

BIOCHEMISTRY & MOLECULAR BIOPHYSICS (BMB)

BMB 5580 Biomolecular Spectroscopy and Microscopy

CHEM 5580 covers basic fluorescence spectroscopy and microscopy, as well as advanced topics such as single molecule spectroscopy and non-linear and super-resolution microscopies. There are weekly homework assignments that include problems based on the lectures as well as journal club style reports on by pairs of students on papers relevant to the course material.

Fall

Also Offered As: CHEM 5580

0.5 Course Units

BMB 5670 Bio-inorganic Chemistry

The course covers selected topics in bioinorganic chemistry; special emphasis is placed on dioxygen chemistry and electron transfer processes. Course topics include: (i) oxygen uptake and utilization; (ii) diatomic oxygen transport; (iii) diatomic and monoatomic oxygen incorporation into substrates; (iv) metalloenzyme-catalyzed C-C bond formation; (v) the metallobiochemistry of DNA; (vi) metal-sulfide proteins; (vii) manganese-containing metalloproteins; (viii) Photosystem II: light-driven electron transfer and the biological water-splitting reaction; (ix) biological electron transfer; (x) electron transfer theory; (xi) mechanisms of energy storage and release; and (xii) long-distance electron transfer reactions.

Fall or Spring

Also Offered As: CHEM 5670

1 Course Unit

BMB 7510 Chemical Biology

This course focuses on current topics in Chemical Biology, particularly experiments in which 1) chemical synthesis enables one to probe or control biological systems, or 2) manipulation of biological systems facilitates novel chemical syntheses. The course is broadly divided into two sections, one dealing with the study of individual proteins and nucleic acids, and one dealing with complex cellular systems. As the goal of the course is to familiarize students with innovative recent experimental approaches and to stimulate them to conceive of their own new methodology, students will be responsible for delivering presentations on topics selected from the literature, designing experiments to address currently unsolved problems in Chemical Biology (in take-home examinations), and generating several novel research proposal ideas, one of which will be elaborated into a full proposal.

Fall or Spring

Also Offered As: CHEM 7510

1 Course Unit