

# BACHELOR OF SCIENCE, MAJOR IN CHEMISTRY/CHEMICAL ENGINEERING

## A Dual Degree Plan for Concurrent Bachelor of Science Degrees from Sam Houston State University and Universities with Recognized Accredited Chemical Engineering Degree Programs

In this plan, the student completes three years in Chemistry at Sam Houston State University and two years in Chemical Engineering at a university with a recognized accredited chemical engineering degree program. On successful completion of the curriculum shown below, and the chemical engineering curriculum at a university with a recognized accredited degree program in chemical engineering, the student will receive two Bachelor of Science degrees, a Bachelor of Science with a major in Chemistry from Sam Houston State University, and a Bachelor of Science in Chemical Engineering from the university with the recognized accredited chemical engineering degree program.

Code	Title	Hours
<b>Bachelor of Science, Major in Chemistry/Chemical Engineering</b>		
Core Curriculum ( <a href="http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/">http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/</a> )		
Component Area I (Communication)		6
Component Area II (Mathematics) <sup>1</sup>		4
Component Area III (Life and Physical Sciences) <sup>2</sup>		8
Component Area IV (Language, Philosophy, and Culture)		3
Component Area V (Creative Arts)		3
Component Area VI (American History)		6
Component Area VII (Government/Political Science)		6
Component Area VIII (Social and Behavioral Sciences)		3
Component Area IX (Component Area Option) <sup>1</sup>		4
<b>Degree Specific Requirements</b>		
ENGL 3330	Intro to Technical Writing	3
ETDD 1361	Engineering Graphics	3
MATH 1420	Calculus I <sup>1</sup>	4
MATH 1430	Calculus II	4
MATH 2440	Calculus III	4
MATH 3376	Differential Equations	3
PHYS 1401	Physics Boot Camp	4
PHYS 1411	Introduction To Physics I	4
PHYS 1422	Introduction To Physics II	4
<b>Major Core</b>		
<b>Major</b>		
CHEM 1411	General Chemistry I <sup>2</sup>	4
CHEM 1412	General Chemistry II <sup>2</sup>	4
CHEM 2401	Quantitative Analysis	4
CHEM 2323 & CHEM 2123	Organic Chemistry I: Lecture and Organic Chemistry I Lab	4
CHEM 2325 & CHEM 2125	Organic Chemistry II: Lecture and Organic Chemistry II: Lab	4
CHEM 4100	Chemical Literature Seminar	1
CHEM 4260	Advanced Integrated Laboratory	2
CHEM 4448	Physical Chemistry I	4
CHEM 4449	Physical Chemistry II	4
CHEM Advanced elective <sup>3</sup>		3
<b>Minor (if required)</b>		
Two years (60 credit hours) of advanced courses in Chemical Engineering from a University with a Recognized Accredited Chemical Engineering Degree Program are also required <sup>2</sup>		60
<b>Total Hours</b>		<b>158</b>

2 Bachelor of Science, Major in Chemistry/Chemical Engineering

<sup>1</sup> MATH 1420 satisfies the Core Curriculum requirement for Component Area II (Mathematics), the one semester credit hour Core Curriculum requirement for Component Area IX (Component Area Option), and the Degree Specific requirement.

<sup>2</sup> CHEM 1411 and CHEM 1412 satisfy the Core Curriculum requirement for Component Area III (Life and Physical Science) and the Major requirement.

<sup>3</sup> CHEM 4440, CHEM 3367, and CHEM 4367 are recommended.

**Notes**

A grade of C or higher is required for CHEM 1411, CHEM 1412, CHEM 2323, CHEM 2123, CHEM 2325, CHEM 2125, CHEM 2401, and CHEM 4448, and in all required Physics and Mathematics courses.

After 5 years of study (3 at Sam Houston State University and 2 at another school with a chemical engineering degree program), the student earns two bachelor's degrees. Completing the 3-year sequence at SHSU is not sufficient to earn a degree by itself.

**First Year**

Fall	Hours	Spring	Hours
Component Area IV ( <a href="http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareiv">http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareiv</a> )		3 CHEM 1412 <sup>1</sup>	4
Component Area V ( <a href="http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareav">http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareav</a> )		3 ENGL 1302 <sup>2</sup>	3
CHEM 1411 <sup>1</sup>		4 MATH 1430	4
ENGL 1301 <sup>2</sup>		3 PHYS 1401	4
MATH 1420 <sup>3</sup>		4	
		<b>17</b>	<b>15</b>

**Second Year**

Fall	Hours	Spring	Hours
Component Area IX ( <a href="http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareaix">http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareaix</a> )		3 CHEM 2125	1
CHEM 2123		1 CHEM 2325	3
CHEM 2323		3 CHEM 2401	4
MATH 2440		4 ENGL 3330	3
PHYS 1411		4 PHYS 1422	4
		POLS 2305 <sup>4</sup>	3
		<b>15</b>	<b>18</b>

**Third Year**

Fall	Hours	Spring	Hours
CHEM 4100		1 Component Area VIII ( <a href="http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareaviii">http://catalog.shsu.edu/undergraduate/academic-policies-procedures/degree-requirements-academic-guidelines/core-curriculum/#componentareaviii</a> )	3
CHEM 4448		4 CHEM 4260	2
CHEM Advanced Elective <sup>5</sup>		3 CHEM 4449	4
ETDD 1361		3 HIST 1302 <sup>6</sup>	3
HIST 1301 <sup>6</sup>		3 POLS 2306 <sup>4</sup>	3
MATH 3376		3	
		<b>17</b>	<b>15</b>

**Fourth Year**

Fall	Hours	Spring	Hours
Spent at a University with a Recognized Accredited Chemical Engineering Program		15 Spent at a University with a Recognized Accredited Chemical Engineering Program	15
		<b>15</b>	<b>15</b>

**Fifth Year**

<b>Fall</b>	<b>Hours</b>	<b>Spring</b>	<b>Hours</b>
Spent at a University with a Recognized Accredited Chemical Engineering Program		15 Spent at a University with a Recognized Accredited Chemical Engineering Program	15
	<b>15</b>		<b>15</b>

**Total Hours: 157**

- 1 Satisfies Core Curriculum requirement for Component Area III (Life and Physical Science).
- 2 Satisfies Core Curriculum requirement for Component Area I (Communications).
- 3 Satisfies Core Curriculum requirement for Component Area II (Mathematics).
- 4 Satisfies Core Curriculum requirement for Component Area VII (Political Science/Government).
- 5 CHEM 4440, CHEM 3367, and CHEM 4367 are recommended.
- 6 Satisfies Core Curriculum requirement for Component Area VI (U.S. History).

**Notes**

A grade of C or higher is required for CHEM 1411, CHEM 1412, CHEM 2323, CHEM 2123, CHEM 2325, CHEM 2125, CHEM 2401, and CHEM 4448, and in all required Physics and Mathematics courses.

After 5 years of study (3 at Sam Houston State University and 2 at another school with a chemical engineering degree program), the student earns two bachelor's degrees. Completing the 3-year sequence at SHSU is not sufficient to earn a degree by itself.

The Texas Higher Education Coordinating Board (THECB) marketable skills initiative is part of the state's **60x30TX plan** and was designed to help students articulate their skills to employers. Marketable skills are those skills valued by employers and/or graduate programs that can be applied in a variety of work or education settings and may include interpersonal, cognitive, and applied skill areas.

The BS in Chemistry/Chemical Engineering is designed to provide graduates with the following marketable skills:

- Ability to work safely with standard chemicals in a chemistry laboratory.
- Ability to keep thorough and accurate records of chemistry experiments.
- Ability to write final research reports and orally present results of experiments.
- Ability to analyze and interpret experimental data, including spectrophotometric data.
- Ability to understand the use of the major methods of purification of chemical compounds, including chromatographic techniques