

**CHEMISTRY**  
**Bachelor of Science (B.S.)**  
**2016-2017**

*Not certified by the American Chemical Society; typically serves as a second major for students with a first major in another science or mathematics*

**Requirements for Major:** At least 38 credit hours in the department, including:

CH 151 Fundamentals of Chemistry I
CH 152 Fundamentals of Chemistry II
CH 320 Analytical Chemistry
CH 321 Analytical Chemistry Laboratory
CH 340 Organic Chemistry I
CH 341 Organic Chemistry II
CH 343 Organic Chemistry Laboratory II
Two (or more) courses, for at least total of three credit hours, chosen from: <ul style="list-style-type: none"> <li>○ CH 345 Inorganic Chemistry Laboratory (CH 342 Organic Chemistry I is pre-requisite)</li> <li>○ CH 346 Instrumental Analysis</li> <li>○ CH 347 Physical Chemistry Concepts Lab</li> <li>○ CH 351 Biochemistry Laboratory I (CH 350 Biochemistry I is pre-requisite)</li> </ul>
Two (or more) courses, chosen from: <ul style="list-style-type: none"> <li>○ CH 350 Biochemistry I</li> <li>○ CH 352 Biochemistry II (CH 350 Biochemistry I is pre-requisite)</li> <li>○ CH 360 Descriptive Inorganic Chemistry</li> <li>○ CH 382 Physical Chemistry II (CH 381 Physical Chemistry I &amp; MA 152 Calculus &amp; Analytical Geometry II are pre-requisites)</li> <li>○ CH 386 Inorganic Chemistry</li> </ul>
CH 380 Fundamentals of Physical Chemistry <u>or</u> CH 381 Physical Chemistry I
CH 390 Undergraduate Chemical Research
CH 391 Chemistry Seminar

Two correlated courses:

PS 261 College Physics I (General Education course) & PS 262 College Physics II <u>or</u> PS 281 General Physics I (General Education course) & PS 282 General Physics II
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Required minor – 30 credit hours:

The B.S. degree also requires a 30-hour minor to be chosen from the Natural Sciences (Biology, Chemistry, Mathematics & Statistics, Physics & Astronomy, or Computer Information Science). This minor must be in departments other than the major, and must have at least 20 hours in one department.
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Notes

Research (CH 390) must be initiated at least one semester prior to the semester of graduation
A written report of research or internship is required of all majors
An oral presentation of CH 390 research results is required of all BS majors
All majors shall present a portfolio of results obtained with departmental instrumentation prior

	to the semester of graduation
	Courses that must be taken to meet the standards for licensure in Kansas are CH 151, 152, 320, 321, 340, 342, 343, 350, 351, 390, and 391. In addition, students must fulfill the professional education course requirements of the Education Department

**General Education Distribution Requirements (BS):**

Humanities (9) (GEHU/GECPA) (Max 6 hours/ discipline)	Course Number	Social Sciences (9) (GESS) (Max 6 hours/ discipline)	Course Number	Natural Sciences/ Mathematics (9) (GENS) (Max 8 Hours or 2 Courses/Discipline)
Fine Arts (3)		Soc. Science 1 (3)		PS 261/281 (5)
Humanities 2 (3)		Soc. Science 2 (3)		Natural Science 2 (3-5)
Humanities 3 (3)		Soc. Science 3 (3)		Natural Science 3 (3-5)

**Core University/BS-Specific Requirements:**

WU 101 (3)* C or Better		Natural Science Minor (30 – 20 in one Discipline)	
EN 101 (3) C or Better		Hours Outside Major (76)	
EN 300 (3) C or Better		Upper Division (300 and above) (45)	
MA 112 or MA 116 (3)** C or Better		Hours Within Arts and Sciences (99)	
>= 2.0 Overall Cumulative GPA		>= 2.0 Major Cumulative GPA	
		Total Hours (124)	

*\*Students transferring with 24 or more credit hours completed at an accredited post-secondary institution (after graduating from High School) with a GPA of 2.0 or higher are exempt from this requirement*

*\*\*May be waived if the student successfully places into a higher-level mathematics course with an ACT score of 25 or higher and then successfully completes that course with a grade of C or higher or if a student presents an ACT score in mathematics of at least 28 (SAT of at least 640).*

# Sample 4-Year Schedule for Chemistry Major (Non-ACS Certified)

## Bachelor of Science

### 124 Hours

Curriculum for students starting 2016-2017 Academic Year

Students starting in different academic years should contact their advisor.

<b>Freshman</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
CH 151 – Fundamentals of Chemistry I	5	CH 152 – Fundamentals of Chemistry II	5
MA 116 – College Algebra	3	MA 117 - Trigonometry	3
EN 101 – English Composition	3	Humanities General Education	3
WU 101 – Washburn Experience	3	Natural Sciences General Education	3
<b>TOTAL</b>	<b>14</b>	<b>TOTAL</b>	<b>14</b>
<b>Sophomore</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
CH 340 – Organic Chemistry I	3	CH 341 – Organic Chemistry II	3
CH 342 – Organic Chemistry I Lab	2	CH 343 – Organic Chemistry II Lab	2
MA 151 – Calculus I	5	PS 281 – General Physics I	5
Soc. Sci. General Education	3	Natural Sciences Minor	3
Natural Sciences Minor	3	Humanities General Education	3
<b>TOTAL</b>	<b>16</b>	<b>TOTAL</b>	<b>16</b>
<b>Junior</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
CH 320 – Analytical Chemistry	3	CH 346 – Instrumental Analysis**	2
CH 321 – Analytical Chemistry Lab	1	CH 386 – Inorganic Chemistry*	3
PS 282 – General Physics II	5	CH 390 – Chemistry Research	1
CH 350 – Biochemistry I*	3	EN 300 – Advanced Composition	3
CH 351 – Biochemistry I Lab**	2	Natural Sciences Minor	3
Natural Sciences Minor	3	Soc. Sci. General Education	3
<b>TOTAL</b>	<b>17</b>	<b>TOTAL</b>	<b>15</b>
<b>Senior</b>			
<b>Fall Semester</b>		<b>Spring Semester</b>	
CH 381 – Physical Chemistry I	3	CH 391 – Chemistry Seminar	1
Natural Sciences Minor	3	Soc. Sci. General Education	3
Natural Sciences Minor	3	Natural Sciences Minor	3
Upper Division Elective	3	Upper Division Elective	3
Humanities General Education	3	Upper Division Elective	3
		Upper Division Elective	4
<b>TOTAL</b>	<b>15</b>	<b>TOTAL</b>	<b>17</b>

\*Many options: must have two or more

\*\*Many options: must have two or more (minimum of 3 hours)

Oral Presentation of CH 390 research results

Required research completed prior to the semester of graduation

Presentation of portfolio of instrumentation results prior to the semester of graduation