

# BIOMOLECULAR CHEMISTRY (BMOLCHEM)

## BMOLCHEM/B M I/BIOCHEM/MATH 609 – MATHEMATICAL METHODS FOR SYSTEMS BIOLOGY

3 credits.

Provides a rigorous foundation for mathematical modeling of biological systems. Mathematical techniques include dynamical systems and differential equations. Applications to biological pathways, including understanding of bistability within chemical reaction systems, are emphasized.

**Requisites:** MATH 415 and (MATH 320, 340, 341, or 375) or graduate/professional standing or member of the Pre-Masters Mathematics (Visiting International) Program

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2022

## BMOLCHEM/MICROBIO 668 – MICROBIOLOGY AT ATOMIC RESOLUTION

3 credits.

Three-dimensional protein structures form the basis for discussions of high resolution microbiology; how particular problems are solved with given protein architectures and chemistries and how themes of protein structure are modified and recycled.

**Requisites:** (BIOCHEM 501 or 507) and (MICROBIO 470 or 612) or graduate/professional standing

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

## BMOLCHEM 675 – ADVANCED OR SPECIAL TOPICS IN BIOMOLECULAR CHEMISTRY

1-3 credits.

Examines special topics in biomolecular chemistry. Topics and content will vary each semester and by section of the course.

**Requisites:** None

**Course Designation:** Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2023

## BMOLCHEM 699 – SPECIAL RESEARCH PROBLEMS

1-5 credits.

Self-directed work under the supervision and guidance of an Instructor and often in conjunction with a day-to-day mentor that is a graduate student or postdoc researcher in the instructor's group. Students normally participate in aspects of ongoing research projects.

**Requisites:** Consent of instructor

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2023

## BMOLCHEM/BIOCHEM 701 – PROFESSIONAL RESPONSIBILITY

1 credit.

Training for the practical aspects of being a scientist. Will cover ethics, peer review, grant writing, science communication, career alternatives, paper writing, experimental design, research documentation, science funding, academic-private interface, scientific fraud, and more.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2022

## BMOLCHEM 720 – EXPERIMENTAL DESIGN AND PARADIGMS IN CELLULAR BIOCHEMISTRY AND MOLECULAR BIOLOGY

3 credits.

Covers following areas from historical to modern contexts: biochemistry of post-translational modification of proteins, model organisms, transcriptional switches, chromosome replication, and RNA in biological regulation.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2023

## BMOLCHEM 901 – BIOMOLECULAR CHEMISTRY SEMINAR

1 credit.

Critical review of selected topics in biomolecular chemistry.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2022

## BMOLCHEM/BIOCHEM 913 – SEMINAR-RIBOGROUP (ADVANCED)

1 credit.

Student-led discussions of RNA-related problems.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Spring 2023

**BMOLCHEM/BIOCHEM/M M & I 914 – SEMINAR-MOLECULAR BIOSCIENCES (ADVANCED)**

1 credit.

During the fall semester, molecular biosciences trainees who have not achieved dissertator status will present seminars based primarily on literature related to their projects. During the spring semester, molecular biosciences trainees with dissertator status will present seminars based upon their own research.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Fall 2020

**BMOLCHEM 990 – ADVANCED BIOMOLECULAR CHEMISTRY AND RESEARCH**

1-12 credits.

Research supervised by individual faculty members.

**Requisites:** Graduate/professional standing

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** Yes, unlimited number of completions

**Last Taught:** Summer 2023