

Bachelor of Science (BS)**Biochemistry Option**

Biochemistry deals with the chemical foundations and properties for all living processes. Research by biochemists increases our knowledge about chemicals and processes that govern the living world and has led to the discovery and development of new and improved medicines, agricultural breakthroughs, and other areas that unveil the mysteries of living things. Those interested in a rewarding career that provides financial security, promotes self-respect and offers the opportunity to work on stimulating and breakthrough projects, should consider a career in chemistry with a biochemistry option.

The biochemistry curriculum prepares students for careers in biochemistry, chemistry and biotechnology and provides an excellent basis for graduate and professional areas of study.

Chemistry students will...

- Gain a rigorous foundation in biochemistry, chemistry, science and math in the context of a broad university education.
- Interact closely with experienced faculty who are recognized for their writing, training, professional affiliations, and expertise.
- Study in the state-of-the-art, first-rate learning environment provided by the newly renovated Magill Hall of Science.
- Have opportunities to pursue research and scholarship that help develop independent thinking and problem solving.
- Have employment opportunities within the department that can provide chemistry-related work experience prior to graduation.

Career Planning

Approximately 35-40% of chemistry graduates pursue graduate or professional programs of study immediately upon graduation. The others pursue employment opportunities in chemistry or other fields. Employment opportunities for chemists exist in a variety of fields, such as biotechnology, biochemistry, chemical manufacturing, environmental monitoring and compliance, industrial hygiene, materials science, pharmaceutical manufacturing, product development, quality control, sales (pharmaceuticals, chemicals, instruments), and technical management.

| Demonstrated Career Proficiency is a Requirement of all Southeast Students | | |
|---|----------------|---|
| CL001/CL002 | First Semester | Complete the FOCUS2 assessment and develop a Career Action Plan. |
| CL003 | Junior Year | Students gain information about career planning and job searching resources. |
| CL004 | Senior Year | 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. |
| Career Services, located in Academic Hall 057, provides professional career advising to guide students in their career development. | | |

Internship Opportunities, Employment Opportunities, Graduate Schools and Programs of Recent Graduates

- Biokowa
- Buzzi Unicem USA
- Eli Lilly
- Exxon Mobil
- Monsanto
- Pharmacia (currently part of Pfizer)
- PPG Industries
- Proctor and Gamble
- Sigma-Aldrich
- Missouri State Highway Patrol Crime laboratory
- Indiana University
- John Hopkins University
- Penn State University
- Purdue University
- Southern Illinois University (School of Medicine)
- Texas A & M
- University of Illinois (School of Medicine, Graduate School)
- University of Missouri – Columbia (School of Medicine, Graduate School)
- University of Notre Dame
- University of Wisconsin – Madison
- Washington University
- Numerous other graduate/professional programs of study and employers

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

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Agriculture online, visit**
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College of Science, Technology and Agriculture
Advising Center (573) 651-5930
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www.semo.edu/costaladvising/index.htm

Bachelor of Science (BS)

This is a guide based on the 2014-2015 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

Business students must be admitted to the College of Business prior to enrolling in upper division (300 level or above) business courses.

Chemistry Core – 34 Hours Required

- ___ CH185 General Chemistry (5) (*Physical Systems*)
- ___ CH186 Foundations of Inorganic Chemistry (3)
- ___ CH187 Inorganic Chemistry and Qualitative Analysis Laboratory (2)
- ___ CH271 Foundations of Analytical Chemistry (5)
- ___ CH311 Foundations of Physical Chemistry (4)
- ___ CH313 Physical Chemistry Laboratory (3)
- ___ CH341 Foundations of Organic Chemistry (4)
- ___ CH342 Organic Chemistry Laboratory I (1)
- ___ CH498 Professional Presentation in Chemistry (1)
- ___ CH531 Foundations of Biochemistry (3)

OR

- ___ UI331 Foundations of Biochemistry (3)
- ___ UI443 Professional Experience in Chemistry (3)

Additional Requirements – 19 Hours Required

- ___ MA140 Analytical Geometry and Calculus I (5) (*Logical Systems*)
- ___ MA145 Analytical Geometry and Calculus II (4)
- ___ PH120/020 Introductory Physics I (5)
- ___ PH121/021 Introductory Physics II (5)

OR

- ___ PH230/030 General Physics I (5)
- ___ PH231/031 General Physics II (5)

Biochemistry Option Courses – 25 Hours Required

- ___ BI154 Genetics and Cellular Biology (4)
- ___ BI200 Microbiology (3)
- ___ BI381 Molecular Genetics (3)
- ___ BI404 Cell Biology (3)
- ___ CH312 Advanced Physical Chemistry (3)
- ___ CH343 Advanced Organic Chemistry (3)
- ___ CH344 Organic Chemistry Laboratory II (2)
- ___ CH532 Advanced Biochemistry (2)
- ___ CH533 Biochemistry Laboratory (2)

Note: Completion of an experiential learning project (undergraduate research or internship) in the major is required. The departmental advisor should be consulted for information about this requirement.

University Studies Requirements (not already listed above):

UI100 First Year Seminar, EN100 English Composition, Artistic Expression, Written Expression, Oral Expression, Literary Expression, Behavioral Systems, Living Systems, Development of a Major Civilization, Economic Systems, Political Systems, Social Systems, and one IU/UI3XX*

* Note: Two IU/UI3XX courses are required if CH531 Foundations of Biochemistry is taken rather than UI331 Foundations of Biochemistry.

SAMPLE FOUR-YEAR PLAN**Chemistry: Biochemistry Option**

Requirements for the 2014-2015 Undergraduate Bulletin

| | Fall Semester | | Spring Semester | |
|---|------------------------|-----------|------------------------|-----------|
| | Course # | Hrs | Course # | Hrs |
| FIRST YEAR | UI100 | 3 | CH186 | 3 |
| | EN100 | 3 | CH187 | 2 |
| | CH185/085/005 | 5 | BI154 | 4 |
| | Living Systems | 3 | MA140 | 5 |
| | Total | 14 | Total | 17 |
| SECOND YEAR | BI200 | 3 | BI381 | 3 |
| | CH271 | 5 | CH341 | 4 |
| | MA145 | 4 | CH342 | 1 |
| | PH120/020 or PH230/030 | 5 | PH121/021 or PH231/031 | 5 |
| | Total | 17 | Total | 16 |
| <i>(summer courses are encouraged to avoid 18 hour semesters)</i> | | | | |
| THIRD YEAR | CH311 | 4 | CH312 | 3 |
| | CH343 | 3 | CH313 | 3 |
| | CH344 | 2 | UI443 | 3 |
| | Oral Expression | 3 | Social Systems | 3 |
| | Total | 15 | Total | 15 |
| FOURTH YEAR | BI404 | 3 | CH498 | 1 |
| | UI331 or CH531 | 3 | CH532 | 2 |
| | Artistic Expression | 3 | CH533 | 2 |
| | Develop of Major Civ | 3 | Economic Systems | 3 |
| | Total | 12 | Total | 14 |

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 freshman and senior levels.

A minimum 2.0 GPA in the major and overall are required to graduate with a BS in Chemistry 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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Experience Success

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