

Course Syllabus
CHEM 2542 A
Nutritional Biochemistry
Spring Semester 2007

Instructor: S. Todd Deal

Office: Chemistry 3212

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Course Website: <http://www.georgiasouthern.edu/~stdeal/CHEM2542/2542.html>

Office Hours: T & Th – 9:30 - 10:30 AM, T – 12:30 - 1:30 PM, & Th – 2:00 - 3:00 PM

Lecture: T & Th – 8:00 – 9:15 AM in Chemistry 2240

Laboratory: T – 2:00 – 4:50 PM in Chemistry 2228 (Pre-lab briefing @ 2 PM in Nursing 1006)

LECTURE SCHEDULE

WEEK OF	TITLE
January 8	Carbohydrate Structure
January 15	Carbohydrate Structure (cont.)
January 22	Review of Protein Structure
January 29	Lipid Structure
February 5	Biochemical energetics
February 12	Digestion & Absorption of Macronutrients
February 19	Carbohydrate Catabolism – Glycolysis
February 26	Carbohydrate Catabolism – Citric Acid Cycle
March 5	Carbohydrate Catabolism – Oxidative Phosphorylation
Monday, March 5 is the last day to withdraw without academic penalty!	
March 12	SPRING BREAK!!!!
March 19	Carbohydrate Catabolism – Glycogen
March 26	Lipid Catabolism
April 2	Carbohydrate Anabolism – Gluconeogenesis
April 9	Carbohydrate Anabolism – Glycogen
April 16	Lipid Anabolism
April 23	Nitrogen Metabolism
April 30	Last day of classes

PLEASE NOTE: This and the lab schedule (following page) are tentative and subject to modification at the instructor's discretion.

LABORATORY SCHEDULE*

DATE	EXPT #	TITLE
January 9	—	No Lab, meet for discussion/lecture
January 16	—	Check-in and Safety
January 23	1	Separating and Isolating the Major Components of Milk
January 30	—	Exam #1
February 6	2	Fats, Oils, Soaps, and Detergents
February 13	3	Estimating the Calorie Content of Nuts
February 20	4	Effects of Cooking on Vitamin C Content of Green Peppers
February 27	4	Effects of Cooking on Vitamin C Content of Green Peppers
March 6	—	WebPage design tutorial
March 13	—	SPRING BREAK!!!
March 20	5	Where is Milk Digested - Lactase Enzyme Activity
March 27	5	Where is Milk Digested - Lactase Enzyme Activity
April 3	6	Keeping Your Bananas Fresh
April 10	6	Keeping Your Bananas Fresh
April 17	—	WebPage Presentations
April 24	—	WebPage Presentations

Required Course Materials

1. Chemistry 2542 Laboratory Manual
2. Safety Glasses or Goggles

Biochemistry is exactly what you think it is...the chemistry of life and life processes. As nutrition majors (which most of you are) and professional nutritionists (which most of you will become, hopefully), you will make extensive use of the material in this course— directly or indirectly — for the rest of your professional lives. The compounds and their reactions that we will study in this course are the very essence of life. Now, you may have been told before that you are a biological organism. While this is true on a large scale, you are actually a complex CHEMICAL system; so, without chemistry, there is no such thing as life!!!

I trust from your previous experiences in chemistry that you realize that you must attend class if you intend to do well. This is particularly true of Chemistry 2542! Chemistry is perceived as difficult because it is a cumulative type of learning, i.e., you must understand and be able to apply the material from the first week of class in order to grasp the material in the last week of class! Given this, it is in your best interest to **NEVER MISS CLASS!!!**

You will probably find the level of this course higher than you encountered in your earlier chemistry courses. Those courses were introductory courses intended to initiate you into an understanding of general chemical principles. While Chemistry 2542 is not a senior-level

course, it is a course designed to provide you with a knowledge base and an understanding of chemical principles that will be important to your continued success as a student and as a professional. That said, it should be apparent to you that this course will demand more of your time than your introductory chemistry courses. Chemistry 2542 will probably push you harder than you have been pushed so far in your college career. You will discover that true mastery of biochemical concepts requires a great deal of personal commitment, but I think you will find that it is well worth the effort!

Homework and Exams

Working homework problems is essential to your success in biochemistry. As we progress through each chapter, I will post a problem set for the chapter on the course website. These problem sets are designed to help you study for the exams. They will not be collected nor graded, they are simply for you to use. That does not mean they are optional. I **strongly** urge you to complete all of the problems on each problem set. Feel free to work together on these problems, but don't get caught up in a study group where everyone else seems to understand and you follow along blindly for fear of appearing dumb. Also, do not simply copy the answers to the problem sets from other people! Such a practice will not help you learn the material. Remember that it is your responsibility to learn the material!

I am available to help you, but I will not **give** you the answers! I will give you hints and ask you questions to help you figure out the problems on your own. Please come see me when you need help, but don't wait until you are in trouble! Set up a time soon to come by and chat about the course, your study skills, your career, life in general, or whatever is on your mind. You will find that when we work one-on-one, you will benefit from my being able to help you specifically; so, please come see me.

There will be four (4) major exams during the course of the semester in addition to the final exam. Exams will cover approximately three weeks (2 – 3 chapters) of course material. The final exam will be given on Tuesday, May 1st at 7:30 AM. (Students entering the final exam with a grade of "A" for the course may exempt the final.) The format of each exam will be discussed far enough in advance of the scheduled exam period to allow adequate preparation time.

Office Hours and Class Communication

My office hours are listed on the first page of this syllabus and are posted on my office door. If the posted hours conflict with your class schedule, and you would like to set up a specific time to come see me, please do so; simply talk to me after class. I am here to help you learn, but you have to make use of my help. I don't always know when you are lost or struggling, so please come see me!!! You will find that when we work one-on-one, you will benefit from my being able to help you specifically. **PLEASE COME SEE ME.**

I will regularly communicate with you through e-mail. WINGS makes it easy for me to use your campus e-mail address, so you will need to check that address at least daily. I will send class assignments and update you on course info such as test dates, cancelled classes, lab schedule changes, etc. via e-mail. So you **MUST** routinely check your campus e-mail. Failure to complete an assignment sent via e-mail because "I didn't get the e-mail" does not constitute a legitimate excuse and no credit for that assignment will be given!

Laboratory

Most of the biochemicals that we will use in the lab are not hazardous. However, these compounds should be treated with due respect. You will be REQUIRED to wear closed toe shoes, long pants/dresses, or a lab jacket or apron and SAFETY GLASSES/GOGGLES while in the lab. If you come to lab improperly attired, you will not be allowed to work until you "acquire" appropriate dress. Failure to wear protective eye wear at all times will result in a deduction of points (at the instructor's discretion) from the day's work. Further safety procedures will be discussed during the first lab session.

(Note: If you are pregnant or have a physical condition by which you are potentially sensitive to exposure to laboratory chemicals, then please see your instructor. We will provide you with a list of chemicals in the laboratory which you can take to your health care provider. If you provide written notice from your health care provider, then we will work on making accommodations for you in the laboratory.)

The laboratory portion of CHEM 2542, unlike your previous experiences in science lab courses, is not designed to simply reinforce what you have learned in the classroom; instead, it is meant to be a completely separate learning experience. The lab will consist of several project-type labs based on various foodstuffs — peanuts, green peppers, milk, and bananas — as well as labs on enzyme chemistry and data analysis. You will submit a lab report for each of the six experiments, and each report will be graded on a 25 pt. basis for a total of 150 pts. for this part of the course.

The Biochemistry of the Vitamins & Minerals

During much of the semester, our focus will be on the structure and metabolic biochemistry of the macronutrients. Equally important to human nutrition are the micronutrients, the vitamins and minerals. Given that we do not have time to cover these important nutrients in lecture and that you all need a well-developed understanding of them, I am assigning you the teaching responsibilities for the members of this class and the classes that will follow you! You will be organized into pairs, and each pair will be assigned a vitamin or mineral to research. Based on your research, you will be responsible for preparing an interactive web page/site dedicated to teaching others about your assigned vitamin/mineral. This page will be incorporated into a class-wide website that will "go live" sometime in mid-April.

I will provide you with a format/template that you will use to create your webpage. Your webpage **must** include the chemical structure/formula of the vitamin/mineral, information about its known biochemical/metabolic functions, any dietary requirements (RDA, etc.), and its dietary sources. You **must** also include complete details of *at least* one biochemical reaction in which your vitamin/mineral is involved. Your webpage should also include information about any diseases or known disorders caused by dietary deficiencies of your vitamin.

Finally, your webpage should include a quiz/problem set to assess the knowledge gained by someone who visits your page. This will most likely be in a multiple choice format. Please understand that you will be graded on the quality of this quiz/problem set (see below). Therefore, you will want to make sure that the majority of your questions are thought-provoking and require higher order thinking skills.

What about the grading? This project is worth 50 pts. You will be graded on 1) the creativity & “interactiveness” of your design, 2) how well your webpage presents the information, and 3) your quiz/problem set. You are the teacher for this project – focus on enhancing your students’ learning experience!

Academic Dishonesty

The policies of Georgia Southern University concerning academic dishonesty are thoroughly outlined in the "Student Conduct Code" publication that is produced by the University's Special Programs Office. These policies will be strictly adhered to in this course. The instructor adamantly disapproves of academic dishonesty and will prosecute all cases to the fullest extent allowable—a grade of "F" for the course, no exceptions!

Attendance

Each student should attend all class and lab meetings and exams. Since we do not have a text, the course material (and exams) will come from lectures and handouts. Therefore, failure to attend a regularly scheduled class session may result in a substantial deficiency in your available information at exam time. **DO NOT COUNT ON CLASSMATES NOTES TO CATCH YOU UP!!!** This seemingly innocent practice has led to the destruction of many friendships, relationships, lives, etc.

Make-up exams will not be given! If you must miss an exam, you should notify the instructor *in advance*. At that point, an appropriate course of action will be decided upon by the student from the options outlined by the professor. Missed exams are handled on a case-to-case basis, so don't expect to get the same options as a classmate who missed an exam. In short, the only thing that should prevent you from taking an exam is your own expiration!

Timeliness and Classroom Etiquette

All assignments must be handed in at the specified time. Any assignment handed in late will be assessed a 10%/day penalty. This penalty begins to accrue at the beginning of the class period during which the assignment is to be handed in. **NO EXCEPTIONS!!!!**

Turn off all cellular phones, beepers, pagers, beeping watches, etc. before class begins. Neither your classmates nor I will appreciate class being interrupted by one of these devices. The owner of any such device which rings, buzzes, beeps, etc. during a class, lab, quiz, or exam will be assessed a 5% penalty on his/her next exam.

Grading

The final course grade will be determined as follows:

Course Component	Possible Points	Letter Grade*
Vitamin/Mineral Webpage	50	A's = >90%
Laboratory	150	B's = >80%
Exams	400	C's = >70%
Final Exam (5/1—7:30 AM)	150	D's = >60%
		F = <60%

*Expressed as a percentage of total Possible Points (750 pts.). Example: To receive an "A", a student must earn $.90 * 750 \text{ pts.} = 675 \text{ pts.}$, to earn a "B", a student must earn $.80 * 750 \text{ pts.} = 600 \text{ pts.}$, etc.

TIPS FOR SUCCESS IN NUTRITIONAL BIOCHEMISTRY

1. Always attend class!
2. Ask questions and participate in classroom discussions.
3. When taking notes:
 - *Do not try to write down every word I say!
 - *Look for main points in the lecture.
 - *As soon as possible after each lecture,
 - Write a one or two sentence summary of that day's lecture.
 - Review and clarify your notes.
4. Uphold your part of the learning process bargain which is — Telling is not teaching (My part), and listening is not learning (Your part)!
5. Do ALL of your homework problems.
6. Utilize the professor's “office hours” when you need help, have a problem, complaint, suggestion, or just need to talk.

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