

# BMB - BIOCHEMISTRY AND MOLECULAR BIOLOGY

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## **BMB 7010 General Biochemistry Lecture Cr. 4**

Introduction to biochemistry: structure of biological molecules, enzymes, bioenergetics, intermediary metabolism. Biosynthesis of DNA, RNA, and proteins. Offered Fall.

**Restriction(s):** Enrollment is limited to Graduate level students.

## **BMB 7015 Introduction to Metabolism Cr. 2**

An introduction to intermediary metabolism of carbohydrate, lipids, amino acids and proteins. Focuses on the metabolic pathways involved in the synthesis and degradation of metabolites. Offered Fall.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Equivalent:** PSL 7015

## **BMB 7020 Biochemistry Laboratory Rotation Cr. 1-4**

Research in labs with various faculty. Offered Every Term.

**Restriction(s):** Enrollment is limited to Graduate level students; enrollment is limited to students in the Department of Biochem, Microbio & Immunology.

**Repeatable for 8 Credits**

## **BMB 7030 Core Concepts in Technologies in Biochemistry and Molecular Biology Cr. 4**

Methods-based approach to understanding core concepts in biochemistry and biotechnology. Students acquire competence enabling them to explain and implement these approaches. Offered Fall.

**Restriction(s):** Enrollment is limited to Graduate level students.

## **BMB 7140 Foundations of Machine Learning and Artificial Intelligence with Python, Scikit-Learn, and PyTorch Cr. 3**

Introduction to basic concepts of linear algebra and their application to data analysis. MATLAB and PYTHON programs are introduced and employed as tools for practical implementation of computational methods. Offered Fall, Winter.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Equivalent:** IBS 7140

## **BMB 7320 Protein Structure and Function Cr. 3**

Structure, function, and design of proteins: architecture, function, regulation, assembly and evolution of proteins and protein complexes; theory and techniques of kinetic analysis; newer techniques of protein design and engineering. Offered Winter.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Equivalent:** IBS 7320

## **BMB 7330 Advanced Molecular Biology Cr. 2**

Modern topics in biochemistry, including nucleic acid dynamics, genomic structure, DNA replication and repair, transcription, RNA processing, translation and protein synthesis. Offered Winter.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Equivalent:** IBS 7330

## **BMB 7360 Advanced Structural Biology Cr. 2**

Determination of structure and dynamics of biological molecules by NMR and crystallography; emphasis on protein structure and function. Offered Winter.

**Prerequisites:** IBS 7015 with a minimum grade of C

**Restriction(s):** Enrollment is limited to Graduate level students.

## **BMB 7670 Advanced Biochemistry Laboratory Cr. 2-10**

Advanced laboratory techniques as applied to investigations of biological materials. Offered Every Term.

**Restriction(s):** Enrollment is limited to Graduate level students.

## **BMB 7890 Journal Club Cr. 1**

Student presentations of papers from recent literature or their own research. Offered Fall, Winter.

**Restriction(s):** Enrollment is limited to students with a major in Biochemistry&Molecular Biology or Immunology and Microbiology; enrollment is limited to Graduate level students.

**Repeatable for 9 Credits**

## **BMB 7996 Research Cr. 1-15**

Offered Every Term.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 30 Credits**

## **BMB 8999 Master's Thesis Research and Direction Cr. 1-8**

Offered Every Term.

**Restriction(s):** Enrollment limited to students with a class of Candidate Masters; enrollment is limited to Graduate level students.

**Repeatable for 8 Credits**

## **BMB 9990 Pre-Doctoral Candidacy Research Cr. 1-8**

Research in preparation for doctoral dissertation. Offered Every Term.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 12 Credits**

## **BMB 9991 Doctoral Candidate Status I: Dissertation Research and Direction Cr. 3-9**

Offered Every Term.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 9 Credits**

## **BMB 9992 Doctoral Candidate Status II: Dissertation Research and Direction Cr. 1-18**

Offered Every Term.

**Prerequisite:** BMB 9991 with a minimum grade of S

**Restriction(s):** Enrollment is limited to Graduate level students.

**Repeatable for 18 Credits**

## **BMB 9993 Doctoral Candidate Status III: Dissertation Research and Direction Cr. 7.5**

Offered Every Term.

**Prerequisite:** BMB 9992 with a minimum grade of S

**Restriction(s):** Enrollment is limited to Graduate level students.

## **BMB 9994 Doctoral Candidate Status IV: Dissertation Research and Direction Cr. 7.5**

Offered Every Term.

**Prerequisite:** BMB 9993 with a minimum grade of S

**Restriction(s):** Enrollment is limited to Graduate level students.

## **BMB 9995 Candidate Maintenance Status: Doctoral Dissertation Research and Direction Cr. 0**

Offered Every Term.

**Restriction(s):** Enrollment is limited to Graduate level students.

**Fees:** \$434.8

**Repeatable for 0 Credits**