

# BIOLOGY MAJOR WITH SECONDARY EDUCATION SPECIALIZATION, BS

The BS degree in Biology with Secondary Education Specialization is designed for those students seeking teaching certification in Biology and who wish to have a more extensive natural science foundation.

## Student Learning Outcomes

Biology, Secondary Education Specialization majors at Washburn University, upon completion of the program will be able to:

- Describe or distinguish major biological principles in cell biology, genetics, organismal biology, ecology, and evolution.
- Demonstrate the complex interrelationships amongst ecological and evolutionary forces and how they influence organisms, populations, and community function.
- Explain the scientific process and be able to discriminate between different approaches to science.
- Identify, recognize, and recall human anatomy, physiology, reproduction, and development.
- Design experiments and analyze and interpret basic scientific data.
- Explain scientific information in oral and written presentations in a clear and professional manner.

## Degree Requirements

### Biology Majors with Secondary Education Specialization

The Bachelor of Science (BS) degree in Biology with Secondary Education Specialization requires a minimum of 38 hours: the 20-hour core and at least 18 hours of required supporting courses.

Code	Title	Hours
<b>Core</b>		
BI 102	General Cellular Biology	5
BI 103	General Organismal Biology	5
BI 301	General Microbiology	4
BI 333	General Genetics	4
BI 390	Biology Seminar (Capstone Course)	1
BI 395	Research in Biology (Capstone Course)	1
Subtotal		20

### Additional Hours

Students must complete the following courses to satisfy Kansas Teaching Standards.

Select 18 credit hours of supporting courses:		18
BI 155 or BI 325	Sexually Transmitted Disease Microbiology of Human Disease	1-5
BI 202	Biology of Behavior	3
BI 250 or BI 275	Introduction to Human Anatomy Human Anatomy	3-4
BI 255 or BI 330	Human Physiology Animal Physiology	4
BI 310 or BI 300	Ecology Field Biology	3-4

BI 340	Evolutionary Biology	3
Subtotal		35-41
<b>Non-Biology Courses <sup>1</sup></b>		
MA 140 or MA 151	Statistics Calculus & Analytic Geometry I	3-5
Select one of the following physics sequences:		10
PS 261 & PS 262	College Physics I and College Physics II	
PS 281 & PS 282	General Physics I and General Physics II	
CH 151 & CH 152	Fundamentals of Chemistry I and Fundamentals of Chemistry II	10
CH 340 & CH 342	Organic Chemistry I and Organic Chemistry Lab I	5
Subtotal		28-30
Total Hours		83-91

<sup>1</sup> These courses may be used to partially satisfy the 30-hour Natural Sciences Concentration

### Natural Sciences Concentration

The BS degree also requires a 30-hour Concentration to be chosen from the Natural Sciences (Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy, or Computer Information Science). This Natural Sciences Concentration must be in departments other than the major, and must have at least 20 hours in one department. Natural Sciences Concentrations for the BS degree are limited to these courses: CH 151 Fundamentals of Chemistry I or above, PS 261 College Physics I or above, MA 116 College Algebra or above, CM 111 Introduction to Structured Programming or above.

To receive departmental approval as having competency for licensure in teaching biology at the secondary level, majors must complete a BS in Biology Secondary Education Specialization as outlined above. Completion of the 20-hour core, other major requirements, and appropriate course work within the Department of Education in science teaching methods will satisfy the State competency requirements for licensure in biology. See the Department of Biology and the Department of Education for details. The number of credit hours to graduate varies but is at least 140 credit hours.

Students seeking licensure to teach biology must be formally admitted to the University's Professional Teacher Education Programs. For admission requirements, see **Education** in this catalog.