**1610-01 General Biology I: Cellular and Molecular Biology**

**MWF 9:00-9:50 A.M, SC 129**
**Fall Semester 2005**

**Instructor:** Charlotte Rosendahl
184a Life Science Building
586-7929
pedersen@suu.edu

**Office hours:** Tuesday 10 am -12 noon, Wednesday 11-12 noon and 1-2 pm and Friday 2-3 pm.

**Course Description:**

This course gives an introduction to the structure and function of the cell. Students will develop an understanding of the different components of the animal, plant and bacterial cell and how they fit together as a whole. The connection between the metabolism in the cell and the structures within will be emphasized. The basis of transmission of genetic information, biotechnology, development, signal transduction, genetic diseases and the immune system will also be covered in this course if time allows.

**Course Objectives:**

As a prerequisite for upper level biology classes, this course give the students an overview of the cellular processes and tries to relate the different topics described above. The students will develop an understanding of how research is conducted. Students will learn to ask and answer questions using basic vocabulary of biology. The course will relate the topics discussed to the everyday life of the student and thereby emphasize the importance of understanding the topics. Also, the course will give students an appreciation of scientists that have contributed significantly to our understanding today. Through this, the major objective of establishing a sound foundation of knowledge of basic cellular and molecular biology, that the student can build on throughout their degree, will be achieved.

**Text required:**

Biology – Life on Earth by Audesirk ISBN 0-13-100506-5
The Double Helix by James Watson

**Expectations of students:**

Students are expected to have read the written material provided **BEFORE** coming to class. Students are responsible for the contents of the text assigned and the contents of the lectures. Regular attendance is required at all class meetings. Late assignments are **NOT** accepted and make-up tests are not possible except in the event of serious injury or illness (note from doctor is required), family death, court appearance or official University activities.

**Assignments and points**: TOTAL POINTS POSSIBLE - 500

This class is based on student involvement. You are all responsible for your own learning in this class which means that you need to **PARTICIPATE**. Participation is part of your grade. Points 50.

**Quiz:** Each quiz will be about 20 minutes long and will be administered at the end of the class. These quizzes are designed to help you summarize and review material covered in class in sections. There will be 2 quizzes total and each are worth 50 points. Points 100.

**Midterm and a Comprehensive Final** each worth 100 points.

**Papers.** The class will be divided into groups of five and each group will decide on a topic related to molecular or cellular biology. If you need help I have several ideas. Each group needs to write in-depth study of the topic being no more than 15 pages. An outline is turned in and approved before proceeding with the paper. More information of who has been assigned to which group and detailed information on how to write a scientific paper will follow soon. Points 100.

**The Double Helix Reviews:**

We are also reading the The Double Helix in this class to give you an appreciation of how science is done and how scientists think. This year it is 50 years ago that the structure of DNA was solved and this paperback explains how three young scientist did it all, James Watson, Francis Crick and Rosalind Franklin. The book has been divided into three parts and after having read each part you are required to turn in a 3 page review of the chapters read. I will provide guiding questions to help you write these reviews. On due dates I will call upon a few students in class to give a brief summary and we will have a short class discussion. Total points 150. More information will follow soon.

**Other things that will help you learn:** This class is all on WebCT and you will be given a small lecture on using WebCT in the first week of school. If you are lost in using WebCT – please come see me – it is crucial for you to complete this class. There is a ton of material on the WebCT site for this class that should be used as a study guide to complement the book. Also there will be an assessment quiz for each chapter covered. Completing the assessment quiz will earn you extra credit if you do well and also help

identify areas that you need to re-visit. The quiz will be on WebCT when announced in class. Also please, use my office hours and ask questions in class.

**Grading:**

| | | |
|---|---|---|
| A = 93-100 | $B^-$ = 79-83 | $D^+$ = 66-69 |
| $A^-$ = 89-93 | $C^+$ = 76-79 | D = 63-66 |
| $B^+$ = 86-89 | C = 73-76 | $D^-$ = 60-63 |
| B = 83-86 | $C^-$ = 69-73 | F = < 60 |

There will be no curving of the grades. A straight percentage scale will be used.

**Academic integrity:**

Scholastic dishonesty **will not be tolerated** and will be prosecuted to the **fullest** extent. You are expected to have read and understood the current issue of the student handbook (published by Student Services) regarding student responsibilities and rights, and the intellectual property policy, for information about procedures and about what constitutes acceptable on-campus behavior.

**Students with disabilities:**

Students with medical, psychological, learning or other disabilities desiring academic adjustments, accommodations or auxiliary aids will need to contact the Southern Utah University Coordinator of Services for Students with Disabilities (SSD) in Room 205C of the Sharwan Smith Center or phone (435) 865-8022. SSD determines eligibility for and authorizes the provision of services.

**Disclaimer:**

Information contained in this syllabus other than the grading, late assignments, makeup work and attendance policies may be subject to change with advance notice as deemed appropriate by the instructor.

| | |
|---|---|
| August 29 | An Introduction to Life on Earth (Chap. 1) |
| August 31 | Atoms, Molecules and Life (Chap. 2) |
| September 2 | Atoms, Molecules and Life (Chap. 2) |
| September 7 | Biological Molecules (Chap. 3) |

September 9 Biological Molecules (Chap. 3)

September 12 Biological Molecules (Chap. 3)

September 14 Cell Membrane Structure and Function (Chap. 4) – **Double Helix Review I (Chap. 1-10)**

September 16 Cell Membrane Structure and Function (Chap. 4)

September 19 Cell Membrane Structure and Function (Chap. 4)

September 21 Cell Structure and Function (Chap. 5)

September 23 Cell Structure and Function (Chap. 5)

September 26 Cell Structure and Function (Chap. 5)- **Quiz I**

September 28 Energy Flow in the Life of a Cell (Chap. 6)

September 30 Energy Flow in the Life of a Cell (Chap. 6)

October 3 Energy Flow in the Life of a Cell (Chap. 6)

October 5 Capturing Solar Energy: Photosynthesis (Chap. 7)

October 7 Capturing Solar Energy: Photosynthesis (Chap. 7)
**Outline for paper due**

October 10 Capturing Solar Energy: Photosynthesis (Chap. 7)

October 12 Harvesting Energy: Glycolysis and Cellular Respiration (Chap. 8)

October 14 Harvesting Energy: Glycolysis and Cellular Respiration (Chap. 8) –
**Double Helix Review II (Chap. 11-20)**

October 17 Harvesting Energy: Glycolysis and Cellular Respiration (Chap. 8)

October 19 Harvesting Energy: Glycolysis and Cellular Respiration (Chap. 8)

October 21 **MIDTERM**

October 24 DNA – The Molecule of Heredity (Chap. 9)

October 26 DNA – The Molecule of Heredity (Chap. 9)

October 28 DNA – The Molecule of Heredity (Chap. 9)

October 31 Gene Expression and Regulation (Chap. 10)

November 2 Gene Expression and Regulation (Chap. 10)

November 4 Gene Expression and Regulation (Chap. 10)

November 7 Gene Expression and Regulation (Chap. 10)

November 9 The Continuity of Life: Cellular Reproduction (Chap. 11)

November 11 The Continuity of Life: Cellular Reproduction (Chap. 11) **- Quiz II**

November 14 The Continuity of Life: Cellular Reproduction (Chap. 11) – **Double Helix Review III (Chap. 21 – to the end)**

November 16 The Continuity of Life: Cellular Reproduction (Chap. 11)

November 18 Patterns of Inheritance (Chap. 12)

November 21 Patterns of Inheritance (Chap. 12)

November 28 Patterns of Inheritance (Chap. 12)

November 30 Biotechnology (Chap. 13)

December 2 Biotechnology (Chap. 13)

December 5 Biotechnology (Chap. 13) – **Papers due**

December 7 Principles of Evolution (Chap. 15)

December 9 Principles of Evolution (Chap. 15)

December 15 **Final Exam at 9 – 10:50 am**