

**Chemistry 436**  
**Biochemistry II Lecture**  
**Spring Semester 2005**

**Instructor:** Duane Smith, Jr., Ph.D.

**Office:** Beauregard Hall, Room 118

**Office Hours:** MWF 7:30 – 10:30am  
MW 1:00 – 4:00 pm

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**Course section:** CHEM 436-4M

**Room:** BEA 237

**Time:** MWF 10:45 – 11:40 a.m.

**CATALOG DESCRIPTION:** \*CHEM 436. Biochemistry II. 3 3 0. Prerequisite: \*CHEM 435. Pentose phosphate pathway; gluconeogenesis; metabolism of glycogen; fatty and amino acids; urea cycle; photosynthesis; biosynthesis of membrane lipids; steroids; amino acids; hemes, nucleotides and integration of metabolism. Sp - odd years only. (26.0202)

**PRE- & CO-REQUISITES:** Prerequisite – Chemistry 435

Recommended – CHEM 438, a laboratory course to accompany CHEM 436

**REQUIRED TEXT:** Biochemistry, 5<sup>th</sup> ed., Berg, Tymoczko, and Stryer, 2002, W.H. Freeman Co., New York.

**REQUIRED SUPPLEMENTARY READINGS:** None at present; however, may be added as the need arises.

**COURSE GOAL:** To provide students with an in-depth knowledge of cellular biochemistry.

**STUDENT OUTCOME OBJECTIVES:** Upon successful completion of this course, the students will have common knowledge in these general subject areas:

1. Structure and function of cell membranes
2. Signal transduction pathways
3. Cellular metabolism and energy transformation
4. Photosynthesis and energy transformation

**COURSE CONTENT:**

1. Membrane structure and function
2. Receptor-mediated cell signaling
3. Signal transduction cascades
4. Photosynthesis
5. Basic metabolic pathways in
  - a) Glycolysis
  - b) Citric Acid Cycle
  - c) Oxidative Phosphorylation
  - d) Pentose Phosphate Shunt and Gluconeogenesis

**COURSE REQUIREMENTS:**

1. Required written work:
  - a) Exams
2. Activities:
  - a) Cooperative group discussions

## **METHOD OF EVALUATION:**

**Grades will be based on a 10-point grading scale.**

|          |   |
|----------|---|
| 90 – 100 | A |
| 80 – 89  | B |
| 70 – 79  | C |
| 60 – 69  | D |
| < 60     | F |

Grades will be based on the average of four exams and one comprehensive final. Several topic area quizzes may also be given throughout the semester, and the average quiz grade may be substituted for one exam grade. This grading policy may be amended due to any unforeseen changes in schedule.

**MAKE-UP POLICY:** If a student misses a class, he or she is still responsible for the material covered during that class period. If a student misses an exam, a makeup will not be given unless the student notifies the instructor in advance of his or her absence. If no advance notice is given, the student must provide documentation as to the reason for having been absent, such as death of a close family friend (death notice), illness (doctor's notice), or court appearance (summons).

**ATTENDANCE POLICY:** Absences amounting to the equivalent of 10% of class time, whether consecutive or not, are grounds for the student being dropped from the course. You are expected to be present, prepared, and alert at all sessions.

**SEMESTER WITHDRAWALS:** The responsibility for withdrawing from the course, if you decide not to continue, lie completely with the student. Failure to drop a course by the final deadline will result in your receiving a grade of "F". **The last day to drop the course with a "W" is Thursday, April 7, 2005.**

**ACADEMIC DISHONESTY WILL NOT BE TOLERATED.** Any student found cheating will be subject to the penalties as stated in the Student Code of Conduct Handbook; including, but not limited to, a score of zero on an exam, expulsion from the class, and/or expulsion from the University.

**ACADEMIC DISABILITIES POLICY:** Please notify the Instructor if you have a disability, so accommodations can be made. If you have a documented disability that requires assistance, you will need to register with the office of Disability Services for coordination of your academic accommodations. The Office of Disability Services is located in Peltier Hall, Room 100-A. The phone number is (985) 448-4430 (TDD 449-7002).

**NO AUDIBLE BEEPERS OR TELEPHONES WILL BE ALLOWED IN CLASS.** Be sure that these devices are turned off, or on "silent", as you enter the classroom. These devices are a distraction to the instructor as well as your classmates. If there is an emergency and you need to respond please let the instructor know of this before the class starts.

## OUTLINE OF TOPICS

| <u>CHAPTER(S)</u>                                                       |                                                    | <u>POINTS</u>            |
|-------------------------------------------------------------------------|----------------------------------------------------|--------------------------|
| 11                                                                      | Carbohydrates                                      |                          |
| 12                                                                      | Lipids and Cell Membranes                          |                          |
| 13                                                                      | Membrane Channels and Pumps                        |                          |
|                                                                         | <b>EXAM 1 (February 11)</b>                        | <b><i>100</i></b>        |
| 14                                                                      | Metabolism – common modalities                     |                          |
| 15                                                                      | Signal Transduction Pathways                       |                          |
|                                                                         | <b>EXAM 2 (March 9)</b>                            | <b><i>100</i></b>        |
| 16                                                                      | Glycolysis and Gluconeogenesis                     |                          |
| 17                                                                      | The Citric Acid Cycle                              |                          |
| 18                                                                      | Oxidative Phosphorylation                          |                          |
|                                                                         | <b>EXAM 3 (April 6)</b>                            | <b><i>100</i></b>        |
| <br><b>LAST DAY TO DROP WITH A “W” GRADE IS THURSDAY, APRIL 7, 2005</b> |                                                    |                          |
| 19                                                                      | The Light Reactions of Photosynthesis              |                          |
| 20                                                                      | The Calvin Cycle and The Pentose Phosphate Pathway |                          |
|                                                                         | <b>EXAM 4 (April 27)</b>                           | <b><i>100</i></b>        |
|                                                                         | <b>FINAL EXAM</b> (as per published schedule)      | <b><u><i>100</i></u></b> |
|                                                                         | <b>TOTAL POINTS</b>                                | <b><i>500</i></b>        |