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College of SCIENCE
Department of CHEMISTRY
Bachelor of Science in CHEMISTRY
Major in POLYMER CHEMISTRY
For Student Date of Entry Under UG Catalog 2023−2024

A dagger (†) indicates a course with prerequisites or co-requisites. Students should check the Undergraduate Course Catalog or consult their advisors for more information.

I. Pathways General Education (49 credits)

Concept 1 Discourse (9 credits)

(1f): 6 credits in foundational courses. ENGL 1105−1106 is recommended

	3			3	

(1a): 3 credits in advanced or applied writing or speaking courses.

	3	

Concept 2 Critical Thinking in the Humanities (6 credits)

	3			3	

Concept 3 Reasoning in the Social Sciences (6 credits)

	3			3	

Concept 4 Reasoning in the Natural Sciences (8 credits). The following course sequence is required of all students majoring in Polymer Chemistry within the B.S. Degree in Chemistry.

† PHYS 2305−2306 Foundations of Physics	4		4	

Concept 5 Quantitative and Computational Thinking (11 credits)

(5f): 6 credits in foundational courses. The following course sequence is required of all students majoring in Polymer Chemistry within the B.S. Degree in Chemistry.

† MATH 1225−1226 Calculus of a Single Variable	4		4	

(5a): 3 credits in advanced or applied courses. Students majoring in Polymer Chemistry within the B.S. Degree in Chemistry must select either STAT 3005 (†) or STAT 3615 (†).[5]

	3	

Concept 6 Critique and Practice in Design and the Arts (6 credits = 3 in design + 3 in arts, or 6 in integrated design and arts)

	3			3	

Concept 7 Critical Analysis of Identity and Equity in the United States (3 credits)

	3	

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II. Chemistry Bachelor of Science Degree Core Requirements (22 credits)

CHEM 1004 Chemistry First Year Experience	1			
† CHEM 1055−1056 General Chemistry for Majors [1]	4		4	
† CHEM 1065−1066 General Chemistry for Major Laboratory [2]	1		1	
† CHEM 2565−2566 Principles of Organic Chemistry [3]	3		3	
† CHEM 2154 Analytical Chemistry for Chemistry Majors	4			
† CHEM 2164 Analytical Chemistry for Chemistry Majors Lab	1			

III. Additional Required Courses for the Chemistry Bachelor of Science (7 credits)*

† CHEM 2555−2556 Organic Synthesis & Techniques Laboratory [4]	2		2	
† CHEM 2564 Problem-Solving in Organic Chemistry [3]	1			
† CHEM 3004 Bridge to the Future	1			
† CHEM 4014 Survey of Chemical Literature	1			

* All students completing a B.S. in Chemistry must complete either STAT 3005 Statistical Methods (†) or STAT 3615 Biological Statistics (†). [5] This requirement is included in Section I above.

IV. Required Courses Specific to the Major in Polymer Chemistry (12 credits)**

† MATH 2204 Introduction to Multivariable Calculus	3	
† CHEM 3615 Physical Chemistry [6]	3	
† CHEM 3625 Physical Chemistry Laboratory	1	
† CHEM 4534 Organic Chemistry of Polymers	3	
† CHEM 4074 / MSE 4544 Laboratory in Polymer Science	2	

** MATH 1225−1226 and PHYS 2305−2306 are also required of all Polymer Chemistry majors within the B.S. Degree Program in Chemistry. These courses are listed in Section I above.

V. Restricted Electives (9 credits)

Choose three of the following courses:

† CHEM 4524 Identification of Organic Compounds	3	
† CHEM 4634 / MSE 4534 Polymer and Surface Chemistry	3	
† CHEM 4624 Materials Chemistry in Energy Science	3	
† CHEM 4424 / SBIO 4424 Polysaccharide Chemistry	3	
† CHE 4104 Process Materials	3	
† CHE 4214 Introduction to Polymer Materials	3	
† CHE 4224 Introduction to Polymer Processing	3	
† PHYS 4564 Polymer Physics	3	

VI. Free Electives (21 credits)

Prerequisites

A dagger (†) indicates a course with prerequisites or co-requisites. Students should check the Undergraduate Course Catalog or consult their advisors for information about prerequisites and co-requisites. This checksheet has no hidden prerequisites, although some of the courses listed are prerequisites for other courses. Please note that Chemistry majors are expected to be "calculus-ready" at the start of their curriculum.

Acceptable Substitutions

[1] *General Chemistry Lecture Substitutions*. A student who earned credit for CHEM 1035 with a grade of "B" or better prior to joining the major in Polymer Chemistry may substitute CHEM 1035 for CHEM 1055. A student who earned credit for CHEM 1036 with a grade of "B" or better prior to joining the major in Polymer Chemistry may substitute CHEM 1036 for CHEM 1056.

[2] *General Chemistry Lab Substitutions*. A student who earned credit for CHEM 1045 prior to joining the major in Polymer Chemistry may substitute CHEM 1045 for CHEM 1065. A student who earned credit for CHEM 1046 prior to joining the major in Polymer Chemistry may substitute CHEM 1046 for CHEM 1066.

[3] *Organic Chemistry Lecture Substitutions*. A student who earned credit for CHEM 2535 with a grade of "B" or better prior to joining the major in Polymer Chemistry may substitute CHEM 2535 for CHEM 2565. A student who is substituting CHEM 2535 for CHEM 2565 may also substitute one additional credit of free elective for the one credit CHEM 2564, since CHEM 2564 is meant as a companion course to CHEM 2565. A student who earned credit for CHEM 2536 with a grade of "B" or better prior to joining the major in Polymer Chemistry may substitute CHEM 2536 for CHEM 2566.

[4] *Organic Chemistry Lab Substitutions.* A student who earned credit for CHEM 2545 prior to joining the major in Polymer Chemistry may substitute CHEM 2545 for CHEM 2555. To compensate for differences in content (mostly with respect to training on specific instrumentation), the substitution requires the student to enroll in one credit of CHEM 4994 with a project that uses the same types of instrumentation (such as IR and NMR). A student who earned credit for CHEM 2546 prior to joining the major in Polymer Chemistry may substitute CHEM 2546 for CHEM 2556. To compensate for differences in content (mostly with respect to training on specific instrumentation), the substitution requires the student to enroll in one credit of CHEM 4994 with a project that uses the same types of instrumentation (such as IR and NMR).

[5] *Statistics Substitution*. STAT 4604 may be substituted for (STAT 3005 or STAT 3615).

[6] *Physical Chemistry Substitution*. Credit for CHE 2164 may be substituted for CHEM 3615.

[7] *Substituting Research Credit.* Unlike with the Major in Chemistry, credit for CHEM 4994 may not count toward Restricted Electives.

Foreign Language Requirement

Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six credit hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count toward the hours required for graduates. Please consult the Undergraduate Catalog for details.

Satisfactory Progress Towards Degree

Upon having attempted 72 credits, student must have completed CHEM 1055−1056, CHEM 1065−1066, CHEM 1004, CHEM 2565−2566, CHEM 2555−2556, PHYS 2305−2306, and MATH 1225−1226.

Polymer chemistry majors must maintain an in-major GPA of 2.0. If a polymer chemistry major fails to meet this requirement for one academic term the student will be placed on Policy 91 (Satisfactory Progress Towards Degree) probation. Failure to meet the standard for two consecutive semesters will result in a Policy 91 suspension.

Minimum Grade Requirements

Polymer Chemistry majors must earn a grade of "C" or better in CHEM 1055, 1056, and 2565.

- A Polymer Chemistry major who earned a grade lower than “C” in CHEM 1055 may repeat this course and earn the required grade (“C” or better), or they may take CHEM 1035 and earn a “B” or better.
- A Polymer Chemistry major who earned a grade lower than “C” in CHEM 1056 may repeat this course and earn the required grade (“C” or better), or they may take CHEM 1036 and earn a “B” or better.
- A Polymer Chemistry major who earned a grade lower than “C” in CHEM 2565 may repeat this course and earn the required grade (“C” or better), or they may take CHEM 2535 and earn a “B” or better. A student repeating CHEM 2565 does not need to repeat CHEM 2564.

Graduation Requirements

Graduation requires completion of a minimum of 120 credit hours with a GPA of 2.0 or greater for all hours attempted. In addition, students must have an in-major GPA of 2.0 or greater counting all required chemistry courses and chemistry electives. The in-major CHEM GPA excludes Chemistry in Context (CHEM 1015, 1016, 1025, 1026), First-Year Experience (CHEM 1004), and Chemistry Problem Solving Skills (CHEM 2984). No more than 6 hours of CHEM 2974, 4974, and 4994 will be included in a student's in-major GPA.