

Bachelor of Science (BS)

DNA Analysis Option

Chemistry is the branch of natural science that deals with the properties and classification of matter, the changes that matter undergoes, and the energy associated with these changes. Research by chemists increases our knowledge about chemicals and their roles in the natural world and has led to the discovery and development of new and improved products and advances in medicine, agriculture, food processing and other fields. 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.

This degree program was crafted in close consultation with the Federal Bureau of Investigation's (FBI) Quality Assurance Standards for Forensic DNA Testing Laboratories. This ensures that graduates leave Southeast fully qualified to begin a career as a DNA analyst in forensic and other DNA testing laboratories.

Chemistry students will...

- Gain a rigorous foundation in chemistry, science, math and DNA analysis 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, including dedicated forensic science and DNA analysis labs.
- Have opportunities to pursue research and scholarship that help develop independent thinking and problem solving.
- Meet educational requirements for DNA analysts prescribed by the FBI's Quality Assurance Standards for Forensic DNA Testing Laboratories.

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, 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

- Arkansas State Crime Laboratory
- Illinois State Police Forensic Sciences Command
- Missouri State Highway Patrol Crime Laboratory Division
- Saint Louis Metropolitan Police Department
- US Army Criminal Investigation Laboratory
- US Bureau of Alcohol, Tobacco, Firearms, and Explosives
- United States Drug Enforcement Administration
- Numerous state and local forensic laboratories nationwide
- Biokyowa
- Buzzi Unicem USA
- Eli Lilly
- Exxon Mobil
- Monsanto
- Pharmacia (currently part of Pfizer)
- PPG Industries
- Proctor and Gamble
- Sigma-Aldrich
- Numerous additional chemical companies
- John Hopkins University
- Purdue University
- University of Illinois (School of Medicine, Graduate School)
- University of Notre Dame
- University of Wisconsin – Madison
- Washington University
- Numerous additional top-tier chemistry graduate and professional schools

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

**To explore the College of
 Science, Technology, and
 Agriculture online, visit**
www.semo.edu/costal

For advising
 College of Science, Technology and Agriculture
 Advising Center (573) 651-5930
costaadvising@semo.edu
www.semo.edu/costaladvising/index.htm

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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**Chemistry Core – 34 Hours Required**

- ___ CH185 General Chemistry (5)
- ___ 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)
- ___ MA145 Analytical Geometry and Calculus II (4)
- ___ PH120/020 Introductory Physics I (5)
- AND
- ___ PH121/021 Introductory Physics II (5)
- OR
- ___ PH230/030 General Physics I (5)
- AND
- ___ PH231/031 General Physics II (5)

DNA Analysis Courses – 28 Hours Required

- ___ BI154 Genetics and Cellular Biology (4)
- ___ BI200 Microbiology (3)
- ___ BI245 Lab Methods in Biotechnology (3)
- ___ BI381 Molecular Genetics (3)
- ___ BI450 Molecular Biology (3)
- ___ CH312 Advanced Physical Chemistry (3)
- ___ CH420 Forensic Chemistry (4)
- ___ CH533 Biochemistry Laboratory (2)
- ___ MA423 Statistical Analysis for Forensic Science (3)

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: DNA Analysis Option**

Requirements for the 2014-2015 Undergraduate Bulletin

	Fall Semester		Spring Semester	
	Course #	Hrs	Course #	Hrs
FIRST YEAR	UI100	3	BI154	4
	EN100	3	CH186	3
	CH185/CH085/CH005	5	CH187	2
	Living Systems	3	MA140	5
			Written Expression	3
Total	14	Total	17	
SECOND YEAR	BI200	3	BI245	3
	CH271	5	CH341	4
	MA145	4	CH342	1
	PH120/020 or PH230/030	5	PH121/021 or PH231/031	5
			Literary Expression	3
Total	17	Total	16	
<i>(summer courses are encouraged to avoid 18 hour semesters)</i>				
THIRD YEAR	BI381	3	CH312	3
	CH311	4	UI443	3
	CH313	3	Oral Expression	3
	MA423	3	Behavioral Systems	3
	Political Systems	3	Social Systems	3
Total	16	Total	15	
FOURTH YEAR	BI450	3	CH498	1
	CH420	4	CH533	2
	UI331 or CH531	3	IU/UI3XX	3
	Develop of Major Civ	3	Artistic Expression	3
			Economic Systems	3
Total	13	Total	12	

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.

Experience **Southeast**
Experience **Success**

Revised
11/18/2013

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