

DEPARTMENT OF MEDICINAL AND BIOLOGICAL CHEMISTRY

Dr. Katherine Wall, Chair

The Department of Medicinal and Biological Chemistry consists of faculty members with a variety of research interests ranging from design and synthesis of drugs directed toward neurotransmitter receptors to the development of novel therapeutics for cancer and AIDS. The department is equipped with state-of-the-art computer-assisted instrumentation, including facilities for organic chemical and macromolecular analysis, molecular graphics, and radiochemical imaging. These facilities are available for use by all students involved in graduate research.

Degrees Offered

- BSPS in Medicinal Chemistry (MBC) (<https://catalog.utoledo.edu/undergraduate/pharmacy-pharmaceutical-sciences/medicinal-biological-chemistry/bsps-medicinal-chemistry/>)
- BSPS/MS Medicinal Chemistry (<https://catalog.utoledo.edu/undergraduate/pharmacy-pharmaceutical-sciences/medicinal-biological-chemistry/bsps-ms-in-medicinal-chemistry-program/>)

MBC 2960 Undergraduate Research

[1-6 credit hours]

Development and pursuit of undergraduate research in Medicinal and Biological Chemistry.

Term Offered: Spring, Summer, Fall

MBC 3100 Practices in Pharmaceutical Research

[1 credit hour]

Consideration of the scientific, ethical, and legal obligations expected in the conduct of academic and industrial pharmaceutical research.

Term Offered: Spring

MBC 3310 Medicinal Chemistry I: Drug Action And Design

[2 credit hours]

An introductory course presenting the basic chemical principles governing the behavior of drugs and the design of new therapeutics.

Prerequisites: CHEM 2420 with a minimum grade of D-

Term Offered: Fall

MBC 3320 Medicinal Chemistry II: Drug Design and Drug Action

[3 credit hours]

A course presenting application of basic medicinal chemistry principles in drug design and drug action, which are key to drug discovery and drug development.

Prerequisites: (MBC 3310 with a minimum grade of D- and MBC 3550 with a minimum grade of D-)

Term Offered: Spring

MBC 3330 Techniques in Pharmaceutical and Medicinal Chemistry

[2 credit hours]

A consideration and application of analytic and chemistry techniques useful for pharmaceutical and medicinal chemistry students.

Term Offered: Fall

MBC 3340 Techniques in Pharmaceutical and Medicinal Chemistry Laboratory

[1 credit hour]

A laboratory course that fosters development of analytical and chemistry techniques useful for pharmaceutical and medicinal chemistry students.

Corequisites: MBC 3330

Term Offered: Fall

MBC 3550 Physiological Chemistry I: Structure And Function Of Biological Macromolecules

[3 credit hours]

An examination of the levels of structure of proteins, nucleic acids, other biomolecules and biomolecular assemblies.

Term Offered: Fall

MBC 3552 Physiological Chemistry II Cellular Metabolism and Homeostasis

[2 credit hours]

An examination of the chemistry and regulation of metabolic processes in cells, interacting cells and tissues.

Prerequisites: MBC 3550 with a minimum grade of D- or MBC 5550 with a minimum grade of D-

Term Offered: Spring

MBC 3560 Physiological Chemistry II: Chemical Regulation Of Cells And Organisms

[3 credit hours]

An examination of the chemistry and regulation of metabolic processes in cells, interacting cells and tissues.

Prerequisites: MBC 3550 with a minimum grade of D-

Term Offered: Spring

MBC 3860 Microbiology for Pharmaceutical Professionals

[2 credit hours]

This is a lecture and laboratory course with emphasis on microorganisms that cause disease. Special attention will be paid to structures and mechanisms present in microorganisms that can be exploited to inhibit the growth and survival of these organisms in a human host.

Prerequisites: MBC 3550 with a minimum grade of D- or MBC 5550 with a minimum grade of D-

Term Offered: Spring

MBC 3880 Medicinal And Biological Chemistry Laboratory

[3 credit hours]

Laboratory and lecture teaching fundamental laboratory skills in synthetic medicinal chemistry.

Term Offered: Spring, Fall

MBC 4380 Medicinal Plants

[3 credit hours]

A lecture/field course emphasizing medicinal and poisonous plants of this locale.

Term Offered: Summer

MBC 4400 Cannabis Science: Plants and Products

[3 credit hours]

CS Plants & Products considers in-depth the growth of Cannabis sativa and its subspecies as well as the production and physical properties of both chemical and consumer products derived from them. Examining the factors, procedures, and techniques that make for optimal medicinal and recreational outcomes, the course is designed for learners with diverse backgrounds, interests, and intents

Term Offered: Spring, Summer, Fall

MBC 4470 Advanced Immuno-Therapeutics

[2 credit hours]

This course emphasizes the development of methods for immunotherapeutic intervention in cancer and autoimmune and infectious disease. The course has a seminar/discussion/student presentation format.

Prerequisites: MBC 4300 with a minimum grade of D-

Term Offered: Spring, Fall

MBC 4710 Targeted Drug Design

[3 credit hours]

A survey of novel macromolecular targeting approaches to drug design in important human disorders. The course has a seminar/discussion/student presentation format.

Prerequisites: MBC 3320 with a minimum grade of D-

Term Offered: Summer, Fall

MBC 4720 Advances In Drug Design

[3 credit hours]

A survey of novel approaches to drug design and development. The course has a seminar/discussion/student presentation format.

Prerequisites: MBC 3320 with a minimum grade of D-

MBC 4780 Internship in Medicinal Chemistry

[6-12 credit hours]

An experiential course in which students acquire practical knowledge through hands-on experience in an area of medicinal and biological chemistry by working in an academic, private or government laboratory or professional site.

Prerequisites: MBC 3320 with a minimum grade of D- and MBC 3560 with a minimum grade of D-

Term Offered: Spring, Summer, Fall

MBC 4850 Advanced Immunology And Tissue Culture Laboratory

[1-10 credit hours]

Research experience in medically related immunology including literature investigations, tissue culture, cell sorting and sterile biotechniques and culminating with a seminar and written report.

Term Offered: Spring, Summer, Fall

MBC 4870 Biomedical Chemistry Laboratory

[1-10 credit hours]

Research experience in biomedical chemistry including literature investigations and chemical synthesis of medically important compounds and culminating with a seminar and written report.

Term Offered: Spring, Summer, Fall

MBC 4900 Honors Seminar In Medicinal And Biological Chemistry

[1-3 credit hours]

An examination of a specific question in the context of the primary literature in medicinal or biological chemistry.

Term Offered: Spring, Summer, Fall

MBC 4910 Problems In Biomedical Chemistry

[1-3 credit hours]

Selected study of topics in biomedical chemistry. New chemical and biochemical strategies in drug design are examined in detail.

Term Offered: Spring, Summer, Fall

MBC 4950 Research In Medicinal Chemistry

[3-8 credit hours]

Selected research and study in medicinal chemistry.

Term Offered: Spring, Summer, Fall

MBC 4960 Honors Thesis In Medicinal And Biological Chemistry

[1-5 credit hours]

An examination of a specific research question in medicinal or biological chemistry that can be answered through experimental work.

Term Offered: Spring, Summer, Fall

MBC 4980 Special Topics In Drug Design

[1-4 credit hours]

A detailed examination of new chemical and biochemical strategies in drug design.

Prerequisites: (MBC 3320 with a minimum grade of D- and MBC 3560 with a minimum grade of D-)

Term Offered: Spring, Summer, Fall