APPROVED
University Registrar

College of SCIENCE
Department of CHEMISTRY
Bachelor of Science in CHEMISTRY
Major in MEDICINAL CHEMISTRY
For Student Date of Entry Under UG Catalog 2021−2022

A dagger (†) indicates a course with prerequisites or co-requisites.

I. Pathways General Education Requirements (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) PSYC 1004 and SOC 1004 are recommended to students contemplating careers in health sciences.

	3			3	

Concept 3 Reasoning in the Social Sciences (6 credits)

	3			3	

Concept 4 Reasoning in the Natural Sciences (8 credits). The following two course sequences are required of all students majoring in Medicinal Chemistry within the B.S. Degree in Chemistry.[5]

† PHYS 2205−2206 General Physics	3		3	
† PHYS 2215−2216 General Physics Laboratory	1		1	

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 Medicinal 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 Medicinal Chemistry within the B.S. Degree in Chemistry must select either STAT 3005 (†) or STAT 3615 (†).

	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	

APPROVED
University Registrar

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

CHEM 1004 Chemistry First Year Experience	1			
† CHEM 1055−1056 General Chemistry for Majors	4		4	
† CHEM 1065−1066 General Chemistry for Major Laboratory[1,2]	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 (5 credits)*

† CHEM 2555−2556 Organic Synthesis & Techniques Laboratory[4]	2		2	
† 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 (†). This requirement is included in Section I above.

IV. Required Courses Specific to the Major in Medicinal Chemistry (19 credits)**

BIOL 1105,1106 Principles of Biology	3		3	
† BIOL 1115,1116 Principles of Biology Laboratory	1		1	
† CHEM 4615−4616 Physical Chemistry for Life Sciences[6]	3		3	
† CHEM 4544 Medicinal Chemistry Capstone Laboratory	2			
† CHEM 4584 Bioorganic Chemistry	3			

** MATH 1225-1226 (†), PHYS 2205-2206 (†), and PHYS 2215-2216 (†) are also required of all Medicinal Chemistry Majors. These courses are listed in Section I above.

V. Restricted Electives (6 credits)

Choose two of the following courses:

† CHEM 4524 Identification of Organic Compounds	3	
† CHEM 4514 Green Chemistry	3	
† CHEM 4554 Drug Chemistry	3	
† CHEM 4444 Bioinorganic Chemistry	3	
† CHEM 4424 / SBIO 4424 Polysaccharide Chemistry	3	

VI. Free Electives (19 credits)

APPROVED
University Registrar

Minimum Grade Requirement: Medicinal chemistry majors must earn a grade of "C" (2.0) or better in CHEM 1055, 1056, and 2565.

- If a medicinal chemistry major fails to earn a "C" (2.0) or better in CHEM 1055, the student must either retake this class (and earn the minimum grade) **or** take CHEM 1035-1036, *General Chemistry*, to remain in good standing for a chemistry degree. If the medicinal chemistry major elects to take CHEM 1035-1036, a minimum grade of "B" (3.0) is required in both in order to enroll in CHEM 2565 and progress towards the B.S. degree.
- If a medicinal chemistry major fails to earn a "C" (2.0) or better in CHEM 2565, the student must either retake this class (and earn the minimum grade) **or** take CHEM 2535, *Organic Chemistry*, to remain in good standing for a chemistry degree. If the medicinal chemistry major elects to take CHEM 2535, a minimum grade of "B" (3.0) is required to count CHEM 2535 as CHEM 2565 for the CHEM degree.

Prerequisites

This check-sheet has no hidden prerequisites, although some of the courses listed are prerequisites for other courses. Courses marked with a dagger (†) have prerequisites or co-requisites as specified in the table on the following page. Please see your advisor or consult the Undergraduate Course Catalog for more information. Please note that Chemistry majors are expected to be "calculus-ready" upon the start of their curriculum.

Acceptable Substitutions

[1] Prior credit for CHEM 1045 may be substituted for CHEM 1065.

[2] Prior credit for CHEM 1046 may be substituted for CHEM 1066.

[3] If a student has taken CHEM 2535 prior to adding a degree in chemistry, a minimum grade of "B" (3.0) or better is required to substitute CHEM 2535 as CHEM 2565. If a student has taken CHEM 2536 prior to adding a degree in chemistry, a minimum grade of "B" (3.0) or better is required to substitute CHEM 2536 as CHEM 2566.

[4] Since CHEM 2545-2546 does not satisfy the prerequisite for CHEM 2556 (due to training on specific instrumentation), if a student adds a CHEM BS degree after completing CHEM 2545-2546, two or more credits of CHEM 4994 may substitute for CHEM 2556 to meet the requirement.

[5] PHYS 2305 may be substituted for 2205/2215; PHYS 2306 may be substituted for 2206/2216.

[6] CHEM 3615 may be substituted for CHEM 4615; CHEM 3616 may be substituted for CHEM 4616.

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 2205/2215-2206/2216, and MATH 1225-1226.

Medicinal chemistry majors must maintain an in-major GPA of 2.0. If a medicinal 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.

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.

APPROVED
University Registrar

Table of Prerequisites and Co-requisites

Courses in this check-sheet marked with a dagger (†) have prerequisites or co-requisites. Prerequisites and co-requisites are detailed in the following table.

Check-sheet Course	Prerequisites and Co-requisites
PHYS 2205−2206	Pre: MATH 1016 or MATH 1016H or MATH 1025 or MATH 2015 or MATH 1026 or MATH 1205 or MATH 1205H or MATH 1525 or MATH 1535 or MATH 1225 or MATH 1225H for 2205; 2305 or 2205 for 2206
PHYS 2215−2216	Pre: 2215 or 2305 for 2216. Co: 2205 for 2215; 2206 for 2216
MATH 1225−1226	Pre: 1225 (C-) for 1226
CHEM 1055−1056	Co: MATH 1025 or 1225 and CHEM 1065 for 1055. Co: 1065 for 1055; 1066, 1066 for 1056
CHEM 2555−2556	Pre: 2565 for 2555; 2555 for 2556
CHEM 2154	Pre: 1036 or 1056 or 1056H. Co: 2164
CHEM 2164	Pre: 1046 or 1066. Co: 2154
CHEM 2565−2566	Pre: 1036 or 1056 or 1036H or 1056H for 2565; 2565 for 2566
CHEM 4014	Pre: Junior standing
STAT 3005	Pre: MATH 1205 or MATH 1225; Co: MATH 1206 or MATH 1226
STAT 3615	Pre: MATH 1205 or MATH 1225 or MATH 1025 or MATH 1525
BIOL 1115−1116	Co: 1105 for 1115; 1106 for 1116
CHEM 4615−4616	Pre: (1036 or 1056 or 1056H), (MATH 1026 or MATH 2015 or MATH 1226), (PHYS 2206 or PHYS 2306) for 4615; (1036 or 1056 or 1056H), (MATH 2016 or MATH 2024 or MATH 2224 or MATH 2204 or MATH 2204H or MATH 2214), (PHYS 2206 or PHYS 2306) for 4616
CHEM 4544	Pre: 4584, BIOL 1105, BIOL 1106
CHEM 4584	Pre: 2536 or 2566
CHEM 4524	Pre: (2536 or 2566), (3616 or 3616H or 4616)
CHEM 4514	Pre: 2536 or 2566
CHEM 4554	Pre: 2536 or 2566
CHEM 4444	Pre: (2566 or BCHM 4115), BIOL 1105, BIOL 1106
CHEM 4424	Pre: 2536 or 2566; course is cross-listed as SBIO 4424