Bachelor of Science with a Major in Chemistry

Requirements for the Bachelor of Science Degree with a Major in Chemistry

The chemistry department requires that the prerequisites for a number of chemistry courses be completed with a grade of “C” or better. Majors in the department should consult an advisor at frequent intervals to be certain that prerequisites are met at the appropriate time and with a suitable grade.

Code	Title	Hours
Core Curriculum		**60**
Core Area A, B, C, D.2.a, and E (See VSU Core Curriculum) [1, 2]		42
Core Area F [3]		
MATH 2261	Analytic Geometry and Calculus I (Carry-over from Area D.2.a)	1
MATH 2262	Analytic Geometry and Calculus II	4
CHEM 1211 & 1211L	Principles of Chemistry I and Principles of Chemistry Laboratory I (unless taken in Area D.2.a)	0-4
CHEM 1212 & 1212L	Principles of Chemistry II and Principles of Chemistry Laboratory II (unless taken in Area D.2.a)	0-4
CHEM 2310	Quantitative Analysis	4
PHYS 2211K	Principles of Physics I (unless taken in Area D.2.a) [4]	0-4
or PHYS 1111K	Introductory Physics I	
PHYS 2212K	Principles of Physics II (unless taken in Area D.2.a) [4]	0-4
or PHYS 1112K	Introductory Physics II	
CHEM 1210	First Year Seminar	1
Senior College Curriculum		**60**
Select one of the following options:		
American Chemical Society Certified Degree		
American Chemical Society Certified Degree Biochemistry Option		
Business Option		
Environmental Option		
Pre-Dental Option		
Pre-Medical Option		
Pre-Optometry Option		
Pre-Pharmacy Option		
Pre-Professional Option		
Teaching Option		
Total hours required for the degree		**120**

1

Chemistry majors must take MATH 1113 in Area A and MATH 2261 in Area D.2.a One hour of MATH 2261 will carry over to Area F. In Area D.2.a, chemistry majors may select eight hours from CHEM 1211/CHEM 1211L, CHEM 1212/CHEM 1212L, PHYS 2211K, PHYS 2212K, or BIOL 1107 and BIOL 1107L.

2

Students in the Pre-Optometry Option must take PSYC 1101 in Area E.

3

Hours in excess of 18 will carry over into the Senior College Curriculum.

4

Students in the pre-professional option, the American Chemical Society (ACS) Certified Degree, and the American Chemical Society (ACS) Certified Degree Biochemistry Option may substitute PHYS 1111K for PHYS 2211K and PHYS 1112K for PHYS 2212K; however, students in the ACS Certified Degree and the ACS Certified Degree Biochemistry Option are strongly encouraged to enroll in PHYS 2211K and PHYS 2212K.

Chemistry Major: American Chemical Society Certified Degree

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above		
CHEM 1210	First Year Seminar	1
CHEM 2210	Sophomore Seminar	1
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
CHEM 3802	Physical Chemistry II	4
CHEM 4210	Seminar	1
CHEM 4310	Instrumental Analysis	4
Advanced courses in Chemistry		6
Modern Foreign Language [4]		3-6
Electives (including courses numbered 3000 and above) [5]		16-19

4

If three hours of language are taken in Area C of the core, only three will be required in this portion of the major.

5

Includes hours which carry over from Area F.

Chemistry Major: American Chemical Society Certified Degree

Biochemistry Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above		
CHEM 1210	First Year Seminar	1
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
BIOL 3100	Microbiology	4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3602	Biochemistry II	3
CHEM 3801	Physical Chemistry I	4
CHEM 3802	Physical Chemistry II	4
CHEM 4210	Seminar	1
CHEM 4310	Instrumental Analysis	4
Modern Foreign Language [7]		3-6
Electives (including courses numbered 3000 and above) [8,9]		16-19

6

Unless taken in Area D.2.a

7

If three hours of language are taken in Area C of the core, only three will be required in this portion of the major.

8

Includes hours which carry over from Area F.

[9]

May include CHEM 4910, but must be a biochemistry topic.

Chemistry Major: Business Track

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above.		
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
BIOL 1108 and BIOL 1108L or science elective numbered 2000 or above		4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
Upper Division mathematics, computer science, or science electives [10]		7-8
Modern Foreign Language [11]		3-6
Electives (including courses numbered 3000 and above) [12]		14-18
Electives must include 9 credit hours of courses taught by the College of Business Administration, of which 6 credit hours will be upper-level electives. Students should discuss their interests and career goals with a faculty mentor before selecting courses.		

Chemistry Major: Environmental Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above.		
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
Selected Course (Select an environmental-themed social science or humanities course such as PHIL 3180 or PHIL 3640)		3
Modern Foreign Language [11]		3-6
Electives (including courses numbered 3000 and above) [12]		9-12
BIOL 1108 and BIOL 1108L or science elective numbered 2000 or above		4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
CHEM 4310	Instrumental Analysis	4
CHEM 3320	Environmental Chemistry	3
GEOL 3010	Environmental Geology	3

Chemistry Major: Pre-Dental Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above		
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4

BIOL 1108 & 1108L	Principles of Biology II and Principles of Biology Laboratory II	4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
Upper-Division mathematics, computer science, or science electives [10]		7-8
Modern Foreign Language [11]		3-6
Electives (including courses numbered 3000 and above) [12]		14-18

Chemistry Major: Pre-Medical Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above		
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
BIOL 1108 & 1108L	Principles of Biology II and Principles of Biology Laboratory II	4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
MATH 1401	Elementary Statistics	3
Upper-Division mathematics, computer science, or science electives		4-5
Modern Foreign Language [11]		3-6
Electives (including courses numbered 3000 and above) [12]		11-15

Chemistry Major: Pre-Optometry Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above		
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
BIOL 2260K	Microbiology in Health and Disease	4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
MATH 1401	Elementary Statistics	3
Upper-Division mathematics, computer science, or science electives [10]		7-8

Modern Foreign Language [11]	3-6
Electives (including courses numbered 3000 and above) [12, 13]	11-15

Chemistry Major: Pre-Pharmacy Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above		
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
BIOL 1108 & 1108L	Principles of Biology II and Principles of Biology Laboratory II	4
BIOL 2251K	Human Anatomy and Physiology I	4
BIOL 2252K	Human Anatomy and Physiology II	4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
Upper-Division mathematics, computer science, or science electives [10]		7-8
Modern Foreign Language [11]		3-6
Electives (including courses numbered 3000 and above) [12]		6-10

Chemistry Major: Pre-Professional Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above.		
CHEM 1210	First Year Seminar	1
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
BIOL 1108 and BIOL 1108L or science elective numbered 2000 or above		4
CHEM 3401	Organic Chemistry I	4
CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
Upper Division mathematics, computer science, or science electives [10]		7-8
Modern Foreign Language [11]		3-6
Electives (including courses numbered 3000 and above) [12]		14-18

Chemistry Major: Teaching Option

Code	Title	Hours
Of the 60 semester hours, 39 must be in courses numbered 3000 or above.		
CHEM 2210	Sophomore Seminar	1
BIOL 1107 & 1107L	Principles of Biology I and Principles of Biology Laboratory I	4
BIOL 1108 and BIOL 1108L or science elective numbered 2000 or above		4
CHEM 3401	Organic Chemistry I	4

CHEM 3402	Organic Chemistry II	4
CHEM 3510	Inorganic Chemistry	4
CHEM 3601 & 3601L	Biochemistry I and Laboratory Techniques in Biochemistry	5
CHEM 3801	Physical Chemistry I	4
or CHEM 3802	Physical Chemistry II	
CHEM 4210	Seminar	1
Upper-Division mathematics, computer science, or science electives [10]		7-8
Modern Foreign Language [11]		3-6
Electives (including courses numbered 3000 and above) [12]		14-18

10

Students who wish to emphasize biochemistry shall take CHEM 3602 & CHEM 3802.

11

If three hours of language are taken in Area C of the core, only three will be required in this portion of the major.

12

Includes hours that carry over from Area F.

VSU/PCOM School of Pharmacy 3 + 4 Program

Under an agreement between VSU and the Philadelphia College of Osteopathic Medicine (PCOM) School of Pharmacy, students may earn a BS in Chemistry and a PharmD upon completion of this program. Students begin with acceptance to PCOM's Early Assurance Program. The 3 + 4 program consists of three years of undergraduate coursework at VSU under a modification of the Chemistry Pre-Professional option. After acceptance and matriculation to PCOM's PharmD program, approved courses from the first two years of study at PCOM are transferred to VSU to satisfy upper division requirements to complete the BS in Chemistry. Students interested in this program should contact PCOM about the Early Assurance Program and the Chemistry department at VSU.

The student will complete Core Areas A-F and the Pre-Professional Option curriculum with the following modifications:

1. MATH 1401 and CHEM 1210 will satisfy Core Area B.
2. COMM 1100 must be taken as a Core Area C elective.
3. ECON 2105 or ECON 2106 must be taken as a Core Area E elective.
4. BIOL 1108 and BIOL 1108L will satisfy the Science elective, 2000-level or higher, requirement.
5. The Modern Foreign Language requirement is waived (9 credit hours).
6. Additional required courses are BIOL 2651, BIOL 2652, and CHEM 4210.
7. The requirement for 30 of the last 40 hours to be taken in residence at VSU is waived.
8. After acceptance and matriculation to PCOM School of Pharmacy, a minimum of 22 credit hours from PCOM School of Pharmacy courses that are approved by the Chemistry department will be transferred to VSU as upper division hours to satisfy all remaining requirements for the Chemistry major: Pre-Professional Option.