

# BIOCHEMISTRY & MOLECULAR BIO (BMB)

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## BMB 601 Graduate Colloquium (1 credits)

This is an open forum during which students will meet for 1 hour per week to discuss their research.

**Course Rotation:** NYC: Fall

## BMB 605 Scientific Communications (2 credits)

Instruction in the art of preparing a scientific paper. Instruction in the appropriate type of publication (short, rapid, full or review) will be provided. Ethics in publishing will be emphasized at all times. This course will also lead students through the path of selecting the appropriate grant funding agency and the ins and outs of grantsmanship.

**Course Rotation:** NYC: Fall

## BMB 609 Special Topics in Biochemistry and Molecular Biology (2 credits)

This course is designed to allow students to pursue a specialized topic in Biochemistry or Molecular Biology that will aid in their eventual decisions on a research topic.

**Course Rotation:** NYC: Fall

## BMB 610 Seminar (1 credits)

Speakers will be invited from the spectrum of professional working Biochemistry and Molecular Biology to present their work to students in the program. Students are required to attend and ask questions of the speakers. They must also write a 500-word abstract of the main points conveyed by the speaker.

**Course Rotation:** NYC: Fall

## BMB 620 Quantitative Methods: Data Analysis and Presentation (3 credits)

Mathematical analysis of biochemical data. Concentrate on statistical analysis, probability and confidence limits, as applied to the evaluation of scientific data. The appropriate use and presentation of mathematical analysis in a scientific paper will be discussed.

**Course Rotation:** NYC: Fall

## BMB 626 Cellular Biochemistry and Advanced Molecular Biology (4 credits)

To provide an understanding of DNA-RNA, protein interaction. Neuronal cell signaling and neurotransmitters. The mechanism by which anesthetics function. The course provides a bridge between biochemistry and molecular biology at the cellular level.

**Course Rotation:** Fall; NY

## BMB 629 Molecular Biochemistry (4 credits)

This course is aimed at integrating key concepts in biochemistry to provide a strong foundation. Students will be able to integrate metabolic pathways illustrating that carbohydrate, lipid, amino acid and nucleic acid metabolism are all interlinked in a super highway.

**Course Rotation:** Fall; NY

## BMB 630 Bioinformatics, Genomics and Proteomics (4 credits)

This is a second semester course in the MS program of Biochemistry and Molecular Biology. Students will learn the role of epigenetic mechanisms regulating gene expression and the analysis of DNA sequences using OLIGO primer and statistical modelling. In silico detection, multiple sequence alignment and analysis. Instruction on the construction of phylogenetic trees using UPGMA, transformed distance matrix and maximum parsimony methods. The concept of orthologous and paralogous proteins will be introduced and discussed with respect to the role played in protein evolution.

**Course Rotation:** NY; Spring

## BMB 640 Physical Biochemistry (4 credits)

To develop a strong understanding of the principles of physical chemistry as they apply to living systems.

**Course Rotation:** Spring; NY

## BMB 700 Research Preparation (1 credits)

This course will insure that research students are equipped with the essential laboratory skills, such as calculating molar concentrations, pipetting micro liters accurately, weighing micro gram amounts, etc. Students will be taught how to develop a research method and apply analytical skills to problem solving.

**Course Rotation:** NYC: Fall, Spring, Summer

## BMB 710 Research I (4 credits)

Students must select a topic for their thesis. The topic selected must be relevant to Biochemistry or Molecular Biology and approved by the Director of the BMB graduate program. After approval the student must generate a proposal. If the project is not approved the student will be advised on how to modify the proposal or instructed to design a new proposal. Students will start their research once approved. They are expected to spend a minimum of 20 hours per week performing their research. They MUST have an acceptable laboratory notebook that conforms to NIH standards (numbered pages, permanently bound, pages MUST NOT be removed). They will consult frequently with their mentor who will review progress to ensure satisfactory completion of the program.

**Course Rotation:** NYC: Spring

BMB 711 Research II (4 credits)

The second semester of a research project. Students are expected to complete their experimental research. They should be in a regular consultation with their mentor and focus on those parts of the research that are necessary to address the main points of the thesis. It is critical that students complete their research during this course.

**Course Rotation:** NYC: Fall

BMB 712 Thesis Preparation (1 credits)

Preparation of a thesis documenting the research performed. The guidelines on the syllabus must be strictly followed for the thesis defense.

**Course Rotation:** NYC: Fall