



**Biology
Bachelor of Science
Arts & Sciences
Traditional**

Program Coordinator: L. K. Vaughan

The Bachelor of Science 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 Science, or Health Sciences Chemistry**, due to the overlap already present in these programs. 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, Psychology, 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 Requirements

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 3760
 Genetics 4 s.h.
 BIOL 3300
 Cell Biology 4 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.
 BIOL 4990
 Comprehensive Assessment 0 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 (BS)

BIOL 3100
 Plant Biology 4 s.h.
 BIOL 3130
 Ecology 4 s.h.

Choose from the following courses 4 s.h.

BIOL 3310
 Human and Vertebrate Comparative Anatomy (4 s.h.)

BIOL 3200	
Histology (4 s.h.)	
BIOL 3260	
Clinical Neuroanatomy (4 s.h.)	
<i>Choose from the following courses</i>	4 s.h.
BIOL 3640	
Neurophysiology (4 s.h.)	
BIOL 3600	
Human and Mammalian Physiology (4 s.h.)..	
BIOL 4670	
Mammalian Toxicology (4 s.h.)	
Biology Electives (3100-level or higher).....	8 s.h.

Cell and Molecular Biology Track (BS)

BIOL 3100	
Plant Biology	4 s.h.
BIOL 3130	
Ecology	4 s.h.
BIOL 3770	
Molecular Biology	4 s.h.
<i>Choose from the following courses</i>	4 s.h.
BIOL 3700	
Biochemistry (4 s.h.)	
BIOL 4670	
Mammalian Toxicology (4 s.h.)	
Biology Electives (3100-level or higher).....	8 s.h.

Bioinformatics Track (BS)

(Minor in Mathematics also required)

BIOL 3770	
Molecular Biology	4 s.h.
BIOL 3250	
Bioinformatics	4 s.h.
BIOL 3700	
Biochemistry.....	4 s.h.
ITEC 2010	
Programming for STEM	4 s.h.
<i>Choose two from the following courses</i>	8 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	42 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	20 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; however, this may require students to have earned some credits before matriculation to King, via dual enrollment and/or AP course credits. 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 at King or during the fall of their third year. Transfer students must complete at least 48 hours at King, including 20 hours of required Biology courses.

Core Curriculum Requirements for Pharmacy Dual Degree

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	
General Biology I	8 s.h.
BIOL 2120	
General Biology II	4 s.h.
BIOL 3760	
Genetics	4 s.h.
BIOL 3700	
Biochemistry.....	4 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.
MATH 2360	
Calculus II	4 s.h.
PHYS 2210	
General Physics I	8 s.h.
PHYS 2220	
General Physics II.....	4 s.h.
IDST 4500 (0.5 s.h. repeated for a total of four semesters)	
Interdepartmental Science and Mathematics Seminar	2 s.h.
<i>Choose from the following courses</i>	<i>8 s.h.</i>
BIOL 3300	
Cell Biology (4 s.h.)	
BIOL 4400	
Microbiology (4 s.h.)	
BIOL 3640	
Neurophysiology (4 s.h.)	
BIOL 3600	
Human & Mammalian Physiology (4 s.h.)	
BIOL 4670	
Mammalian Toxicology (4 s.h.)	
BIOL 4990	
Comprehensive Assessment	0 s.h.

Summary of Total Credits

Core Curriculum	42 s.h.
Major Requirements.....	50 s.h.
Transferred Hours from PharmD program.....	<u>32</u> s.h.
Minimum to Earn Bachelor of Science	124 s.h.