BIOCHEMISTRY (BIOC)

BIOC 502. Biochemistry (Medicine). 3 Hours.
Semester course; 3 lecture hours. 3 credits. Enrollment restricted to students accepted in the School of Medicine. An introduction of structural biochemistry, intermediary metabolism, cell biology and methods of biochemical analysis as part of the fundamental background of modern medicine.

BIOC 503. Biochemistry, Cell and Molecular Biology. 1-5 Hours.
Continuous course; variable hours. 1-5 credits. Prerequisites: undergraduate organic chemistry, physical chemistry recommended. Permission of instructor is required for any student not enrolled in a graduate (certificate, M.S. or Ph.D.) program. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIOC 504. Biochemistry, Cell and Molecular Biology. 1-5 Hours.
Continuous courses; variable hours. 1-5 credits. Prerequisites: undergraduate organic chemistry, physical chemistry recommended. Permission of instructor is required for any student not enrolled in a graduate (certificate, M.S. or Ph.D.) program. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIOC 505. Experimental Biochemistry. 2 Hours.
Continuous courses; 4 laboratory hours. 2 credits. Prerequisite: BIOC 503 (or concurrent) or equivalent quantitative chemistry. Laboratory work, including theory and practice of advanced biochemical research methods.

BIOC 506. Experimental Biochemistry. 2 Hours.
Continuous courses; 4 laboratory hours. 2 credits. Prerequisite: BIOC 503 (or concurrent) or equivalent quantitative chemistry. Laboratory work, including theory and practice of advanced biochemical research methods.

BIOC 507. Bioorganic Chemistry. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. Study of structure, chemistry, and mechanism of small, biologically important molecules.

BIOC 510. Radiation Safety. 1 Hour.
Semester course; 15 lecture hours. 1 credit. Provides basic principles for the safe use of radioactive materials in biological research and meets the minimum training requirements set forth for responsible investigators in the university's Nuclear Radiation License. Offered on a demand basis (2-4 times or approximately 20 students per year).

BIOC 524. Biochemistry (Pharmacy). 2 Hours.
Continuous courses; 2 lecture hours. 2 credits. Prerequisites: BIOC 501 or 523. Specialty topics in biochemistry are presented in the spring semester as part of the fundamental background of modern pharmacy.

BIOC 530. Biochemistry, Cell and Molecular Biology Module 1: Protein Structure and Function. 2 Hours.
Modular course; 2 lecture hours. 2 credits. Prerequisites: undergraduate organic chemistry, physical chemistry recommended. Permission of instructor is required for any student not enrolled in a graduate (certificate, M.S. or Ph.D.) program. The first module of a group of four (BIOC 530-533), which taken together provide a comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIOC 531. Biochemistry, Cell and Molecular Biology Module 2: Basic Metabolism. 1 Hour.
Modular course; 1 lecture hour. 1 credit. Prerequisites: undergraduate organic chemistry, physical chemistry recommended. Permission of instructor is required for any student not enrolled in a graduate (certificate, M.S. or Ph.D.) program. The second module of a group of four (BIOC 530-533), which taken together provide a comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIOC 532. Biochemistry, Cell and Molecular Biology Module 3: Central Dogma of Molecular Biology. 1 Hour.
Modular course; 1 lecture hour. 1 credit. Prerequisites: undergraduate organic chemistry, physical chemistry recommended. Permission of instructor is required for any student not enrolled in a graduate (certificate, M.S. or Ph.D.) program. The third module of a group of four (BIOC 530-533), which taken together provide a comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIOC 533. Biochemistry, Cell and Molecular Biology Module 4: Lipids/ Membranes and Bioenergetics. 1 Hour.
Modular course; 1 lecture hour. 1 credit. Prerequisites: undergraduate organic chemistry, physical chemistry recommended. Permission of instructor is required for any student not enrolled in a graduate (certificate, M.S. or Ph.D.) program. The fourth module of a group of four (BIOC 530-533), which taken together provide a comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIOC 601. Membranes and Lipids. 3 Hours.
Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOC 503. Comprehensive presentation of important areas in biological membrane research. Key topics include techniques in the study of membrane lipids and proteins, "order" and organization in membranes, transport, receptors and cell surface antigens, physical measurements in membranes, reconstituted systems, and signal transduction.

BIOC 602. Physical Properties of Macromolecules. 1-4 Hours.
Semester course; 4 lecture hours. 1-4 credits. Prerequisites: BIOC 503 and physical chemistry or permission of instructor. Structure of macromolecular components and macromolecules; biophysical approaches to the determination of structure.

BIOC 604. Enzymology. 1-3 Hours.
Semester course; 3 lecture hours. 1-3 credits. Students may register for module 1 only, modules 1 and 2, or modules 1, 2 and 3. Prerequisite: BIOC 503. Physical and chemical properties and mechanisms of action of enzymes. Treatment of chemical catalysis, enzyme kinetics and correlation of enzyme structure to mechanisms.

BIOC 605. Molecular Biology. 2 Hours.
Semester course; 3 lecture hours. 3 credits. Prerequisite: undergraduate chemistry or biochemistry. An advanced course on molecular biology. Eukaryotic replication, transcription, RNA processing, control of gene expression, translation, cell cycle, oncogenes and tumor suppressors, viral vectors, and gene therapy.

BIOC 610. Current Trends in Biochemistry. 2 Hours.
Semester course; 2 lecture hours. 2 credits. Prerequisites: BIOC 503-504. A study and literature review of common and complex biochemical substances using recent research methodology.

BIOC 651. Biochemistry Journal Club. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Talks given by students describing and critiquing recent published research or review articles.

BIOC 652. Cancer Biology Journal Club. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Permission of instructor is required for any student not enrolled in a graduate program. Oral presentations/discussions on the advances in cancer biology research in order to further the field in cancer research and critically evaluate and understand scientific research articles. Graded S/U/F.

BIOC 661. Critical Thinking. 1 Hour.
Semester course; 1 lecture hour. 1 credit. May be repeated for credit. Paper presentations and discussions of important topics in biomedical science.

BIOC 662. Signal Metabolism Lipids. 1 Hour.
Semester course; 1 lecture hour. 1 credit. Talks given by faculty members, students describing research progresses or discussion of recent published research or review articles.

BIOC 690. Biochemistry Seminar. 1 Hour.
Semester course. 1 credit. Reports on recent biochemical literature and research by students and staff. Graded as S/U/F.

BIOC 691. Special Topics in Biochemistry. 1-4 Hours.
Semester course; 1-4 credits. Lectures, tutorial studies and/or special assignments in selected areas of advanced study not available in other courses or as part of research training.

BIOC 692. Special Topics. 1-4 Hours.
Semester course; 1-4 variable hours. 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of the research training. Graded as S/U/F.

BIOC 695. Biochemistry Student Seminar. 1 Hour.
Semester course; 1 seminar hour. 1 credit. Reports by students on their thesis research projects. Graded as Satisfactory/Unsatisfactory/Fail.

BIOC 697. Directed Research in Biochemistry. 1-15 Hours.
Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.