

CHEMISTRY

Bachelor of Science**Secondary Education****(B.S.)***Non-ACS Certified, Biology Minor***Requirements for Major:** At least 43 credit hours in the department, including:

CH 151 Fundamentals of Chemistry I; 5 credit hours	Offered:	Fall
CH 152 Fundamentals of Chemistry II; 5 credit hours		Spring
CH 320 Analytical Chemistry; 3 credit hours		Fall
CH 321 Analytical Chemistry Laboratory; 1 credit hour		Fall
CH 340 Organic Chemistry I; 3 credit hours		Fall
CH 341 Organic Chemistry II; 3 credit hours		Spring
CH 342 Organic Chemistry Laboratory I; 2 credit hours		Fall
CH 343 Organic Chemistry Laboratory II; 2 credit hours		Spring
CH 350 Biochemistry I; 3 credit hours		Fall
CH 351 Biochemistry Lab I; 2 credit hours		Fall
CH 380 or CH 381 Fundamentals of Physical Chemistry or Physical Chemistry I; 3 credit hours		Fall- Odd Year
CH 390 Undergraduate Chemical Research; 2 credit hours		Fall/Spring
CH 391 Chemistry Seminar; 1 credit hour		Spring
Two of the following	Offered:	
CH352 Biochemistry II; 3 credit hours		Spring-Odd Year
CH 360 Descriptive Inorganic Chemistry; 3 credit hours		Fall-Odd Year
CH 382 Physical Chemistry II; 3 credit hours		Spring-Even Year
CH 386 Inorganic Chemistry; 3 credit hours		Spring-Odd Year
Two or more of the following (minimum of 3 hours)	Offered:	
CH 345 Inorganic Chemistry Laboratory; 2 credit hours		Spring-Odd Year
CH 346 Instrumental Analysis; 2 credit hours		Spring-Odd Year
CH 347 Physical Chemistry Concepts Laboratory; 1 credit hour		Spring-Even Year
CH 390 Chemical Research; 2 credit hours		Fall/Spring
Required Correlated Courses	Offered:	
MA 116 College Algebra; 3 credit hours		Fall/Spring/Summer
MA 117 Trigonometry; 3 credit hours		Fall/Spring
PS 261 or PS 281 College Physics I or General Physics I; 5 credit hours	PS 261 Fall/PS281	Spring
PS 262 or PS 282 College Physics II or General Physics II; 5 credit hours	PS262 Spring/PS 282	Fall
ED 155 Teaching Learning and Leadership; 3 credit hours		
ED 285 Educational Psychology; 3 credit hours		
ED 165: Ed. 1- Examining Teaching as a Profession; 3 credit hours		
ED 275: Ed. 2- Exploring Teaching as a Profession; 3 credit hours		
ED 295: Ed. 3- Experiencing Teaching as a Profession; 3 credit hours		
ED 395: Ed. 4- Extending Teaching as a Profession; 3 credit hours		
ED 302 Teaching Exceptional Learners; 3 credit hours		
ED 345: Curriculum and Assessment; 3 credit hours		
ED 352 Methods of Teaching Science in Sec. School or ED 350 General Secondary Methods; 3 credit hours		
ED 410 Secondary Student Teaching; (12) credit hours		

CM 101 Computer Competency and Internet
CN 150 Public Speaking

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

CM 101, Computer Competency & Internet must be completed prior to enrollment in ED 300. 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
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)		MA 151 (5)
Humanities 2 (3)		Soc. Science 2 (3)		PS 281 (5)
Humanities 3 (3)		Soc. Science 3 (3)		

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	>= C Grade All Major and Correlated Courses
	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 Secondary Ed Specialization Major
Required Minor in Biology
Bachelor of Science
141 Hours

Sample curriculum for students starting in an even numbered academic year. Individual four-year degree plans are developed for each student upon consultation with an academic advisor.

Freshman			
Fall Semester		Spring Semester	
CH 151 – Fundamentals of Chemistry I	5	CH 152 – Fundamentals of Chemistry II	5
MA 116 – College Algebra	3	BI 102 – General Cellular Biology	5
EN 101 – English Composition	3	CM 101 – Computer Concepts and Internet	3
WU 101 – Washburn Experience	3	CN 150 – Public Speaking	3
Soc Sci General Education	3		
TOTAL	17	TOTAL	16
Summer Session			
Humanities General Education	3		
Soc Sci General Education	3		
TOTAL	6		
Sophomore			
Fall Semester		Spring Semester	
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
AR/MU/TH General Education	3	*ED155 Teaching, Learning Leadership	3
BI 301 – General Microbiology	4	*ED165: Ed. 1- Examining Teaching as a Profession	3
PS 261 – College Physics I	5	PS 262 – College Physics II	5
		*ED 285 Educational Psychology	3
TOTAL	17		19
Summer Session		* ED155; ED285 must be taken prior to acceptance to Education program (ED165 can be taken prior if you wish)	
CH390 Chemistry Research	1		
Biology Minor Elective	3		
TOTAL	4		
Junior			
Fall Semester		Spring Semester	
CH 320 – Analytical Chemistry	3	CH 352 – Biochemistry II	3
CH 321 – Analytical Chemistry Lab	1	CH353 – Biochemistry II Lab	2
CH 350 – Biochemistry I	3	ED 295: Ed. 3- Experiencing Teaching as a Profession	3
CH 351 – Biochemistry I Lab	2	ED 395: Ed. 4- Extending Teaching as a Profession	3
BI 333 – General Genetics	4	CH 391 – Chemistry Seminar	1
ED275 Ed. 2-Exploring Teaching as a Profession	3	ED302 Teaching Exceptional Learner	3
TOTAL	16	TOTAL	15

Summer Session Soc Sci- General Education	3		
TOTAL	3		
Senior			
Fall Semester		Spring Semester	
CH 380 – Physical Chemistry I	3	ED 410 – Student Teaching	12
Biology Minor Elective	4		
ED 352 – Methods of Teaching Science	3		
ED 354 Curriculum and Assessment	3		
EN Advanced			
Composition (Education Emphasis)	3		
TOTAL	16		12

Required Research completed prior to the semester of graduation.

Please direct questions to:

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<http://www.washburn.edu/chemistry>

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