

MILLERSVILLE UNIVERSITY

Student Name:

Student I.D. #:

DEGREE: BS

MAJOR: CHEM

OPTION:

MAJOR REQUIREMENTS FOR A BS DEGREE IN CHEMISTRY

Total credit hours required: 120 minimum

REQUIREMENTS AND POLICIES FOR THE BS CHEMISTRY MAJOR

A. Policies for Admission to the Major

1. New students (freshmen and transfers) must be admitted to the Chemistry major by the Office of Admissions upon admission to the University.
2. Admission into the Chemistry major from other departments is upon approval of the chairperson of the Chemistry Department.
3. Non-degree and continuing education students must be admitted to the Chemistry major by the Office of Admissions.

B. Policies for Retention in the Major

1. University requirements for retention.
2. The student is required to have a 2.00 grade point average in the major courses by the end of the of sophomore year. If not, it is recommended that courses be repeated to achieve a 2.00 average in the major or that there be a change of major.
3. Chemistry majors are required to have a 2.00 grade or better in Chemistry courses required for the major at the 100 and 200 level before proceeding to a new course for which it is a prerequisite. (Currently, these courses include: CHEM 111,112,231,232,251, and 265).

C. Policies for Completion of the Major

1. Completion of all University curricular requirements.

American Chemical Society Certification

A student opting for ACS certification should take all chemistry courses in the given sequence in the college catalog. The student must have successfully completed Physical Chemistry II (CHEM 342) before beginning Advanced Inorganic (CHEM 452) or Analytical Chemistry (CHEM 465).

In compliance with the ACS Guidelines, the department highly recommends a modern foreign language (FORL 101-102; G1 Humanities elective) and an elementary economics course (Social Science: G3 elective) for ACS certification.

Note to the Student: *This form is provided as a guide. IT is your responsibility to consult regularly with your advisor to be aware of change and curriculum details which are not incorporated on this form.*

MAJOR SEQUENCE AND DEGREE REQUIREMENTS

Major: **BS CHEMISTRY**

Option:

Major Field Requirements: **55.0-57.0 Credits**

Other Requirements: **24.0-26.0 Credits**

When applicable, up to six of the **REQUIRED RELATED** courses may be credited toward the

Liberal Arts Core subject to normal distribution rules.

Course	No.	Short Title	C.H.	Grade	Course	No.	Short Title	C.H.	Grade
REQUIRED CHEMISTRY COURSES (47.0 Credits)					REQUIRED RELATED (24.0-26.0 credits)				
CHEM	111	Intro Chemistry I	4.0	_____	Mathematics (12.0 credits)				
CHEM	112	Intro Chemistry II	4.0	_____	MATH	161	Calculus I	4.0	_____
CHEM	188	Freshman Seminar	1.0	_____	MATH	211	Calculus II	4.0	_____
CHEM	231	Organic Chem I	4.0	_____	MATH	311	Calculus III	4.0	_____
CHEM	232	Organic Chem II	4.0	_____	Physics (10.0 credits)				
CHEM	251	Inorganic Chem I	3.0	_____	PHYS	231	Physics I with Calc	5.0	_____
CHEM	265	Quant Analysis	4.0	_____	PHYS	232	Physics II with Calc	5.0	_____
CHEM	326	Biochemistry I	4.0	_____	Physics, Mathematics, and/or Computer Science				
CHEM	341	Physical Chem I	4.0	_____	Electives (Choose one course)				
CHEM	342	Physical Chem II	4.0	_____	Physics-any course numbered 233 or higher, except				
CHEM	391	Advanced Lab I	1.0	_____	perspectives courses. (2.0-3.0 credits)				
CHEM	392	Advanced Lab II	1.0	_____	CSCI	161	Intro to Programming I	4.0	_____
CHEM	452	Inorganic Chem II	3.0	_____	CSCI	162	Intro to Programming II	4.0	_____
CHEM	465*	Analytical Chem	4.0	_____	MATH	235	Survey of Statistics	3.0	_____
CHEM	487	Seminar in Chem I	0.5	_____	MATH	236	Elements of Stat. II	3.0	_____
CHEM	488	Seminar in Chem II	0.5	_____	MATH	322	Linear Algebra	4.0	_____
CHEM	498	Independent Study	1.0	_____	MATH	333	Intro to Prob. & Stats	4.0	_____
CHEMISTRY ELECTIVES (8.0-10.0 Credits)					MATH	335	Math Stat I	3.0	_____
CHEM	312	Chem in Nanotech	3.0	_____	MATH	365	Differential Equations	3.0	_____
CHEM	324	Plant Biochemistry	4.0	_____	MATH	435	Math Stat II	3.0	_____
CHEM	327	Biochemistry II	4.0	_____	<i>The total number of credits earned in both</i>				
CHEM	328	Analyt. Biochem Lab	1.0	_____	<i>elective blocks must be 12 credits.</i>				
CHEM	375	Environmental Chem	4.0	_____	General Electives (as necessary)				
CHEM	381	Polymer Chem I	4.0	_____	_____	_____	_____	_____	_____
CHEM	435	Advanced Organic Chem	3.0	_____	_____	_____	_____	_____	_____
CHEM	476	Environmental Chem II	4.0	_____	_____	_____	_____	_____	_____
CHEM	482	Polymer Chem II	4.0	_____	_____	_____	_____	_____	_____
CHEM	486	Topics in Chemistry	1.0-4.0	_____	_____	_____	_____	_____	_____
CHEM	498	Independent Study **	1.0-3.0	_____	_____	_____	_____	_____	_____
CHEM	489	Dept. Honors	1.0-3.0	_____	_____	_____	_____	_____	_____
CHEM	499	Dept. Honors	1.0-3.0	_____	_____	_____	_____	_____	_____
CHEM	300	Cooperative Educ	3.0	_____	_____	_____	_____	_____	_____
CHEM	400	Cooperative Educ	3.0	_____	_____	_____	_____	_____	_____
<p>*Students not seeking ACS certification may corequisite CHEM 342 and CHEM 465.</p> <p>** Students seeking ACS certification must take a minimum of two hours credit of CHEM 498 under Chemistry Electives.</p>									

**BACHELOR OF SCIENCE IN CHEMISTRY
RECOMMENDED PROGRAM**

FIRST SEMESTER				SECOND SEMESTER			
CHEM	111	Intro Chem I	4.0	CHEM	112	Intro Chem II	4.0
CHEM	188	Freshman Seminar	1.0	MATH	211	Calculus II	4.0
MATH	161	Calculus I	4.0	COMM	100	Fund. of Speech	3.0
ENGL	110	English Composition	3.0	CHEM	251	Inorganic I	<u>3.0</u>
_____	_____	Social Sciences Course #1	<u>3.0</u>			<i>TOTAL S.H.</i>	14.0
		<i>TOTAL S.H.</i>	15.0				
THIRD SEMESTER				FOURTH SEMESTER			
CHEM	231	Organic I	4.0	CHEM	232	Organic II	4.0
PHYS	231	Physics I	5.0	PHYS	232	Physics II	5.0
MATH	311	Calculus III	4.0	CHEM	265	Quant. Analysis	4.0
WELL	175	Wellness	<u>3.0</u>	_____	_____	Humanities Course #1	<u>3.0</u>
		<i>TOTAL S.H.</i>	16.0			<i>TOTAL S.H.</i>	16.0
FIFTH SEMESTER				SIXTH SEMESTER			
CHEM	341	Physical Chem I	4.0	CHEM	342	Physical Chem II	4.0
CHEM	391	Advanced Lab I	1.0	CHEM	392	Advanced Lab II	1.0
_____	_____	Humanities Course #2	3.0	CHEM	_____	Chemistry Elective	4.0
_____	_____	Social Sciences Course #2	3.0	_____	_____	Humanities Course #3	3.0
ENGL	3XX	Advanced Writing	<u>3.0</u>	_____	_____	Math/Phys Elective	<u>2-4.0</u>
		<i>TOTAL S.H.</i>	14.0			<i>TOTAL S.H.</i>	14-16.0
SEVENTH SEMESTER				EIGHTH SEMESTER			
CHEM	326	Biochemistry I	4.0	CHEM	465	Analytical Chemistry	4.0
CHEM	452	Inorganic II	3.0	CHEM	488	Chemistry Seminar	0.5
CHEM	487	Chemistry Seminar	0.5	CHEM	_____	Chemistry Elective	4.0
CHEM	498	Intro to Research	1.0	_____	_____	C&E Course #1	3.0
_____	_____	Perspectives Course	3.0	_____	_____	C&E Course #4	<u>3.0</u>
_____	_____	Social Sciences Course #3	<u>3.0</u>			<i>TOTAL S.H.</i>	14.5
		<i>TOTAL S.H.</i>	14.5				

COMMENTS, NOTES OR RECOMMENDATIONS:

1. Connections & Exploration (C&E) courses #1 and #4 can be satisfied with any approved GenEd course.
2. Cultural Diversity & Community (D) course may be satisfied with approved courses from the GenEd requirements (including Perspectives), the major, the minor, the required related area, or general electives.

The American Chemical Society (ACS) and the Chemistry Department strongly recommend an Introductory Economics course (ECON 100, for example) among the Social Science (G3) electives and Elementary Foreign Language (FORL 101 and 102) among the Humanities (G1) electives. ENGL 312 (Technical Writing) is highly recommended.

BACHELOR OF SCIENCE IN CHEMISTRY

3-Year Plan

*This plan is for students matriculating with AP Chemistry
(Chem 111) & Calculus AB (Math 161).

YEAR 1

First Semester				Second Semester			
CHEM	112	Intro Chem II	4.0	CHEM	251	Inorganic I	3.0
CHEM	188	Freshman Seminar	1.0	CHEM	265	Quant. Analysis	4.0
MATH	211	Calculus II	4.0	PHYS	232	Physics II	5.0
PHYS	231	Physics I	<u>5.0</u>	MATH	311	Calculus III	<u>4.0</u>
<i>TOTAL S.H.</i>			<i>14.0</i>	<i>TOTAL S.H.</i>			<i>16.0</i>
Winter Session				ENGL	110	English Composition	<u>3.0</u>
				<i>TOTAL S.H.</i>			<i>3.0</i>
Summer Sessions							
Summer 1				CHEM	231	Organic I	4.0
Summer 2				CHEM	232	Organic II	4.0
Summer 3				_____	_____	Humanities Course #1	<u>3.0</u>
				<i>TOTAL S.H.</i>			<i>11.0</i>

YEAR 2

Third Semester				Fourth Semester			
CHEM	391	Advanced Lab I	1.0	CHEM	392	Advanced Lab II	1.0
CHEM	341	Physical Chemistry I	4.0	CHEM	342	Physical Chemistry II	4.0
CHEM	498	Intro to Research	1.0	WELL	175	Wellness	3.0
_____	_____	Chemistry Elective	4.0	COMM	100	Fund. Of Speech	3.0
_____	_____	Social Science Course #1	<u>3.0</u>	_____	_____	Perspectives Course	<u>3.0</u>
<i>TOTAL S.H.</i>			<i>13.0</i>	<i>TOTAL S.H.</i>			<i>14.0</i>
Winter Session				_____	_____	Social Science Course #2	<u>3.0</u>
				<i>TOTAL S.H.</i>			<i>3.0</i>
Summer Sessions							
Summer 1				_____	_____	Social Science Course #3	3.0
Summer 2				_____	_____	Humanities Course #2	3.0
Summer 3				_____	_____	C&E Course #1	<u>3.0</u>
				<i>TOTAL S.H.</i>			<i>9.0</i>

YEAR 3

Fifth Semester				Sixth Semester			
CHEM	452	Inorganic II	3.0	CHEM	465	Analytical Chemistry	4.0
CHEM	326	Biochemistry I	4.0	CHEM	488	Chemistry Seminar	0.5
CHEM	487	Chemistry Seminar	0.5	_____	_____	Chemistry Elective	4.0
ENGL	312	Technical Writing	3.0	_____	_____	Humanities Course #3	3.0
_____	_____	Math/Phys Elective	<u>3.0</u>	_____	_____	C&E Course #2	<u>3.0</u>
<i>TOTAL S.H.</i>			<i>13.5</i>	<i>TOTAL S.H.</i>			<i>14.5</i>

BACHELOR OF SCIENCE IN CHEMISTRY

3-Year Plan

*This Program Sheet does not include all of the requirements
for an ACS Certified Bachelor of Chemistry Degree.

YEAR 1

First Semester				Second Semester			
CHEM	111	Intro Chem I	4.0	CHEM	251	Inorganic I	3.0
CHEM	188	Freshman Seminar	1.0	CHEM	112	Intro Chem II	4.0
MATH	161	Calculus I	4.0	MATH	211	Calculus II	4.0
ENGL	110	English Composition	3.0	COMM	100	Fund. Of Speech	<u>3.0</u>
_____	_____	Social Science Course #1	<u>3.0</u>	<i>TOTAL S.H.</i>			<i>14.0</i>
			<i>TOTAL S.H.</i>				<i>15.0</i>

Winter Session	_____	Social Science Course #2	<u>3.0</u>
			<i>TOTAL S.H.</i>
			<i>3.0</i>

Summer Sessions

Summer 1	CHEM	231	Organic I	4.0
Summer 2	CHEM	232	Organic II	4.0
Summer 3	_____	_____	Humanities Course #1	<u>3.0</u>
			<i>TOTAL S.H.</i>	<i>11.0</i>

YEAR 2

Third Semester				Fourth Semester			
CHEM	391	Advanced Lab I	1.0	CHEM	392	Advanced Lab II	1.0
MATH	311	Calculus III	4.0	CHEM	265	Quant. Analysis	4.0
PHYS	231	Physics I	5.0	PHYS	232	Physics II	5.0
_____	_____	Chemistry Elective	<u>4.0</u>	ENGL	312	Technical Writing	3.0
			<i>TOTAL S.H.</i>	_____	_____	C&E Course #1	<u>3.0</u>
			<i>14.0</i>	<i>TOTAL S.H.</i>			<i>16.0</i>

Winter Session	WELL	175	Wellness	<u>3.0</u>
			<i>TOTAL S.H.</i>	<i>3.0</i>

Summer Sessions

Summer 1	CHEM	326	Biochemistry I	4.0
Summer 2	_____	_____	Humanities Course #2	3.0
Summer 3	_____	_____	C&E Course #2	<u>3.0</u>
			<i>TOTAL S.H.</i>	<i>9.0</i>

YEAR 3

Fifth Semester				Sixth Semester			
CHEM	341	Physical Chemistry I	4.0	CHEM	342	Physical Chemistry II	4.0
CHEM	452	Inorganic II	3.0	CHEM	465	Analytical Chemistry	4.0
CHEM	487	Chemistry Seminar	0.5	CHEM	488	Chemistry Seminar	0.5
CHEM	498	Intro to Research	1.0	_____	_____	Chemistry Elective	4.0
_____	_____	Perspectives Course	3.0	_____	_____	Humanities Course #3	<u>3.0</u>
_____	_____	Math/Phys Elective	<u>3.0</u>	<i>TOTAL S.H.</i>			<i>15.5</i>
			<i>TOTAL S.H.</i>				<i>14.5</i>

Winter Session	_____	Social Science Course #3	<u>3.0</u>
			<i>TOTAL S.H.</i>
			<i>3.0</i>