

## BACHELOR'S DEGREE PROGRAMS

A major in chemistry may be obtained with either a Bachelor of Science or a Bachelor of Arts. Students who aspire to careers as professional chemists are advised to obtain the Bachelor of Science. Students majoring in chemistry are urged to take at least one year of a foreign language (preferably German) and at least one course in computer science (e.g. CSC 260 or above). Students majoring in chemistry are also urged to participate in independent research (CHE 492).

### **Bachelor of Science**

This degree program meets requirements for American Chemical Society certification. The Bachelor of Science, major in chemistry, requires 45 semester hours of chemistry (excluding CHE 100, 110, and 115). These must include:

CHE 120-121	General Chemistry I and II
CHE 120L-121L	General Chemistry Laboratory I and II
CHE 310-311	Organic Chemistry I and II
CHE 310L-311L	Organic Chemistry Laboratory I and II
CHE 320-320L	Inorganic Chemistry with Laboratory
CHE 340-340L	Analytical Chemistry with Laboratory
CHE 350-350L	Instrumental Analysis with Laboratory
CHE 360-361	Physical Chemistry I and II
CHE 361L	Physical Chemistry Laboratory
CHE 400	Chemistry Seminar
CHE 482	Biochemistry I

At least 3 additional hours of chemistry courses numbered above 400.

MAT 120 and 220 (Calculus I and II) and PHY 220 and 222 (University Physics) are also required.

A student completing the Bachelor of Science in chemistry is not required to complete a minor or an area of concentration.

### **Bachelor of Science (Biochemistry Track)**

The Bachelor of Science, major in chemistry (biochemistry track), requires the following courses in biology and chemistry:

CHE 120-121	General Chemistry I and II
CHE 120L-121L	General Chemistry Laboratory I and II
CHE 310-311	Organic Chemistry I and II
CHE 310L-311L	Organic Chemistry Laboratory I and II
CHE 340-340L	Analytical Chemistry with Laboratory
CHE 360-361	Physical Chemistry I and II
CHE 362L	Physical Chemistry Laboratory
CHE/BIO 482-483	Biochemistry I and II
CHE/BIO 482L	Biochemistry Laboratory
CHE 400	Chemistry Seminar
BIO 150-150L-150R	Introduction to Biology I
BIO 151-151L-151R	Introduction to Biology II
MAT 120, 220	Calculus I and II
PHY 211, 213	General Physics or
PHY 220, 222	University Physics
At least three of the following six courses:	
BIO 302-302L	General Microbiology
BIO 352-352L	Genetics
BIO 360	Biology of the Cell
BIO 400-400L	Molecular Biology of the Gene
BIO 430	Immunology
CHE 350-350L	Instrumental Analysis with Laboratory

A student completing this major is not required to complete a minor or an area of concentration.

### **Bachelor of Arts**

The Bachelor of Arts, major in chemistry, requires 34 semester hours of chemistry (excluding CHE 100, 110, and 115). These must include:

CHE 120-121	General Chemistry I and II
CHE 120L-121L	General Chemistry Laboratory I and II
CHE 310-311	Organic Chemistry I and II
CHE 310L-311L	Organic Chemistry Laboratory I and II
CHE 340-340L	Analytical Chemistry with Laboratory
CHE 350-350L	Instrumental Chemistry with Laboratory
CHE 360-361	Physical Chemistry I and II
CHE 362L	Physical Chemistry Laboratory
CHE 400	Chemistry Seminar
MAT 120, 220	Calculus I and II
PHY 211, 213	General Physics or PHY 220, 222
	University Physics

### **The Minor in Chemistry**

A minor in chemistry requires 12 semester hours of chemistry beyond General Chemistry.

### **PRE-PROFESSIONAL PROGRAMS**

The following pre-professional programs are offered by the Faculty of Chemistry: pre-dentistry and pre-medicine, pre-pharmacy, and pre-veterinary medicine.

To ensure proper planning, students must obtain approval of their programs through consultation with a member of the chemistry faculty.

The following sample curricula are offered as guidelines:

#### **Pre-Dentistry and Pre-Medicine**

In preparation for admission to dental or medical schools, it is advisable to obtain a broad background in natural sciences, social sciences, and humanities. Students should consult bulletins from dental and medical schools of their choice for specific entrance requirements. In the fall of their junior year, students must register with Northern's Pre-Medical and Pre-Dental Review Board to indicate intended application to these professional schools. Information on the Board may be obtained from student's advisors.

The sample curriculum below lists general requirements and leads to the Bachelor of Arts, major in chemistry.

	1st semester	2nd semester
<i>Freshman Year</i>		
CHE 120-120L, 121-121L General Chemistry I and II	4	4
BIO 150-150L-150R Introduction to Biology I	5	
BIO 151-151L-151R Introduction to Biology II		5
ENG 101 College Writing	3	
General studies electives	3	3
Electives	0-3	6-3
Total	15-18	18-15
<i>Sophomore Year</i>		
CHE 310-310L, 311-311L Organic Chemistry I and II	4	4
MAT 120, 220 Calculus I and II	5	5
General studies electives	3	3
ENG 291 Advanced Writing	3	
Elective	3	6
Total	18	18

*Junior Year*

CHE 340-340L Analytical Chemistry	4	
CHE 350-350L Instrumental Analysis		4
CHE 482-483 Biochemistry I and II	3	3
PHY 211, 213 General Physics I and II	5	5
Electives	3	3
Total	15	15

*Senior Year*

CHE 360-361 Physical Chemistry I and II	3	3
CHE 362L Physical Chemistry Laboratory	2	
CHE 400 Chemistry Seminar	1	
CHE 4XX Chemistry elective, 400 level	1	
Electives	8	12
Total	15	15

**Pre-Pharmacy**

The usual pre-pharmacy curriculum involves two or three years of work at NKU. If students do not gain admission to pharmacy school, they may then graduate with a bachelor's degree at Northern by completing the requirements for a chemistry major. Individual colleges of pharmacy may require different prerequisite courses than those listed in this sample curriculum. Students are responsible for familiarizing themselves with requirements of their schools of interest.

	1st semester	2nd semester
<i>Freshman Year</i>		
CHE 120-120L, 121-121L General Chemistry I and II	4	4
BIO 150-150L-150R Introduction to Biology I	5	
BIO 151-151L-151R Introduction to Biology II		5
ENG 101 College Writing	3	
MAT 120 Calculus I	5	
Electives		6
Total	17	15

*Sophomore Year*

CHE 310-310L, 311-311L Organic Chemistry I and II	4	4
PHY 211, 213 General Physics I and II	5	5
BIO 302-302L General Microbiology		4
ENG 291 Advanced Writing	3	
MAT 205 Statistics		4
Elective	3	
Total	15	17

### **Pre-Veterinary Medicine**

Although Kentucky does not have a school of veterinary medicine, a limited number of students who are residents of Kentucky are selected to enter training in veterinary medicine at Auburn University, Auburn, Alabama, and Tuskegee Institute, Tuskegee, Alabama. The students are exempt from out-of-state tuition. Students generally need to maintain a grade-point average (GPA) of at least 3.20 to be competitive for admission.

Because many more students apply to veterinary schools than are accepted, it is strongly advised that all pre-vet students plan their curricula in such a way that the addition of a year of coursework will satisfy Northern's requirements for the bachelor's degree. A suggested fifth year of coursework is shown below. To design a four-year curriculum that fulfills the pre-veterinary requirements and those for the BA degree in chemistry, interested students should consult with a chemistry advisor.

	1st semester	2nd semester
<i>Freshman Year</i>		
CHE 120-120L, 121-121L General Chemistry I and II	4	4
BIO 150-150L-150R Introduction to Biology I	5	
BIO 151-151L-151R Introduction to Biology II		5
ENG 101 College Writing	3	
Elective	3	
Electives		6
Total	15	15

### **TEACHER EDUCATION IN THE PHYSICAL SCIENCES**

The Bachelor of Arts, major in chemistry, is approved for certification to teach chemistry in Kentucky at the secondary level. Upon deciding to pursue the teacher education program, students must meet with the director of administrative services in the College of Education