BACHELOR OF SCIENCE IN CHEMISTRY - PRE-HEALTH OPTION

Code	Title	Credit Hours
Wellness Requirement		
APPH 1040	Scientific Foundations of Health	2
or APPH 10	The Science of Physical Activity and Health	
or APPH 10	Flourishing: Strategies for Well-being and Resilience	
Core IMPACTS		
Institutional Priority		
CS 1301	Introduction to Computing [12]	3
Mathematics and Quantitative Skills		
MATH 1552	Integral Calculus	4
Political Science and U.S. History		
HIST 2111	The United States to 1877	3
or HIST 2112	The United States since 1877	
or INTA 1200	American Government in Comparative Perspective	
or POL 1101	Government of the United States	
or PUBP 3000	American Constitutional Issues	
Arts, Humanities, and Ethics		
Any HUM		6
Communicating in Writing		
ENGL 1101	English Composition I	3
ENGL 1102	English Composition II	3
Technology, Mathematics, and Sciences		
Lab Science [1]		8
MATH 1551	Differential Calculus	2
MATH 1553	Introduction to Linear Algebra [8]	2
Social Sciences		
Any SS [4]		9
Field of Study		
PHYS 2212	Principles of Physics II	4
CHEM 1212K	Chemical Principles II	4
CHEM 2380	Synthesis Laboratory I	2
BIOS 1107 & 1107L	Biological Principles and Biological Principles Laboratory	4
BIOS 1108 & 1108L	Organismal Biology and Organismal Biology Laboratory	4
Major Requirements		
CHEM 2216 & 2216L	Quantitative Chemical Analysis and Quantitative Chemical Analysis Laboratory	4
or CHEM 22	Quantitative Chemical Analysis	
CHEM 2311	Organic Chemistry I	3
CHEM 2312	Organic Chemistry II	3
or CHEM 23	Organic Chemistry II	
CHEM 2601	Professional Skills for Chemists and Biochemists	1
CHEM 3111	Inorganic Chemistry	3
CHEM 3216 & 3216L	Analytical Chemistry Lecture and Analytical Chemistry Laboratory	5
or CHEM 321	Analytical Chemistry	
CHEM 3411	Physical Chemistry I	3
CHEM 3412	Physical Chemistry II	3
CHEM 3511	Survey of Biochemistry	3
or CHEM 45	Biochemistry I	
or CHEM 35	Biochemistry I	
Pre-Health Option		
Lab Electives: [2]		6
CHEM 3380	Synthesis Laboratory II	
CHEM 3481	Physical Chemistry Laboratory I	
CHEM 4699	Undergraduate Research [9]	
or CHEM 4694	Undergraduate Assistantship (Undergraduate Internship for Pay)	
or CHEM 4695	Undergraduate Internship (Undergraduate Internship for Academic Credit)	
or CHEM 4698	Undergraduate Research Assistantship	
Technical electives [3,6,10]		3
Pre-Health Electives: [6]		12
BIOS 2600	Genetics	
BIOS 2601	Genetics Laboratory	
BIOS 2610 & BIOS 2611	Integrative Genetics and Honors Genetics Lab	
BIOS 3380	Microbiology	
BIOS 3381	Microbiology Lab	
BIOS 3450	Cell and Molecular Biology	
BIOS 3451	Cell and Molecular Biology Lab	
BIOS 3753	Fundamentals of Human Anatomy	
BIOS 3754	Laboratory in Human Anatomy	
BIOS 3755	Human Physiology	
BIOS 3756	Physiology Laboratory	
BIOS 4012	Protein Biology	
BIOS 4015	Cancer Biology and Biotechnology	
BIOS 4150/ BIOL 6150	Genomics and Applied Bioinformatics	
BIOS 4200	Kinesiological Basis of Human Movement	
BIOS 4238/ APPH 6238	Ion Channels	
BIOS 4340	Medical Microbiology	
BIOS 4400	Human Neuroanatomy	
BIOS 4401	Experimental Design and Statistical Methods in Biological Sciences	
BIOS 4440	Human Pathology	
BIOS 4464	Developmental Biology	
BIOS 4471	Behavioral Biology	
BIOS 4500	Drug Discovery	
BIOS 4510/ BIOL 8510	Epigenetics, Stem Cells, and Development	
BIOS 4520	Health Genes Society	

BIOS 4530/ BIOL 8530	Human Evolutionary Genomics	
BIOS 4560/ BIOL 8560	RNA Biology and Biotechnology	
BIOS 4545	Genetics of Complex Human Traits and Diseases	
BIOS 4570	Immunology	
BIOS 4607/ BIOL 6607	Molecular Biology of Microbes: Disease, Nature, and Biotechnology	
BIOS 4651	Bioethics	
BMED 3100	Systems Physiology	
BMED 3600	Physiology of Cellular and Molecular Systems	
CHEM 4521	Biophysical Chemistry	
CHEM 4765	Drug Design, Development, and Delivery	
Free Electives		
Free Electives [2,5,6,7,8,10,11]		10
Total Credit Hours		**122**

1 Students are highly encouraged to complete CHEM 1211K and PHYS 2211 for Core IMPACTS Area T. These courses are pre-requisites for other courses in the program.

2 Lab Electives:
Select two of three lab courses. The lab elective may be fulfilled with either CHEM 3380 (3 credits) or CHEM 3481 (2 credits) or one of the following [CHEM 4695 (3 credits) or CHEM 4699 (3 credits) or CHEM 4694 (no credit) or CHEM 4698 (no credit)].
Research or Internship Experience:
Either Undergraduate Research CHEM 4699 (3) or Undergraduate Internship CHEM 4695 (3) are acceptable. If research or an internship is conducted for pay / audit rather than credit (e.g., CHEM 4698 or CHEM 4694) , then additional free elective(s) may be substituted to achieve the required earned hours to graduate. The research or internship experience must include a final comprehensive laboratory report. Only one Research or Internship course may be used for the Lab elective requirement. If CHEM 3481 is used, add one free elective.

3 The technical elective requirement may be fulfilled by coursework in Science, Engineering, and Computing at the 3000 level or higher. MATH 2551, MATH 2552, SLS 3110, or SLS 3120 may also be used for a Technical Elective. If a 4 credit hour course is used, one less free elective credit is required

4 It is suggested students select pre-health preparation courses (SOC or PSYC).

5 It is suggested students select pre-health preparation courses (BIOS, HTS, LMC, PSYC).

5 Courses may be applied toward completion of a minor.

7 VIP courses may be used only as free electives or in place of CHEM 4699 with pre-approval from the Associate Chair for Academic Programs or their designate

8 Courses taken as pass-fail may only be used in free electives.

9 MATH 1554 or MATH 1564 may be used in place of MATH 1553.

10 A maximum of twelve credit hours of CHEM 4699 taken on a letter-grade basis are permitted for the degree program

11 Up to six hours of CHEM 2699 taken on a letter-grade basis may be used as free electives

12 CS 1371 may be used with approval of the Associate Chair for Academic Programs or their designate