................................... 8 s.h.
IDST 4500 (0.5 s.h. repeated for a total of four semesters)
Interdepartmental Science and Mathematics Seminar .......... 2 s.h.

Choose from the following courses ........................................ 8 s.h.
BIOL 3300
   Cell Biology (4 s.h.)
BIOL 3400
   Microbiology (4 s.h.)
BIOL 3540
   Neurophysiology (4 s.h.)
BIOL 3600
   Human & Mammalian Physiology (4 s.h.)
BIOL 4670
   Mammalian Toxicology (4 s.h.)

Summary of Total Credits
Core Curriculum .......................................................... 42 s.h.
Major Requirements ..................................................... 50 s.h.
Transferred Hours from PharmD program .......................... 32 s.h.
Minimum to Earn Bachelor of Science .............................. 124 s.h.