BACHELOR OF SCIENCE IN MEDICINAL CHEMISTRY

Medicinal chemistry is a specialized area of chemistry with an emphasis on a study of drug design, drug synthesis, and pharmaceutical and biomedical analysis. The program will provide students with a strong background in traditional chemistry areas as well as a fundamental understanding of chemistry and biological and pharmacological actions of pharmaceuticals and biomedical products. Students will learn to apply biological, chemical, and data science to computer-aided design, synthesis, evaluation, and analysis of structurally diverse drugs for the detection, treatment, and cure of human diseases. The program will prepare students with the technical skills to develop a career in biomedical science, bioanalytical science, biotechnology, medicine, and pharmaceutical science.

Required Courses

Code	Title		Credit Hours
Medicinal Chemistry Requirements			**(51)**
CHEM 100	Intro to the Profession		2
CHEM 124	Princ of Chemistry I with Lab		4
CHEM 125	Prin of Chemistry II w/Lab		4
CHEM 237	Organic Chemistry I		4
CHEM 239	Organic Chemistry II		3
CHEM 240	Organic Chemistry Lab		2
CHEM 247	Analytical Chemistry		3
CHEM 321	Instrumental Analysis		4
CHEM 343	Physical Chemistry I		3
CHEM 344	Physical Chemistry II		4
CHEM 415	Inorganic Chemistry		3
CHEM 434	Spec Methods in Id and Analys		4
CHEM 456	Computational Biochem/Drug Des		3
CHEM 463	Analytical Method Develop Lab		3
CHEM 467	Medicinal Chemistry		3
CHEM 485	Chemistry Colloquium		1
CHEM 495	Seminar in Special Topics		1
Medicinal Chemistry Electives			**(6)**
Select two courses from the following:			6
CHEM 416	Advanced Chemistry Lab	3	
CHEM 452	Cheminformatics	3	
CHEM 455	Advanced Organic Chemistry	3	
CHEM 460	Bioanalytical Chemistry	3	
CHEM 461	Bioanalytical Chemistry Lab	3	
CHEM 473	Environmental Analytical Chem	3	
CHEM 476	Forensic Chemistry Laboratory	3	
CHEM 513	Chemometrics & Statistics	3	
CHEM 538	Physical Biochemistry	3	
Biology Requirements			**(6-7)**
BIOL 107	General Biol Lecture		3
or BIOL 115	Human Biology		
BIOL 401	Introductory Biochemistry		3-4
or BIOL 403	Biochemistry		
Mathematics Requirements			**(18)**
MATH 151	Calculus I		5
MATH 152	Calculus II		5
MATH 251	Multivariate & Vector Calculus		4
MATH 252	Introduction to Diff Equations		4
Physics Requirements			**(8)**
PHYS 123	General Physics I: Mechanics		4
PHYS 221	Gen Physics II: Elect&Magntism		4

Computer Science Requirement		**(2)**
CS 105	Intro to Computer Programming	2
or CS 110	Computing Principles	
Humanities and Social Sciences Requirements		**(21)**
See Illinois Tech Core Curriculum, sections B and C		21
Interprofessional Projects (IPRO)		**(6)**
See Illinois Tech Core Curriculum, section E		6
Free Electives		**(9)**
Select nine credit hours [1]		9
Total Credit Hours		**127-128**

[1] Suggested electives include: BIOL 210, BIOL 445, BIOL 514, BIOL 527, BIOL 550, ITMD 521, ITMD 525, and ITMD 527.

Bachelor of Science in Medicinal Chemistry

			Year 1
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
CHEM 124	4	CHEM 100	2
CS 105 or 110	2	CHEM 125	4
MATH 151	5	MATH 152	5
Humanities 200-level Course	3	PHYS 123	4
		Social Sciences Elective	3
	14		**18**

			Year 2
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
CHEM 237	4	CHEM 239	3
BIOL 107 or 115	3	CHEM 240	2
MATH 251	4	CHEM 247	3
PHYS 221	4	MATH 252	4
Humanities or Social Sciences Elective	3	Humanities Elective (300+)	3
	18		**15**

			Year 3
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
CHEM 321	4	CHEM 344	4
CHEM 343	3	CHEM 434	4
IPRO Elective I	3	CHEM 467	3
Social Sciences Elective (300+)	3	CHEM 485	1
Free Elective[1]	3	Humanities Elective (300+)	3
	16		**15**

			Year 4
Semester 1	**Credit Hours**	**Semester 2**	**Credit Hours**
BIOL 401 or 403	3-4	CHEM 495	1
CHEM 415	3	Medicinal Chemistry Elective[2]	3
CHEM 456	3	Medicinal Chemistry Elective[2]	3
CHEM 463	3	IPRO Elective	3
Free Elective[1]	3	Social Sciences Elective (300+)	3
		Free Elective[1]	3
	15-16		**16**

Total Credit Hours: 127-128

1 Suggested electives include: BIOL 210, BIOL 445, BIOL 514, BIOL 527, BIOL 550, ITMD 521, ITMD 525, and ITMD 527.

2 Choose from the following courses: CHEM 416, CHEM 452, CHEM 455, CHEM 460, CHEM 461, CHEM 473, CHEM 476, CHEM 513, or CHEM 538.