Chemistry: DNA Analysis Option
Bachelor of Science (BS)

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.

<table>
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<tr>
<th>Demonstrated Career Proficiency is a Requirement of all Southeast Students</th>
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<tbody>
<tr>
<td>CL001/CL002 First Semester</td>
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<tr>
<td>CL003 Junior Year</td>
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<td>CL004 Senior Year</td>
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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
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.

**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)
- CH441 Foundations of Organic Chemistry (4)
- CH442 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.

**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.