



CHEM-342
INTRODUCTION TO BIOCHEMISTRY
SYLLABUS - SPRING 2011

On-line at: <http://www.udel.edu/chem/white/C342/342-SyllabusS11.html>

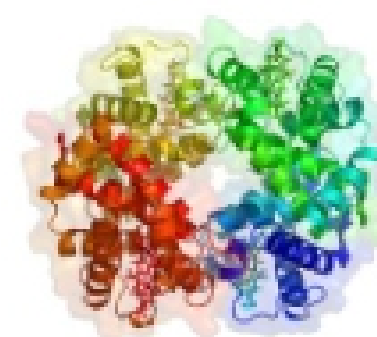


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Administrative Information

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Office Hours: Normally, the hour after class will be available for office hours; however, you should feel free to contact me by phone or e-mail or to stop by my office at other times. If I do not have pressing business, I will be happy to meet on the spur of the moment. Please note that I do not do e-mail at home, so messages sent in the evening or on weekends likely will not be answered until the next working day.

Meeting Time and Place: 8:00 - 8:50, MWF in 205 [Brown Laboratory](#). Normally, important announcements are made at the beginning of class, so don't be late. Similarly, homework is due at the beginning of class. The [tentative course schedule](#) is available on line and will be updated regularly as necessary through the semester.

Prerequisite: [CHEM-331](#) or CHEM-321, Organic Chemistry or equivalent. Completion of or concurrent registration in introductory biology, physics, and calculus courses is assumed.

Course Reader and Texts: The Course Reader, which contains photocopies of all articles used in the course as well as some supplementary materials, is required. It and a three-ring, 2-inch loose-leaf binder to contain it can be purchased at the University Bookstore. The textbook for CHEM-641 & 643 is a useful optional, but highly recommended, reference book in CHEM-342, *Introduction to Biochemistry*. All students should have and use a good collegiate dictionary or be willing to make frequent use of Wikipedia. (There will be a variety of biochemistry texts available for loan during the course.) In addition, textbooks from introductory/prerequisite biology, chemistry, physics, and math courses come in handy for reviewing a variety of topics encountered in *Introduction to Biochemistry*, i.e. don't sell them.

Classroom Resources: A variety of biochemistry textbooks and other books will be available for loan from the course's classroom library.

Grading: There will be two examinations (midterm 20% and comprehensive final 30%). Individual and group assignments will constitute 40% of the final grade, of that 15% is a major individual [writing assignment](#) due the last Friday of the semester. Attendance, Preparation, Participation, and Attitude (APPA) are worth 10%. Unexcused absences and tardiness will detract from your final grade. Attendance is monitored. The comprehensive final will be administered during finals week. The midterm is scheduled in two parts for Wednesday and Friday before Spring Break. Grading will *not* be on a curve. If every student does excellent work, everyone will get an A in this class. (The converse is also true.)

Important General Information

Brief Course Description: This course uses series of 8 to 10 classic research articles on hemoglobin and sickle cell anemia to introduce sophomore biochemistry majors to the discipline of biochemistry. The course and its problem-based learning (PBL) format are non-traditional. Each article constitutes a rich multidisciplinary *problem* from which students identify and pursue those topics (learning issues) they need to learn or review outside of class in order to understand the article as a whole. Most classes are devoted to discussions of various learning issues within permanent groups of 4-5 students facilitated by a peer tutor-facilitator who has previously taken the course. Brief descriptions of the historical context of each article and follow-up lists of instructor-generated learning issues provide the intellectual continuity and assure that students address the major issues. These issues include topics relating to ethics in the conduct of science, philosophy of science, and experimental design in

addition to issues of biochemical content and history. This course is not a survey course. Midterm and final essay examinations involve both individual and group assessments. Old exam files may be accessed from the [course home page](#).

Course Objectives and Content: The ability to evaluate information within conceptual frameworks distinguishes practicing scientists from most undergraduate science majors. Through formal education and practical experience, biochemists come to "see" and interpret biological phenomena in molecular terms. A major objective of CHEM-342 is to initiate that transition in you through study of an important biochemical molecule (hemoglobin) in a variety of conceptual contexts (chemical, physical, functional, mathematical, genetic, historical, ethical, medical, etc.). Thus, while learning science content is important in this course, success depends on achieving a number of [behavioral goals](#) that address many of the [Department's Learning Goals and Outcomes](#) and the University's [General Education goals](#) as well.

If you are like most other students in this class, this will be your first biochemistry course. Because sound foundations in biology and especially chemistry support the discipline of biochemistry, courses in biochemistry usually are not offered to majors until their junior year after full-year courses in introductory chemistry, biology, and organic chemistry, as well as courses in calculus and physics. Consequently, many students who express an interest in biochemistry get no formal exposure to the subject until the second half of their college career. CHEM-342, *Introduction to Biochemistry*, attempts to alleviate this problem and to cultivate your interest by introducing biochemistry in nontraditional ways in the sophomore year. The objective is to enrich your appreciation for the discipline without preempting material from CHEM-641/642/643, a three-semester survey of biochemistry that you will probably begin next fall.

Introduction to Biochemistry differs from subsequent biochemistry courses in that it is not a lecture survey course and does not emphasize factual material per se. Rather, it emphasizes the nature of scientific investigation and problem solving, using biochemistry as the example. To convey this, you will read a series of research articles in a single research area spanning nearly 100 years. This approach provides the basis for discussions on the application of chemical principles to biochemistry, the history of biochemistry, experimental design, the role of publication, the language of science, and ethics in science.

Probably you will find CHEM-342 unlike any course you have taken before. In most courses, the goals are primarily on learning content. While certainly that is a significant goal in CHEM-342, it alone will not assure success. In fact, some students who are used to excelling academically find this course difficult because the "rules are different." Successful students in this course can be compared to decathlon athletes who depend on a variety of skills. Students who excel in this course:

- work well with other students,
- communicate effectively,
- have or develop good information searching skills,
- remember what they learned in prerequisite courses,