

New and Discontinued Courses

BBMB changes course offerings in response to developments in biochemistry and biophysics and changes in its faculty. Unfortunately, new courses may take up to six years to enter the catalog. Information regarding new courses (and old courses that have been discontinued) is presented below. All of new courses satisfy one of the three areas (bio-organic mechanisms, cell biology and physical biochemistry) described under the Ph.D. degree program on Page 5.

New courses not in catalog (See: <http://www.registrar.iastate.edu/faculty-staff/courses/explistings>)

BBMB 510X. Molecular Biology and Biochemistry of RNA. (2-0) Cr. 2. F. *Prereq: BIOL 313, BBMB 405, BBMB 502, or Gen 409, or equivalent.* Biochemical processes that define structure and function of nucleic acids. Emphasis on the molecular processes that take place during synthesis, processing, and function of different RNA species; review of recent advances in RNA research.

BBMB 512X. Principles of Glycobiology. (2-0) Cr. 2. S. *Prereq: 3 credits in Organic Chemistry.* Structure, synthesis, and functions of glycans, glycoproteins, glycolipids, and glycosylated secondary metabolites in prokaryotic and eukaryotic organisms. Fundamental role of glycans in living organisms along with the most advanced techniques used for their characterization. Biotechnological applications of glycans and glycoconjugates for human needs.

BBMB 531X. Plant Biochemistry. (2-0) Cr.2. S. *Prereqs: BBMB 301 or equivalent.* In-depth exploration of plant biochemistry with a focus on the unique aspects of plants versus heterotrophic organisms. Analysis of unique pathways, metabolic trafficking between unique organelles and tissues, and techniques for their characterization.

BBMB 532X. Enzyme Kinetics and Mechanisms. (2-0) Cr. 2. S. *Prereq: BBMB 504.* Advanced concepts of enzyme kinetics and catalysis. Experimental methods for determining kinetic and chemical reaction mechanisms. Enzyme structure/function relationships and the role of dynamics in catalysis.

BBMB 549X. Nuclear Magnetic Resonance Spectroscopy. (3-0) Cr. 3. F. (*Cross-listed with CHEM 549X.*) *Prereq: any one of the following: CHEM 324, CHEM 325, BBMB 461, BBMB 561.* Theoretical principles of NMR, practical aspects of experimental NMR, solution and solid state NMR, methodologies for molecule characterization, protein structure determination, NMR relaxation, and recent advances.

BBMB 551X. Computational Biochemistry. (2-0) Cr. 2. F. *Prereq: BBMB 404 or equivalent.* Biological and structural databases, molecular visualization, sequence comparisons, homology searches, sequence motifs, construction of phylogenetic trees, structure comparisons, protein structure predictions, RNA structure predictions, molecular docking, metabolic pathways

BBMB 553X. Current Research in Chemical and Physical Biology. (2-0) Cr. 2. F. *Prereqs: BBMB 404 or equivalent.* Principles and applications of chemical and physical methods to analyze biological structures and function ranging from cells to individual biomolecules. Synthetic and biosynthetic strategies, cell surface engineering, single molecule and super-resolution spectroscopy and imaging, membrane biophysics, and use of nuclear magnetic resonance.

BBMB 549X. Nuclear Magnetic Resonance Spectroscopy. (3-0) Cr. 3. F. (*Cross-listed with CHEM 549X.*) *Prereq: any one of the following: CHEM 324, CHEM 325, BBMB 461, BBMB 561.* Theoretical principles of NMR, practical aspects of experimental NMR, solution and solid state NMR, methodologies for molecule characterization, protein structure determination, NMR relaxation, and recent advances.

Discontinued courses still in catalog

BBMB 607, 622, 632, 642, 652, 653, and 660.