

CHEMISTRY

Degree: Bachelor of Science
 Specializations: Chemistry, Chemistry/Biochemistry,
 Pre-Dental, Fast Track Master's
 Minor: Chemistry
 Department: Chemistry
 Building 58, Room 151
 (850) 474-2739
 chemistry@uwf.edu
 College: Arts and Sciences
 Semester Hours Required for Degree: 120

Faculty: S.P. Tanner (Chairperson), C.W.J. Chang
 (Emeritus), G. Chiu (Emerita), J.E. Gurst, W.P. Halpern
 (Emeritus), M.T. Huggins, A.T. Royappa, T.M. Sirvent, P.S.
 Tanner, L.W. ter Haar

The program has been approved by the Committee on Professional Training of the American Chemical Society (ACS) and consists of courses designed to offer training in the fundamentals of chemistry. Opportunities exist for the student to take courses to prepare for a wide variety of careers in chemistry; in health-related fields such as medical, dental, or veterinary schools; pharmacy, physiology, pharmacology, biochemistry, medicinal, and clinical chemistry; in environmental sciences; in education; or in business including sales and management.

For highly qualified students, a fast-track program leading to a BS and MS is available.

For students interested in the forensic science field of criminal justice, a major in chemistry with a minor in criminal justice is available.

Students interested in obtaining certification to teach this subject area in secondary education need to contact an advisor in this department to carefully plan the course work to satisfy degree and some teacher certification requirements. A degree in this major is required for participation in teacher education certification options.

PROGRAM REQUIREMENTS

In addition to general University requirements, students seeking the B.S. in Chemistry must meet the requirements listed below.

Students should consult with their academic advisor for courses which may satisfy both the General Studies requirements and common prerequisites.

A grade of "C" or better is required in all common prerequisites. No grade below a "C-" in a major course may be applied toward graduation.

Chemistry specialization majors must complete PHY 2048 and PHY 2049 for ACS certification. Chemistry/ Biochemistry specialization majors must complete PHY 2048, PHY 2049, BCH 3034/L, and PCB 3063/L for ACS certification.

Course descriptions are listed alphabetically by prefix in the back of this *Catalog*.

CHEMISTRY SPECIALIZATION

General Studies (36 sh)

For additional information see the General Studies section of this *Catalog*.

Common Prerequisites (24 sh)

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. Courses in brackets indicate substitutes from Florida public community/junior colleges and universities.

+ CHM	2045/L	General Chemistry I/Lab	4
		[CHM x045/L, 1045C, 1045E, or 1040 & 1041]	
+ CHM	2046/L	General Chemistry II/Lab	4
		[CHM x046/L, 1046C, 1046E]	
+ MAC	2311	Analytic Geometry & Calculus I	4
		[MAC x311, x281]	
+ MAC	2312	Analytic Geometry & Calculus II	4
		[MAC x312, x282]	

Choose one option:

Option 1

CHM	2210/L	Organic Chemistry I/Lab	4
		[CHM 2210C]	
CHM	2211/L	Organic Chemistry II/Lab	4
		[CHM 2211C]	

Option 2

+ PHY	2048/L	University Physics I/Lab	4
		[PHY 2048C]	
+ PHY	2049/L	University Physics II/Lab	4
		[PHY 2049C]	

or

+ PHY	2053/L	General Physics I/Lab	4
		[PHY 2053C]	
+ PHY	2054/L	General Physics II/Lab	4
		[PHY 2054C]	

+ Indicates common prerequisites which can be used to satisfy General Studies requirements.

Lower Division Electives (0-13 sh)

Sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement. Recommended courses:

Option 1

PHY	2048/L	University Physics I/Lab	4
PHY	2049/L	University Physics II/Lab	4

or

PHY	2053/L	General Physics I/Lab	4
PHY	2054/L	General Physics II/Lab	4

Option 2

CHM	2210/L	Organic Chemistry I/Lab	4
CHM	2211/L	Organic Chemistry II/Lab	4

Major (31-39 sh)

CHM	3120/L	Analytical Chemistry/Lab	4
CHM	3230	Organic Chemistry III: Structure	3
CHM	3410	Physical Chemistry I	4

CHM 3411	Physical Chemistry II	4
CHM 3610	Intermediate Inorganic Chemistry	3
CHM 3740L	Experimental Chemistry I: Structure	2
CHM 3741L	Experimental Chemistry II: Physical Measurements	2
CHM 4130/L	Instrumental Analysis/Lab	4
CHM 4441	Chemical Kinetics	1
CHM 4742L	Experimental Chemistry III: Synthesis	2

Choose one:

CHM 4220	Organic IV: Reactions	2
CHM 4611	Advanced Inorganic Chemistry	2

If not completed at lower division:

CHM 2210/L	Organic Chemistry I/Lab	4
CHM 2211/L	Organic Chemistry II/Lab	4

Major-Related (0-8 sh)*If not completed at the Lower Division, choose one option:**Option 1*

PHY 2048/L	University Physics I/Lab	4
PHY 2049/L	University Physics II/Lab	4

Option 2

PHY 2053/L	General Physics I/Lab	4
PHY 2054/L	General Physics II/Lab	4

Upper Division Electives (21-29 sh)

Sufficient 3000/4000 level electives to meet UWF's requirement of 48 semester hours in the upper division or completion of all departmental requirements at the 3000/4000 level, whichever is greater.

CHEMISTRY/BIOCHEMISTRY SPECIALIZATION

General Studies (36 sh)

For additional information see the General Studies section of this *Catalog*.

Common Prerequisites (32 sh)

State mandated common prerequisites must be completed prior to graduation, but are not required for admission to the program. Courses in brackets indicate substitutes from Florida public community/junior colleges and universities.

+ BOT 2010/L	General Botany/Lab	4
	[BSC 2011/L]	
+ CHM 2045/L	General Chemistry I/Lab	4
	[CHM 2045C, CHM 2045E]	
+ CHM 2046/L	General Chemistry II/Lab	4
	[CHM 2046C, CHM 2046E]	
+ MAC 2311	Analytic Geometry & Calculus I	4
+ MAC 2312	Analytic Geometry & Calculus II	4
+ ZOO 1010/L	General Zoology/Lab	4
	[BSC 2010/L]	

*Choose one option:**Option 1*

CHM 2210/L	Organic Chemistry I/Lab	4
	[CHM 2210C]	
CHM 2211/L	Organic Chemistry II/Lab	4
	[CHM 2211C]	

Option 2

+ PHY 2048/L	University Physics I/Lab	4
+ PHY 2049/L	University Physics II/Lab	4

or

+ PHY 2053/L	General Physics I/Lab	4
+ PHY 2054/L	General Physics II/Lab	4

+ Indicates common prerequisites which can be used to satisfy General Studies requirements.

Lower Division Electives (0-5 sh)

Sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement. Recommended courses if not taken previously:

CHM 2210/L	Organic Chemistry I/Lab	4
PHY 2048/L	University Physics I/Lab	4
PHY 2053/L	General Physics I/Lab	4

Major (40-51 sh)

BCH 3033/L	Biochemistry/Lab	4
CHM 3120/L	Analytical Chemistry/Lab	4
CHM 3230	Organic Chemistry III: Structure	3
CHM 3410	Physical Chemistry I	4
CHM 3411	Physical Chemistry II	4
CHM 3610	Intermediate Inorganic Chemistry	3
CHM 3740L	Experimental Chemistry I: Structure	2
CHM 3741L	Experimental Chemistry II: Physical Measurements	2
CHM 4441	Chemical Kinetics	1

Choose one:

BCH 3034/L	Biochemistry II/Lab	4
CHM 4130/L	Instrumental Analysis/Lab	4
CHM 4742L	Experimental Chemistry III: Synthesis	2
CHS 4100/L	Radiochemical Techniques/Lab	4

Choose three:

HSC 3550	Pathophysiology	3
MCB 3020/L	Microbiology/Lab	4
PCB 3063/L	Genetics/Lab	4
PCB 3253/L	Developmental Biology/Lab	4
PCB 4233/L	Immunology/Lab	4
PCB 4723/L	Comparative Animal Physiology I/Lab	4
ZOO 4753/L	Histology/Lab	4

If not completed at the Lower Division:

CHM 2210/L	Organic Chemistry I/Lab	4
CHM 2211/L	Organic Chemistry II/Lab	4

Major-Related (0-8 sh)*If not completed at the Lower Division, choose one option:**Option 1*

PHY 2048/L	University Physics I/Lab	4
PHY 2049/L	University Physics II/Lab	4

Option 2

PHY 2053/L	General Physics I/Lab	4
PHY 2054/L	General Physics II/Lab	4

Upper Division Electives (9-20 sh)

Sufficient 3000/4000 level electives to meet UWF's requirement of 48 semester hours in the upper division or completion of all departmental requirements at the 3000/4000 level, whichever is greater.

CHEMISTRY PRE-DENTAL SPECIALIZATION

Students must comply with the admission requirements to this specialization discussed in the Pre-Dental Program description in the Undergraduate Degree Programs section of the *Catalog*. That section also explains the use of University of Florida dental (DEN) courses in the specialization.

General Studies (36 sh)

For additional information, see the General Studies section of this *Catalog*. Pre-Dental majors should take DEP 2004 to meet the Social Sciences/Behavioral perspectives component.

Common Prerequisites (32 sh)

Same as Chemistry/Biochemistry Specialization.

Lower Division Electives (0-5)

Sufficient 1000/2000 level electives to complete at least 60 semester hours in the lower division. Current UWF students may use elective courses at any level (1000-4999) to meet this elective requirement.

Major (35-43 Hours)

BCH	3033/L	Biochemistry/Lab	4
CHM	3120/L	Analytical Chemistry/Lab	4
CHM	3230	Organic Chemistry III: Structure	3
CHM	3410	Physical Chemistry I	4
CHM	3411	Physical Chemistry II	4
CHM	3610	Intermediate Inorganic Chemistry	3
CHM	3740L	Experimental Chemistry I: Structure	2
CHM	3741L	Experimental Chemistry II: Physical Measurements	2
CHM	4441	Chemical Kinetics	1
MCB	3020/L	Microbiology/Lab	4
PCB	3063/L	Genetics/Lab	4

If not completed at the Lower Division:

CHM	2210/L	Organic Chemistry I/Lab	4
CHM	2211/L	Organic Chemistry II/Lab	4

Major-Related (14-25 sh)

*	DEN	5121C	Biochemistry and Molecular Biology	4
*	DEN	5200C	Dental Anatomy and Morphology	2
*	DEN	5210	Oral Embryology	2
*	DEN	5120	Principles of Physiology	6

* Indicates courses taken at University of Florida College of Dentistry that apply to degree.

If not completed at the Lower Division:

DEP	2004	Human Development Across The Lifespan	3
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If not completed at the Lower Division, choose one option:

Option 1

PHY	2048/L	University Physics I/Lab	4
PHY	2049/L	University Physics II/Lab	4

Option 2

PHY	2053/L	General Physics I/Lab	4
PHY	2054/L	General Physics II/Lab	4

Upper Division Electives (0-11 sh)

Sufficient 3000/4000 level electives to meet UWF's requirement of 48 semester hours in the upper division or completion of all departmental requirements at the 3000/4000 level, whichever is greater.

BIOLOGICAL CHEMISTRY FAST TRACK BACHELORS/MASTER'S SPECIALIZATION

This B.S./M.S. program is a 5-year (fast-track) program leading to a bachelor's degree in Chemistry and a master's degree in Biology with a specialization in Biological Chemistry. If students did not complete the admission foreign language in high school or community college, then they must complete it before receiving the bachelor's degree. During the first three years, students will satisfy the foundational requirements of the Chemistry/Biochemistry Specialization. In the fourth year students will complete most of the requirements for the B.S. degree and will begin graduate work and research in the Biological Chemistry Specialization within the M.S. program in Biology. The two degrees will be awarded concurrently upon completion of all requirements for the M.S. degree.

General Studies (36 sh)

For additional information see the General Studies section of the *Catalog*.

Common Prerequisites (32 sh)

Same as Chemistry/Biochemistry Specialization

Lower Division Electives (0-5 sh)

Same as Chemistry/Biochemistry Specialization

Major (39-47 sh)

BCH	3033/L	Biochemistry I/Lab	4
BCH	3034/L	Biochemistry II/Lab	4
CHM	3230	Organic Chemistry III: Structure	3
CHM	3410	Physical Chemistry I	4
CHM	3411	Physical Chemistry II	4
CHM	3610	Intermediate Inorganic Chemistry	3
CHM	3740L	Experimental Chemistry I: Structure	2
CHM	3741L	Experimental Chemistry II: Physical Measurements	2
CHM	4441	Chemical Kinetics	1
MCB	3020/L	Microbiology/Lab	4
PCB	3063/L	Genetics/Lab	4
PCB	3253/L	Developmental Biology/Lab	4

If not completed at the lower division:

CHM	2210/L	Organic Chemistry I/Lab	0-4
CHM	2211/L	Organic Chemistry II/Lab	0-4

Major-Related (21 sh)

If not completed at the lower division:

PHY	2048/L	University Physics I/Lab	0-4
PHY	2049/L	University Physics II/Lab	0-4

or

PHY	2053/L	General Physics I/Lab	0-4
PHY	2054/L	General Physics II/Lab	0-4

Students must complete all requirements for the MS in Biology (Biological Chemistry Specialization). Upon completion, up to 21 hours will be applied to the baccalaureate degree.

MASTER'S REQUIREMENTS

See the Biological Chemistry Fast Track Specialization in the Biology listing of the Master's portion of this *Catalog*.

MINOR

The Minor in Chemistry is designed for students majoring in other science disciplines. Chemistry majors may not earn this minor. The following requirements must be completed.

CHM 3120/L	Analytical Chemistry/Lab	4
CHM 3230	Organic Chemistry III: Structure	3
CHM 3410	Physical Chemistry I	4
CHM 3610	Intermediate Inorganic Chemistry	3

Choose one:

CHM 3740L	Experimental Chemistry I: Structure	2
CHS 4100/L	Radiochemical Techniques/Lab	4