

CHEMISTRY | BACHELOR OF ARTS: CHEMISTRY (TEACHER EDUCATION)

& Secondary Education

If you're interested in a career as a high school teacher the Bachelor of Arts (BA) in Chemistry - Teacher Education concentration with a second major in Secondary Education is the right option for you.

Program Summary

Code	Title	Hours
	General Education	34
	Bachelor of Arts Language Requirement	10
	Major Courses	32
	Major Electives	5
	Chemistry Teacher Education	5-10
	Cognates	26
	Open Electives ¹	0
	Secondary Education	33
	Total Hours	145-150

¹ Open electives are the credit hours required to reach a minimum of 120 total hours and 45 upper division hours. The number listed assumes all courses are completed at FHSU as listed. This number may vary if students transfer courses, or have individual substitutions allowed.

Students should speak with their advisor if either situation applies to determine if the number will vary, and to ensure they enroll in a minimum of 45 upper division hours.

Students entering within 1 year of high school graduation will take UNIV 101 Freshman Seminar and may apply that hour in the open elective category.

Program Requirements

General Education

All undergraduate degrees require completion of the Kansas Systemwide General Education (<https://catalog.fhsu.edu/general-education/>).

Courses identified with ^{GE} on this page may satisfy a general education requirement in addition to the identified degree requirement. Students who apply a degree requirement to satisfy a general education requirement will typically add an equal number of hours to the university elective category. This flexibility may allow you to complete a minor or certificate within the 120 hour degree. Transfer students are especially encouraged to select these courses in completing General Education requirements to maximize the likelihood of completing the degree with 120 credit hours.

Code	Title	Hours
	General Education	34-35

Effective in Fall 2025 the math pathway course (<https://catalog.fhsu.edu/general-education/gateway-courses/>) identified below is required for this degree.

The General Education Math Pathways course identified for this major is **MATH 110 College Algebra**. All students pursuing this degree program will be required to complete this course or the corequisite support course. Students who place into a higher level math course may be able to satisfy this requirement; consult with your Academic Advisor for additional information.

Placement measures for **MATH 110 College Algebra** include:

- Math ACT: 22 or higher OR
- Math SAT: 540 or higher OR
- ALEKS PPL: 46 or higher OR
- Accuplacer QAS: 263 or higher OR
- HS GPA and Course Grade: 3.25 cumulative GPA (unweighted) and B- or higher in Second semester Algebra 2 or Integrated Math 3 OR
- Institutional Measure

Students who do not meet any of the placement measures listed above will need to register for the corequisite support course: MATH 105 College Algebra with Review. Credit for the corequisite support course will satisfy any requirement for the pathway course listed above.

BA Language Requirement

All FHSU students pursuing a BA degree are required to take two consecutive non-English language classes. These classes total 10 hours at FHSU. Courses accepted in transfer must be a minimum of 8 credit hours **and** determined to be equivalent to the FHSU sequence or additional credit hours must be taken. Students taking beginning Spanish or French classes may be able to apply the first class to the Arts and Humanities area of the general education requirement.

Code	Title	Hours
	Bachelor of Arts Language Requirement	10

Code	Title	Hours
	Major Core Courses	
CHEM 101	Orientation to Chemistry	1
CHEM 120 & 120L	University Chemistry I and University Chemistry Laboratory I ^{GE}	5
CHEM 122 & 122L	University Chemistry II and University Chemistry Laboratory II ^{GE}	5
CHEM 340 & 340L	Organic Chemistry and Organic Chemistry Laboratory I	5
CHEM 342 & 342L	Organic Chemistry II and Organic Chemistry Laboratory II	5
CHEM 350 & 350L	Chemical Analysis and Chemical Analysis Laboratory	5
CHEM 430 & 430L	Survey of Physical Chemistry and Survey of Physical Chemistry Laboratory	5
CHEM 675	Seminar in Chemistry	1
	Directed Electives	5
	Select five credit hours from Upper Division Chemistry courses	
	Total Hours	37

Code	Title	Hours
	Chemistry Education Courses	
CHEM 277	Early Field Experience: Physical Science Education	1

CHEM 480	Laboratory Safety and Teaching Techniques	1-2
TESS 406	Science Teaching Methods	2-3
CHEM 476	Apprenticeship in Chemistry	1-4
Total Hours		5-10

Code	Title	Hours
Cognate		
BIOL 180 & 180L	Principles of Biology and Principles of Biology Laboratory	4
GSCI 100 & GSCI 102	Exploring Earth and Exploring Earth Laboratory	4
PHYS 309	Descriptive Astronomy	3
MATH 234 or MATH 250	Analytic Geometry and Calculus I Elements of Statistics	5
PHYS 111 & 111L & PHYS 112 & PHYS 112L or PHYS 211 & 211L & PHYS 212 & PHYS 212L	Physics I and Physics I Laboratory and Physics II and Physics II Laboratory Engineering Physics I and Engineering Physics I Laboratory and Engineering Physics II and Engineering Physics II Laboratory	10
Total Hours		26

The Bachelor of Science in Secondary Education is available as part of a dual major in conjunction with a major in an academic teaching field approved by the KSDE at the PreK-12 or 6-12 levels. The teaching fields available at FHSU for students interested in licensure at middle or high school levels are art, biology, business, chemistry, earth/space science, English, modern languages (Spanish), journalism, mathematics, music, physical education, physics, psychology, technology education (communications; power, energy, transportation; production), history and government. For requirements in each field, please contact the appropriate teaching area departmental office. Students wishing to complete the requirements for the Secondary Education major must also meet the Teacher Education Program admission requirements. This program follows the Conceptual Framework for Teacher Education at Fort Hays State University.

Code	Title	Hours
Secondary Education Core		19
Courses from field of study		variable
Student Teaching		12
Total number of credit hours varies based on chosen field of study		

General Education

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Courses identified with ^{GE} on this page may satisfy a general education requirement in addition to the identified degree requirement. Students who apply a degree requirement to satisfy a general education requirement will typically add an equal number of hours to the university elective category. This flexibility may allow you to complete a minor or certificate within the 120 hour degree. Transfer students are especially encouraged to select these courses in completing General Education

requirements to maximize the likelihood of completing the degree with 120 credit hours.

Code	Title	Hours
General Education		34-35

Effective in Fall 2025 the math pathway course (<https://catalog.fhsu.edu/general-education/gateway-courses/>) identified below is required for this degree.

Secondary Education students are required to complete the math pathway course (MATH 101 Contemporary Mathematics or MATH 110 College Algebra) identified by their content discipline major. Should any majors require MATH 250 Elements of Statistics as the math pathway course either MATH 101 Contemporary Mathematics or MATH 110 College Algebra may be chosen as the second math course for the teacher education program admissions. Students placing into an advanced math course may be able to satisfy the general education and program admission requirement; consult with your Academic Advisor for additional information.

Program Admission Requirements & General Education Courses

To earn an undergraduate degree at FHSU, you must complete 34 hours of General Education coursework. For the Secondary Education degree the following classes typically applied to the general education requirements must be completed with the specified grade for admission to the teacher education program, these include:

Code	Title	Hours
ENG 101	English Composition I (Grade C) ^{GE}	3
ENG 102	English Composition II (Grade B) ^{GE}	3
COMM 100	Fundamentals of Oral Communication (Grade B) ^{GE}	3
or COMM 304	Intermediate Interpersonal Communication	
MATH 110 or MATH 101	College Algebra (Grade C) ^{GE} Contemporary Mathematics	3
MATH 250	Elements of Statistics (Grade C) ^{GE}	3

For a current list of all teacher education admission requirements check out the programs website (<https://www.fhsu.edu/cert/admission-to-teacher-education/>)

Secondary Education Requirements

These requirements are in addition to the requirements for the primary degree

Code	Title	Hours
Secondary Education Core Non-Restricted Courses		
TEEL 202	Foundations of Education (Grade C)	3
TEEL 231	Human Growth and Development (Grade C) ^{GE}	3
TECS 301	Introduction to Instructional Technology (Grade C)	3
__ 277	Early Field Experience (Grade C)	
Secondary Education Core Restricted Courses (Admission to Teacher Education Required)		
TESP 302	Educating Students with Exceptionalities	3

TEEL 431	Educational Psychology	3
TESS 494	The Secondary School Experience	4
Student Teaching Courses		
TESS 496	Student Teaching Secondary	11
TEEL 675	Seminar in Education I	1

Total Secondary Education Courses: 31 Credit Hours. The 31 credit hours doesn't include method classes in the discipline or additional cognates necessary for specific fields.

Secondary Education programs in the Sciences also require:

Code	Title	Hours
TESS 406	Science Teaching Methods	2-3

- All program courses must be completed with a C or better
- Major requires 2.75 GPA

Degree Requirements

Code	Title	Hours
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All bachelor degrees require:

GPA of 2.0 on FHSU courses & 2.0 on all coursework (Higher program requirements prevail over the 2.0 when set)

A minimum of 30 hours earned from FHSU with a grade of D, C, B, or A

Successful completion of an upper division Writing and Information Literacy course (Most majors contain a course designated)

A minimum of 45 hours of recognized upper division credit

A minimum of 120 hours of recognized college credit

Degree Requirements

Code	Title	Hours
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Bachelor of Arts Degree Language Requirement

Two consecutive semesters of a non-English Language

All bachelor degrees require:

GPA of 2.0 on FHSU courses & 2.0 on all coursework (Higher program requirements prevail over the 2.0 when set)

A minimum of 30 hours earned from FHSU with a grade of D, C, B, or A

Successful completion of an upper division Writing and Information Literacy course (Most majors contain a course designated)

A minimum of 45 hours of recognized upper division credit

A minimum of 120 hours of recognized college credit

Reach out to our faculty mentors for information on a chemistry emphasis:

- **Teacher Education in Chemistry Concentration:** Dr. Edwin Olmstead (eolmstead@fhsu.edu)