Biology: Biomedical Sciences Option

Bachelor of Science (BS)

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 may also consider this option. The curriculum includes supporting chemistry, physics, and mathematics core work.

The Department of Biology has numerous research and teaching labs that provide excellent opportunities for “hands-on” experiences. We have relationships with local health professionals and two regional hospitals that provide numerous opportunities for volunteering, part-time employment, internships, and shadowing. Students may also choose to be involved in the Student Medical Society and Alpha Epsilon Delta honorary society.

**Biomedical Sciences students will...**

- Meet with their advisor each semester to assess their progress towards admission to a professional school.
- Take a core of courses that prepares them in any area of biology.
- Take rigorous coursework in animal physiology and molecular genetics which are required for most medical schools.
- Select additional electives in virology, immunology, pathogenic bacteriology, epidemiology, health physics, and toxicology.
- Complete 80 hours (for 2 credit hours) of experiential learning, usually shadowing doctors and nurses.
- Complete additional coursework in organic chemistry, physics, and mathematics to make them competitive for admission to medical schools.
- Attend classes in the renovated Magill Hall furnished with modern equipment.

**Career Planning**

Career preparation is part of the mission of Southeast. In fact, more than 90% of Southeast students participate in internships, clinical opportunities, student teaching, research assistantships, and study abroad.

Professional career counselors are available for all students. The Office of Career Services in Academic Hall 057 can provide students with professional career counseling, resume critiques, practice interviews, job search strategies, career events, networking opportunities, and more. Students in this major will receive special attention from their adviser in CL003 and CL004 to prepare their medical school application and medical school interviews.

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

- 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**

- St. Francis Medical Center
- Southeast Missouri Hospital
- Landmark Hospital
- Delta Area Hospital
- 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.

**Demonstrated Career Proficiency is a Requirement of all Southeast Students**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CL001/CL002</td>
<td>First Semester</td>
<td>Complete the FOCUS2 assessment and develop a Career Action Plan.</td>
</tr>
<tr>
<td>CL003</td>
<td>Junior Year</td>
<td>Students gain information about career planning and job searching resources.</td>
</tr>
<tr>
<td>CL004</td>
<td>Senior Year</td>
<td>Students demonstrate advanced proficiency by identifying a position in their field, developing a cover letter, and tailoring a resume for the position. Materials are critiqued to ensure preparedness for a successful job search.</td>
</tr>
</tbody>
</table>
Biology: Biomedical Sciences Option

Bachelor of Science (BS)

This is a guide based on the 2016-2017 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 DegreeWorks 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 (1)
- CH185/085/005 General Chemistry (5)

Choose one math course:
- MA134 College Algebra (3)
- MA137 Precalculus (5)
- MA139 Applied Calculus (3)
- MA140 Analytical Geometry & Calculus I (5)

Choose one additional math course:
- MAxxx Additional math (MA133 or higher) (3)

Experiential Learning Requirement: 2 hours
- BI 471-473 Internships in Biology (2)
- BI 551-553 Biology Field Studies (2)
- BI 589-591 Biological Research (2)
- BI 570 Development of Instructional Materials (1)

Biomedical Sciences Option Required Courses:
- BI310 General Microbiology (4)
- OR
- ZO310 Animal Biology (4)
- ZO331 Animal Physiology (3)

Biology Electives: Choose 17 Hours
- Any BI, BO, ZO, BT courses. At least 10 credit hours must be at the 300-599 level.

Non-Biology Requirements:
- CH198 Foundations of Inorganic Chemistry (3)
- CH187 Inorganic Chemistry and Qualitative Analysis Lab (2)
- CH341 Foundations of Organic Chemistry (4)
- CH342 Organic Chemistry Lab (1)
- PH121/021 Introductory Physics I (5)
- PH121/021 Introductory Physics II (5)

University Studies Requirements (not already listed above):
- UI100 First Year Seminar, EN100 English Composition, Artistic Expression, Written Expression, Oral Expression, Literacy Expression, Behavioral Systems, Development of a Major Civilization, Economic Systems, Social Systems, Political Systems, and two IU/UI3XXs and one IU4XX.

**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**

<table>
<thead>
<tr>
<th>Course #</th>
<th>Fall Semester</th>
<th>Hrs</th>
<th>Spring Semester</th>
<th>Hrs</th>
</tr>
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<tbody>
<tr>
<td>UI100</td>
<td></td>
<td>3</td>
<td>Bi173</td>
<td>4</td>
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<td>4</td>
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<tr>
<td>CH185/085/005</td>
<td></td>
<td>5</td>
<td>CH187</td>
<td>2</td>
</tr>
<tr>
<td>MA134/137/39/140</td>
<td>3-5</td>
<td></td>
<td>EN100</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td>15-17</td>
<td><strong>Total</strong></td>
<td>15</td>
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**FIRST YEAR**

- Milestone: maintain 2.0 cumulative GPA

<table>
<thead>
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<th>Course #</th>
<th>Fall Semester</th>
<th>Hrs</th>
<th>Spring Semester</th>
<th>Hrs</th>
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</thead>
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<tr>
<td>ZO331</td>
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<tr>
<td>PH120/020</td>
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<td>5</td>
<td>PH121/021</td>
<td>5</td>
</tr>
<tr>
<td>Biology elective</td>
<td></td>
<td>3</td>
<td>CH389</td>
<td>1</td>
</tr>
<tr>
<td>Experiential Learning Req</td>
<td>2</td>
<td>Behavioral Systems</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>IU/UI3XX</td>
<td></td>
<td>3</td>
<td>Social Systems</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>16</td>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
</tbody>
</table>

**SECOND YEAR**

- Milestone: take admission test and apply to professional program

**THIRD YEAR**

- Biology electives | 4 | Biology electives | 4 |
- Develop of a Major Civ | 3 | Economic Systems | 3 |
- Oral Expression | 3 | Political Systems | 3 |
- IU/UI 3XX | 3 | IU4XX | 3 |
- General elective | 3 |
| **Total** | 16 | **Total** | 13 |

**FOURTH YEAR**

- Milestone: maintain 2.0 cumulative GPA

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

*Recommended for program; consult advisor

**Degree requirements for all students:** a minimum of 120 credit hours, completion of University Studies program, career proficiencies (CL001-004), Writing Proficiency Exam (WP003), and completion of the Measure of Academic Proficiency and Progress (MAPP) at the senior level.

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

Refer to the Undergraduate Bulletin or DegreeWorks for additional graduation requirements (i.e. minimum GPA and coursework) for your program of study.

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