

# Biology: Biomedical Sciences Option

## Bachelor of Science (BS)

# Biomedical Sciences Option

This option is for the students preparing to apply for admission into a professional school in one of the following areas: allopathic medicine, osteopathic medicine, chiropractic medicine, optometry or dentistry. Students interested in biomedical research, including Masters and Doctoral degrees, may also consider this option. The curriculum includes supporting chemistry, physics and mathematics course work as well as a core of courses that prepares graduates in any area of biology. Students may select additional electives in virology, immunology, pathogenic bacteriology, epidemiology, comparative anatomy, molecular genetics, health physics and toxicology.

### Becoming Career Ready...

/ Faculty-mentored research and guidance will help you develop the professional skills needed for success in a competitive job market and/or advanced study in graduate and professional programs. Students attend classes in the renovated Magill Hall furnished with modern equipment.

/ While most Biomedical Science graduates go on to graduate or medical school, the program can also prepare students for entering the workforce immediately in various capacities of the health field. Example job titles include pharmaceutical sales rep, pharmaceutical marketer, science writer, biologist, forensic scientist, food and drug analyst, hematologist and hospital administrator.

/ 100% of Southeast programs offer real-world experience. Biomedical Science students earn this experience through required 80 hours outside the class room which earn 2 college credits. Students in Biomedical Sciences often do this by shadowing doctors and nurses or working or volunteering at hospitals. Students often conduct laboratory research with faculty in addition to shadowing.

/ Biomedical science students take rigorous coursework in animal physiology and molecular genetics which are required for most medical schools. Students also complete additional coursework in social science, organic chemistry, physics, and mathematics to make them competitive for admission to medical schools.

/ Alpha Epsilon Delta (honorary), American Student Medical Association, and the Student Medical Society provide peer-support and guidance. The Biomedical Scholars advising program provides faculty-based advising and committee letters of recommendation. Students will meet with their advisor each semester to assess their progress towards admission to a professional school.

/ The path to a successful career starts with you! You can maximize your career development by working closely with Career Services and Southeast faculty – they are here to help you connect your passions, interests and skills to jobs and opportunities in the field. Career Services provides professional career counseling and coaching, resume critiques, practice interviews, job search strategies, career events, networking opportunities and more.

### Southeast graduates have attended some of the most prestigious medical schools throughout the country, including:

- Washington University in St. Louis
- Harvard Medical School
- Vanderbilt University School of Medicine
- St. Louis University School of Medicine
- University of Minnesota
- Kansas University – Kansas City
- University of Arkansas

### Missouri residents typically matriculate to:

- University of Missouri - Columbia
- University of Missouri – Kansas City

Southeast students are eligible for the Bryant's Scholar Program at the University of Missouri-Columbia.

### Illinois residents typically matriculate to:

- Southern Illinois University
- University of Illinois

### Osteopathic medicine provides a fantastic opportunity to become a physician at:

- A.T. Still – Kirksville College of Osteopathic Medicine
- Carey College of Osteopathic Medicine
- Edward Via College of Osteopathic Medicine

Southeast students have access to the KCOM Pre-Osteopathic Scholar Pre-admission Program.

### Other professional schools students have attended include:

- UM - Kansas City Dental School
- UM - St. Louis Optometry School

Students interested in chiropractic medicine may matriculate directly to Logan College of Chiropractic medicine through our 3+3 plan.

### Shadowing experiences are often fulfilled at:

- Local doctors, dentist, optometrists, and chiropractors
- Physicians and medical centers in the student's hometown

### Admission Requirements

A college preparatory sequence that includes three years of science (including biology, chemistry, and physics) and mathematics through advanced algebra is encouraged. There is no admission process to this major, but students that are honors eligible are directly admitted to the Biomedical Scholars advising program.

### Transfer and Dual Credit Students

If you have dual credit or transfer credit, please visit our transfer course equivalencies guide at [semo.edu/transfercredit](http://semo.edu/transfercredit).

**To learn more**  
Office of Admissions  
(573) 651-2590  
[admissions@semo.edu](mailto:admissions@semo.edu)  
[semo.edu](http://semo.edu)

**To explore**  
the College of Science,  
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[semo.edu/stem](http://semo.edu/stem)

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[semo.edu/advising](http://semo.edu/advising)

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Degree Map 2019-2020

This is a guide based on the 2019-2020 Undergraduate Bulletin and is subject to change. The time it takes to earn a degree will vary based on several factors such as dual enrollment, remediation, and summer enrollment. Students will meet with an academic advisor each semester and use Degree Works to monitor their individual progress.

### CURRICULUM CHECKLIST

*"Critical Courses" are italicized and bolded. Data shows that students who have completed this course in the first two years and have earned the noted grade are most likely to complete this program of study.*

#### Required Courses:

- \_\_\_ BI163 Evolution & Ecology (4)
- \_\_\_ BI173 Cell & Organismal Biology (4)
- \_\_\_ **BI283 Genetics (4)**
- \_\_\_ BI389 Career Development in Biology (2)
- \_\_\_ CH185/085/005 General Chemistry (5)

#### Choose one math course:

- \_\_\_ MA116 Precalculus A (3)
- \_\_\_ MA137 Precalculus (5)
- \_\_\_ MA139 Applied Calculus (3)
- \_\_\_ MA140 Analytical Geometry & Calculus I (5)

#### Choose one additional math course:

- \_\_\_ MAxxx Additional math (for which MA116 is a prerequisite) (3)
- OR
- \_\_\_ MA155 Statistical Reasoning (3)

#### Experiential Learning Requirement: 2 hours

- \_\_\_ BI471-473 Internships in Biology (2)
- \_\_\_ BI551-553 Biology Field Studies (2)
- \_\_\_ BI563-565 Experience in Museum Curation (1-3)
- \_\_\_ BI570 Development of Instructional Materials (1)
- \_\_\_ BI589-591 Biological Research (2)

#### Biomedical Sciences Option Required Courses:

- \_\_\_ BI310 General Microbiology (4)
- OR
- \_\_\_ ZO310 Animal Biology (4)
- \_\_\_ ZO331 Animal Physiology (3)

#### Biology Electives: Choose 16 Hours

\_\_\_ Any BI, BO, ZO, BT courses. At least 10 credit hours must be at the 300-599 level.

#### Non-Biology Requirements:

- \_\_\_ CH186 Foundations of Inorganic Chemistry (3)
- \_\_\_ CH187 Inorganic Chemistry and Qualitative Analysis Lab (2)
- \_\_\_ **CH341 Foundations of Organic Chemistry (4)**
- \_\_\_ CH342 Organic Chemistry Lab I (1)
- \_\_\_ PH120/020 Introductory Physics I (5)
- \_\_\_ PH121/021 Introductory Physics II (5)

**General Education Requirements** – some requirements may be fulfilled by coursework in major program

- Social and Behavioral Sciences – 6 hours
- Constitution Requirement – 3 hours
- Written Communication – 6 hours
- Oral Communication – 3 hours
- Natural Sciences – 7 hours (from two disciplines, one to include a lab)
- Mathematics – 3 hours
- Humanities & Fine Arts – 9 hours (from at least two disciplines)
- Additional requirements – 5 hours (to include UI100 for native students)
- Civics examination

#### Professional School Admissions

Students seeking to attend professional schools in the biomedical sciences will be required to take an admissions test as specified below:

- Medical school: Medical College Admission Test (MCAT)
- Dental school: Dental Admission Test (DAT)
- Optometry School: Optometry Admission Test (DAT)

The curriculum for this degree is aligned to prepare students to be competitive applicants to biomedical professional schools and to perform well on the admissions tests. Students are advised to complete a substantial portion of the degree curriculum prior to attempting these admissions tests, typically after the third year of studies. Students should consult with their Biomedical Scholars advisor regarding preparation for these tests. The Biomedical Scholars advisors will advise students on the admissions process and timeline. Students should be aware that admission to these professional programs is very competitive and their GPA will need to be substantially higher than the minimum required for graduation.

### SAMPLE FOUR-YEAR PLAN

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
<b>FIRST YEAR</b>	UI100	3	BI173	4
	BI163	4	CH186	3
	CH185/085/005	5	CH187	2
	MA116/137/39/140	3-5	EN100	3
			Additional Math course	3
	<b>Total</b>	<b>15-17</b>	<b>Total</b>	<b>15</b>
Milestone: achieve a target cumulative GPA of 3.2				

<b>SECOND YEAR</b>	<b>BI283</b>	<b>4</b>	BI310 or ZO310	4
	<b>CH341</b>	<b>4</b>	CH343*	3
	CH342	1	CH344*	2
	General Education	3	Biology elective	3
	General Education	3	General Education	3
	<b>Total</b>	<b>15</b>	<b>Total</b>	<b>15</b>
Milestone: achieve a target cumulative GPA of 3.2				

(summer courses are encouraged to avoid 18 hour semesters)

<b>THIRD YEAR</b>	PH120/020	5	BI389	2
	ZO331	3	PH121/021	5
	Biology elective	3	Biology elective	3
	Experiential Learning Req	2	General Education	3
	Elective	3	General Education	3
	<b>Total</b>	<b>16</b>	<b>Total</b>	<b>16</b>
Milestone: take admission test and apply to professional program				

<b>FOURTH YEAR</b>	Biology electives	4	Biology electives	3
	General Education	3	General Education	3
	General Education	3	General Education	3
	Elective	3	Elective	3
	Elective	3		
	<b>Total</b>	<b>16</b>	<b>Total</b>	<b>12</b>
Milestone: achieve a target cumulative GPA of 3.2				

A "Milestone" signifies a significant stage for a student in the completion of a degree.

\*Recommended for program; consult advisor

A minimum 2.00 GPA in the major and overall are required to graduate with a BS in Biology degree.

**Degree requirements for all students:** a minimum of 120 credit hours, completion of the General Education program, completion of 39 senior division hours (300-599), Writing Proficiency Exam (WP003).

Refer to the Undergraduate Bulletin or Degree Works for additional graduation requirements for your program.

Revised  
4/29/2019

**To learn more**  
Office of Admissions  
(573) 651-2590  
admissions@semo.edu  
semo.edu

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the College of Science,  
Technology, Engineering and  
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