BCHM 1030 Careers in Biochemistry and Genetics 1(1) Introduces students to biochemistry and genetics career paths, professional organizations, ethical issues, and requirements for advanced study. Also gives students training in design of a professional portfolio. Credit toward a degree will be given for only one of BCHM 1030, GEN 1030. Preq: Biochemistry or Genetics major.

BCHM 3010 Molecular Biochemistry 3(3) Introduces the nature, production, and replication of biological structure at the molecular level and its relation to function. Includes Honors sections. Preq: BIOL 1100 with a C or better. Preq or concurrent enrollment: CH 2230 with C or better.

BCHM (GEN) 3040 Molecular Biology Laboratory 2 (4) Introduces fundamental molecular biology laboratory techniques commonly used in biochemistry, genetics, and molecular biology research. Principles and applications of these techniques are also discussed. May also be offered as GEN 3040. Preq: BIOL 1100. Preq or concurrent enrollment: BCHM 3010 or GEN 3020.

BCHM 3050 Essential Elements of Biochemistry 3(3) Introduction to structure, synthesis, metabolism, and function of biomolecules in living organisms. Preq: BIOE 1010 or BIOL 1030 or BIOL 1100. Preq or concurrent enrollment: CH 2010 or CH 2230.

BCHM 4060 Physiological Chemistry 3(3) Studies the chemical basis of the mammalian physiological processes of muscle contraction, nerve function, respiration, kidney function, and blood homeostasis. Discusses composition of specialized tissue such as muscle, nerve, blood, and bone and regulation of water, electrolytes, and acid-base balance. Preq: BCHM 3050 or CH 2230 or CH 2010.

BCHM 4230 Principles of Biochemistry 3(3) Study of the chemistry of amino acids, monosaccharides, fatty acids, purines, pyrimidines, and associated compounds leads to an understanding of their properties and the relationship between structure and function that makes them important in biological processes. The use of modern techniques is stressed. Preq: CH 2240.

BCHM 4310 Physical Approach to Biochemistry 3(3) Study of chemical and physical properties of amino acids, lipids, nucleic acids, sugars, and their biopolymers. Physical and mathematical analyses are correlated with biological structure and function. Includes Honors sections. Preq: BCHM 3010 with a C or better. Preq or concurrent enrollment: CH 3300 or CH 3310.

BCHM 4320 Biochemistry of Metabolism 3(3) Study of the central pathway of carbohydrate, lipid, and nucleotide metabolism. Emphasizes energetics, limiting reactions, and the regulation and integration of the metabolic pathways. Includes Honors sections. Preq: BCHM 3010 and BCHM 4310, each with a C or better.

BCHM 4330* Physical Approach to Biochemistry Laboratory 2 (4) Experiments to illustrate current methods used in biochemical research. Preq or concurrent enrollment: BCHM 4310.

BCHM 4340* Biochemistry of Metabolism Laboratory 2 (4) Experiments are conducted to illustrate current methods used in metabolic biochemical research. Preq: Concurrent enrollment in BCHM 4320.

BCHM 4360* Molecular Biology: Genes to Proteins 3(3) Examines how nucleic acids and proteins are synthesized in prokaryotic and eukaryotic cells. Designed for students interested in biochemistry, cell biology, molecular biology, and cell physiology. Includes Honors sections. Preq: BCHM 3010 and GEN 3020, each with a C or better.

BCHM (GEN) 4400* Bioinformatics 3(3) Theory and application of computational technology to analysis of the genome, transcriptome, and proteome. Includes Honors sections. May also be offered as GEN 4400. Preq: BCHM 3010 or BCHM 3050 or GEN 3030 or GEN 3020, with C or better.

BCHM 4340* Molecular Basis of Disease 3(3) Topics in heritable human metabolic disorders, including clinical features and newborn screening, genetic testing, the biochemical basis, and treatment. Preq: BCHM 3010 or BCHM 3050, with a C or better; and GEN 3030 or GEN 3020, with a C or better.

BCHM 4900 Selected Topics in Biochemistry 1-4(1-4) Comprehensive study of selected topics not covered in other courses. May be repeated for a maximum of 8 credits, but only if different topics are covered. Preq: Consent of instructor.

BCHM 4910 Directed Research in Biochemistry 1-8(3-24) Orientation in biochemical research (i.e., experimental planning, execution and reporting). May be repeated for a maximum of 20 credits. Includes Honors sections. Preq: Consent of instructor.

BCHM 4920 Honors Thesis in Biochemistry 1(1) Students complete a senior thesis and oral presentation detailing their honors research in biochemistry. Preq or concurrent enrollment: Students are expected to have completed or be concurrently enrolled in their second semester of an Honors section of BCHM 4910 for a minimum of four credits when registering for this course.

BCHM 4930 Senior Seminar 2(2) Analysis and discussion of papers from the primary literature in the life sciences, particularly in biochemistry. Students find pertinent articles in the primary literature and present and analyze the selected reading. Includes Honors sections. Preq: BCHM 3010 and GEN 3020, each with a C or better; and one of BCHM 4310 or BCHM 4320 or BCHM 4360 with a C or better.

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BCHM 4360* Molecular Biology: Genes to Proteins 3(3) Examines how nucleic acids and proteins are synthesized in prokaryotic and eukaryotic cells. Designed for students interested in biochemistry, cell biology, molecular biology, and cell physiology. Includes Honors sections. Preq: BCHM 3010 and GEN 3020, each with a C or better.

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