

Eastern Illinois University
New Course Proposal
CHM 3300, Survey of Biochemistry

1. Catalog Description

3300 CHM. Survey of Biochemistry. (3-0-3) F, S. BIOCHEM SURVEY. An introduction to the structure of biomolecules and their function in living cells, as well as a survey of metabolic pathways involving the breakdown and synthesis of sugars, lipids, nucleic acids, and proteins. Prerequisite: CHM 2430 with a minimum grade of C or CHM 2840 with a minimum grade of C. No credit for students with prior credit in CHM 3450.

2. Objectives of the Course

This course is intended to give students a broad introduction to biochemistry in one semester. It is designed for those students who require or are interested in a single semester survey course covering biomolecule structure, function, and metabolism. It is intended to be a terminal course. There are no writing specifications for this course.

3. Outline of the Course

Week 1: Cellular Organization and Cell Communication
Week 2: Biomolecules in Water
Week 3: Amino Acids and Peptides
Week 4: Protein Structure
Week 5: Enzymes I: Reactions, Kinetics, and Inhibition
Week 6: Enzymes II: Coenzymes and Regulation
Week 7: Carbohydrate Structure and Function
Week 8: Lipids, Membranes, and Cellular Transport; Nucleic Acids: Structure of DNA and RNA
Week 9: Basic Concepts in Cellular Metabolism and Bioenergetics
Week 10: Metabolism of Carbohydrates
Week 11: Production of NADH and NADPH: The Citric Acid Cycle, the Glyoxylate Cycle, and Phosphogluconate Pathway
Week 12: ATP Formation by Electron Transport Chains
Week 13: Metabolism of Fatty Acids and Lipids
Week 14: Metabolism of Amino Acids and Other Nitrogenous Compounds
Week 15: Integration, Coordination, and Specialization in Metabolism

Evaluation of student's knowledge will be assessed via three one-hour exams, a comprehensive final exam and ten to twelve quizzes. Generally, quizzes will be given in the weeks when no exam is scheduled. The distribution of points will be approximately 75% from exams (including the final exam) and 25% from quizzes.

4. Implementation

- a. Faculty members to whom the course may be assigned are Drs. Furumo, Chesnut, or Treadwell
- b. There are no additional costs to students.
- c. Text to be used is Concepts in Biochemistry by Rodney F. Boyer, 2002, Brooks/Cole
- d. Term to be first offered is fall 2002.

5. Rationale

- a. Currently, there is only one introductory biochemistry course (CHM 3450) available to students, whether they major in Biology, Family and Consumer Sciences, Chemistry, or another discipline. This single course does not adequately address the needs of such a diverse population of students. For example, Family and Consumer Sciences majors (Dietetics Option) require a single semester course while Chemistry majors (Biochemistry Concentration) require an in-depth first semester course to prepare them for subsequent biochemistry courses. Students can be better served if they have a biochemistry course more tailored to their needs. The proposed course is intended primarily for Family and Consumer Science majors, Biology majors, and students wishing to earn a minor in chemistry. Students wishing to take two semesters of biochemistry would be required to take CHM 3450 as the first biochemistry lecture course.
- b. The level of this course is appropriate (sophomore-junior level) since its foundation includes one year of general chemistry and Survey of Organic Chemistry, CHM 2430/2435. This course is intended to be the final course in a program requiring one semester of biochemistry with CHM 2430 and 2435 as prerequisites.
- c. There are no existing courses that are similar to the proposed course. This course will have an impact on students whose major is Family and Consumer Sciences/Dietetics Option or Biological Sciences/Cell & Functional Biology Concentration as well as students who are working toward a minor in chemistry. The proposed course will present the material differently (more breadth and less depth) than the biochemistry course now required of them (CHM 3450).
- d. This course can serve as an elective for either Track I or Track II of the Minor in Chemistry, as well as an elective in the Minor in Chemistry for Teacher Certification

6. Community College Transfer

A community college course may be judged equivalent to this course.

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| 7. Date approved by the department: | October 24, 2001 |
| 8. Date approved by the College or School curriculum committee: | November 9, 2001 |
| 9. Date approved by CAA: | December 6, 2001 |