

# BACHELOR OF SCIENCE, MAJOR IN CHEMISTRY FOR PROFESSIONAL CHEMISTS

| Code  | Title   | Hours   |
|---|---|---------|
| <b>Bachelor of Science, Major in Chemistry for Professional Chemists</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 (Area IV elective or Oral Communication)  |   | 3       |
| <b>Degree Specific Requirements</b>   |   |         |
| ENGL 3330   | Intro to Technical Writing                                      | 3       |
| MATH 1420   | Calculus I <sup>1</sup>   | 4       |
| MATH 1430   | Calculus II   | 4       |
| PHYS 1301 & PHYS 1101   | General Phy-Mechanics & Heat and General Physics Laboratory I   | 4       |
| PHYS 1302 & PHYS 1102   | Gen Phy-Snd,Lght, Elec, & Mag and General Physics Laboratory 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 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 2401   | Quantitative Analysis   | 4       |
| CHEM 3438   | Biochemistry I  | 4       |
| CHEM 4100   | Chemical Literature Seminar                                     | 1       |
| CHEM 4440   | Instrumental Analytical Chem                                    | 4       |
| CHEM 4448   | Physical Chemistry I  | 4       |
| CHEM 4449   | Physical Chemistry II   | 4       |
| CHEM 4260   | Advanced Integrated Laboratory                                  | 2       |
| CHEM 4367   | Advanced Inorganic Chemistry                                    | 3       |
| CHEM 4395   | Undergrad Research In Chem                                      | 3       |
| CHEM Advanced elective <sup>3</sup>   |   | 3-4     |
| <b>Minor (if required)</b>  |   |         |
| A minor, including 6 advanced hours is required <sup>4</sup>  |   | 10      |
| <b>Electives</b>  |   |         |
| UNIV 1301   | Intro To Collegiate Studies (or general elective)               | 3       |
| General electives   |   | 4       |
| Advanced electives  |   | 6       |
| Total Hours   |   | 120-121 |

<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.

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<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 3361, CHEM 3367, CHEM 3368, CHEM 3339, CHEM 4442, and CHEM 4443 are recommended.

<sup>4</sup> A minor in MATH, for instance, only requires 10 additional hours beyond MATH 1420 and MATH 1430.

**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.

A minor generally requires six semesters of coursework, a minimum of 18 credits (six advanced) in an approved field. Students should use elective and minor hours to satisfy the 42 advanced hour requirement.

## Teacher Certification

Students seeking a background that will prepare them to teach chemistry at the secondary level might pursue a major in chemistry with a minor in secondary education, or they might major in chemistry, minor in another discipline, and seek alternative teaching certification.

## Emphasis in Biochemistry-Biotechnology

Students seeking a background that will prepare them for the emerging technologies in biochemistry and biotechnology can select advanced courses that will lead to a major in chemistry and a minor in biology.

**First Year**

| Fall                   | Hours | Spring                   | Hours |
|------------------------|-------|--------------------------|-------|
| CHEM 1411 <sup>1</sup> |       | 4 CHEM 1412 <sup>1</sup> | 4     |
| ENGL 1301 <sup>2</sup> |       | 3 ENGL 1302 <sup>2</sup> | 3     |
| HIST 1301 <sup>3</sup> |       | 3 HIST 1302 <sup>3</sup> | 3     |
| MATH 1420 <sup>4</sup> |       | 4 MATH 1430              | 4     |
| UNIV 1301 <sup>5</sup> |       | 3                        |       |
|                        | 17    |                          | 14    |

**Second 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 2125                  | 1     |
| CHEM 2123   |       | 1 CHEM 2325                  | 3     |
| CHEM 2323   |       | 3 ENGL 3330                  | 3     |
| CHEM 2401   |       | 4 Minor Courses <sup>6</sup> | 4     |
| PHYS 1101   |       | 1 PHYS 1102                  | 1     |
| PHYS 1301   |       | 3 PHYS 1302                  | 3     |
|   | 15    |                              | 15    |

**Third Year**

| Fall                   | Hours | Spring  | Hours |
|------------------------|-------|---|-------|
| CHEM 3438              |       | 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     |
| CHEM 4448              |       | 4 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     |
| Elective               |       | 4 CHEM 4449   | 4     |
| POLS 2305 <sup>7</sup> |       | 3 Minor Courses (Advanced) <sup>6</sup>   | 3     |
|                        |       | POLS 2306 <sup>7</sup>  | 3     |
|                        | 15    |   | 16    |

**Fourth Year**

| <b>Fall</b>                           | <b>Hours</b> | <b>Spring</b>   | <b>Hours</b> |
|---------------------------------------|--------------|---|--------------|
| 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 4440                             |              | 4 CHEM 4260   | 2            |
| CHEM Advanced Elective <sup>8</sup>   |              | 3-4 CHEM 4367   | 3            |
| Elective (Advanced)                   |              | 3 CHEM 4395   | 3            |
| Minor Courses (Advanced) <sup>6</sup> |              | 3 Elective (Advanced)   | 3            |
|                                       |              | 14-15   | 14           |

Total Hours: 120-121

- 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 VI (U.S. History).
- 4 Satisfies Core Curriculum requirement for Component Area II (Mathematics).
- 5 Or general elective.
- 6 A minor requires 6 semester credit hours of coursework, a minimum of 18 semester credit hours (6 advanced) in an approved field.
- 7 Satisfies Core Curriculum requirement for Component Area VII (Political Science/Government).
- 8 CHEM 3339, CHEM 3361, CHEM 3367, CHEM 3368, CHEM 4442, CHEM 4443 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.

Students should use elective and minor hours to satisfy the 42-advanced hour requirement. Advanced hours are 3000 and 4000 level courses.

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 for Professional Chemists 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.