

# MILLERSVILLE UNIVERSITY

Student Name:

Student I.D. #:

DEGREE: BS  
MAJOR: CHEM  
OPTION: ENVIR

**MAJOR REQUIREMENTS FOR A BS  
DEGREE IN ENVIRONMENTAL 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.

**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: **ENVIRONMENTAL**  
 Major Field Requirements: **50.0 Credits**  
 Other Requirements: **31.0-32.0 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
<b>REQUIRED CHEMISTRY COURSES (46.0 Credits)</b>				<b>REQUIRED RELATED (31.0-32.0 credits)</b>			
CHEM	111 Intro Chemistry I	4.0	_____	<b>Mathematics (12.0 credits)</b>			
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	_____	<b>Physics (10.0 credits)</b>			
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	375 Environmental Chem	4.0	_____	<b>Biology</b>			
CHEM	341 Physical Chem I	4.0	_____	Competency equivalent to BIOL 100*			
CHEM	342 Physical Chem II	4.0	_____	<b>Select 3 courses from the following: (9.0-10.0 credits)</b>			
CHEM	465 Analytical Chem	4.0	_____	BIOL	241 Principles of Ecology	3.0	_____
CHEM	476 Environmental Chem II	4.0	_____	ESCI	245 Environm. Meteorology	3.0	_____
CHEM	487 Seminar in Chem I	0.5	_____	ESCI	349 Chem of Atmosphere	3.0	_____
CHEM	488 Seminar in Chem II	0.5	_____	ESCI	426 Groundwater Geo.	3.0	_____
CHEM	498 Independent Study	1.0	_____	GEOG	202 Resources & Env.	3.0	_____
<b>CHEMISTRY ELECTIVES (4.0 Credits)</b>				OSEH	321 Industrial Hygiene	4.0	_____
CHEM	312 Chem in Nanotech	3.0	_____	*Competency may be demonstrated by one of the following:			
CHEM	324 Plant Biochemistry	4.0	_____	1) a course grade of "A" or "B" in AP Biology			
CHEM	326* Biochemistry I	4.0	_____	2) a score of 3 or better in the national AP exam			
CHEM	327 Biochemistry II	4.0	_____	3) a successful score on the CLEP exam			
CHEM	328 Analytical Biochem Lab	1.0	_____	4) a passing grade for General Biology (BIOL 100)			
CHEM	381 Polymer Chem I	4.0	_____	<b>General Electives (as necessary)</b>			
CHEM	391 Advanced Lab I	1.0	_____	_____	_____	_____	_____
CHEM	392 Advanced Lab II	1.0	_____	_____	_____	_____	_____
CHEM	300 Cooperative Educ	3.0	_____	_____	_____	_____	_____
CHEM	400 Cooperative Educ	3.0	_____	_____	_____	_____	_____
CHEM	435 Adv. Organic Chem	3.0	_____	_____	_____	_____	_____
CHEM	452 Inorganic Chem II	3.0	_____	_____	_____	_____	_____
CHEM	486 Topics in Chemistry	1.0-4.0	_____	_____	_____	_____	_____
CHEM	489 Department Honors	1.0-3.0	_____	_____	_____	_____	_____
CHEM	498 Independent Study	1.0-3.0	_____	_____	_____	_____	_____
CHEM	499 Department Honors	1.0-3.0	_____	_____	_____	_____	_____
* This elective is recommended for the Environmental Option by the American Chemical Society.							

**BACHELOR OF SCIENCE IN CHEMISTRY  
ENVIRONMENTAL CHEMISTRY OPTION  
RECOMMENDED PROGRAM**

<b>FIRST SEMESTER</b>				<b>SECOND SEMESTER</b>			
CHEM	111	Intro Chem I	4.0	CHEM	112	Intro Chem II	4.0
CHEM	188	Freshman Seminar	1.0	CHEM	251	Inorganic	3.0
ENGL	110	English Composition	3.0	MATH	211	Calculus II	4.0
MATH	161	Calculus I	4.0	WELL	175	Wellness Course	<u>3.0</u>
_____	_____	Humanities Course #1	<u>3.0</u>			<i>TOTAL S.H.</i>	14.0
		<i>TOTAL S.H.</i>	15.0				
<b>THIRD SEMESTER</b>				<b>FOURTH SEMESTER</b>			
CHEM	231	Organic I	4.0	CHEM	232	Organic II	4.0
COMM	100	Communication	3.0	CHEM	265	Quantitative Analysis	4.0
PHYS	231	Physics I	5.0	PHYS	232	Physics II	<u>5.0</u>
MATH	311	Calculus III	<u>4.0</u>			<i>TOTAL S.H.</i>	13.0
		<i>TOTAL S.H.</i>	16.0				
<b>FIFTH SEMESTER</b>				<b>SIXTH SEMESTER</b>			
CHEM	341	Physical Chem I	4.0	CHEM	342	Physical Chem II	4.0
CHEM	375	Environmental I	4.0	CHEM	476	Environmental II	4.0
ENGL	3XX	Advanced Writing	3.0	_____	_____	Required Related **	3.0-4.0
_____	_____	Humanities Course #2	3.0	_____	_____	Social Sciences Course #2	<u>3.0</u>
_____	_____	Social Sciences Course #1	<u>3.0</u>			<i>TOTAL S.H.</i>	14.0-15.0
		<i>TOTAL S.H.</i>	17.0				
<b>SEVENTH SEMESTER</b>				<b>EIGHTH SEMESTER</b>			
CHEM	_____	Chemistry Elective *	4.0	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	_____	_____	C&E Course #4	3.0
_____	_____	Required Related **	3.0-4.0	_____	_____	Required Related **	3.0-4.0
_____	_____	Humanities Course #3	3.0	_____	_____	Perspectives Course	<u>3.0</u>
_____	_____	Social Science Course #3	3.0			<i>TOTAL S.H.</i>	13.5-14.5
_____	_____	C&E Course #1	<u>3.0</u>				
		<i>TOTAL S.H.</i>	17.5-18.5				

**COMMENTS, NOTES OR RECOMMENDATIONS:**

\* Biochemistry I (CHEM 326) is a recommended elective by the ACS for the Environmental Chemistry Option.

\*\*Select 3 courses from the following: BIOL 241, Principles of Ecology; ESCI 245, Environmental Meteorology; ESCI 426, Groundwater Geology; GEOG 202, Resources & the Environment; or OSEH 321, Environmental & Industrial Hygiene I.

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. 11/10