

**BIOLOGY 101  
BIOLOGICAL SCIENCE  
SECTIONS 1 & 2  
SPRING 2003**

PROFESSOR: DR. H. E. SHEALY, JR.  
OFFICE: ROOM 111D, SCIENCE BUILDING  
OFFICE HOURS: BY APPOINTMENT  
COURSE CREDIT: FOUR CREDIT HOURS  
LECTURE: T/TH 10:50AM-12:05PM, RM 327, SCI BLDG  
LABS: T 8:00-10:40 AM (SEC 1) & TH 8:00-10:40 (SEC 2) ALL IN RM 107, SCI BLDG  
PHONE/E-MAIL: 803-641-3404/HSHEALY@USCA.EDU

**COURSE GOALS AND OBJECTIVES:** BIOLOGICAL SCIENCE 101 IS DESIGNED AND INTENDED TO INTRODUCE STUDENTS TO THE FIELD OF BIOLOGY. BIOLOGY 101 IS FOR BIOLOGY MAJORS AND NON-MAJORS. THE GOAL OF THIS COURSE IS SIMPLY TO INTRODUCE THE STUDENT TO THE UNDERLYING **PRINCIPLES** GOVERNING THE SCIENCE OF BIOLOGY. SPECIAL EMPHASIS WILL BE PLACED ON THE BASIC PROCESSES AND COMPONENTS OF CELLS IN LIVING ORGANISMS. TO SUCCESSFULLY COMPLETE THIS COURSE THE STUDENT MUST DEMONSTRATE AN UNDERSTANDING OF:

- THE SCIENTIFIC METHOD AND HOW IT IS USED
- BASIC BIOLOGICAL COMPOUNDS AND HOW THEY ARE UTILIZED BY CELLS
- THE CELLULAR PROCESSES AND COMPONENTS, AND THE INTERACTIONS BETWEEN THEM
- THE STRUCTURE OF EUKARYOTES, PROKARYOTES, AND VIRUSES
- THE FLOW OF ENERGY IN BIOLOGICAL SYSTEMS
- THE STRUCTURE AND IMPORTANCE OF PROTEINS AND NUCLEIC ACIDS
- THE ROLE OF ENZYMES IN METABOLISM
- THE NATURE OF GENES AND THEIR EXPRESSION
- THE BASICS OF HEREDITY AND PATTERNS OF INHERITANCE
- THE CONCEPTS OF SPECIATION AND EVOLUTION

THE STUDENT WILL BE INTRODUCED TO MANY TOPICS THAT ARE COVERED IN GREATER DETAIL IN UPPER LEVEL BIOLOGY COURSES. IT IS EXPECTED THAT STUDENTS RECEIVING A SATISFACTORY GRADE ON THE HOUR EXAMS, FINAL EXAM, AND LABORATORY ASSIGNMENTS WILL HAVE A GOOD BASIC UNDERSTANDING OF THE BIOLOGICAL CONCEPTS OUTLINED ABOVE.

**TEXT:** BIOLOGY, 2<sup>ND</sup> EDITION BY DAVID KROGH. PUBLISHED BY PRENTICE HALL, 2002.

**LAB MANUAL:** BIOLOGY 101 LAB MANUAL. BY JACKSON AND YATES. THE MANUAL IS AVAILABLE AT THE USCA BOOKSTORE.

**REQUIRED SUPPLIES:** SCANTRON SHEETS FROM USCA BOOKSTORE FOR HOUR EXAMS, #2 LEAD PENCILS AND A **QUAD** RULED LAB NOTEBOOK. ALL ARE AVAILABLE AT THE USCA BOOKSTORE.

**METHODS OF EVALUATION:**

**GENERAL**

THERE WILL BE THREE HOUR EXAMS, LAB QUIZZES, LAB REPORTS, READING ASSIGNMENTS, AND A COMPREHENSIVE FINAL EXAM.

**LAB AND LAB REPORTS**

EACH STUDENT WILL BE REQUIRED TO PURCHASE AND MAINTAIN A LABORATORY NOTEBOOK. YOUR INSTRUCTOR WILL GIVE YOU THE SPECIFICS ON THIS. ALL NOTES AND RECORDS FROM EACH LAB WILL BE KEPT IN THIS BOOK. THE FORMAT OF THE REPORTS WILL BE PRESENTED IN LAB. THESE REPORTS WILL BE SUBMITTED PERIODICALLY FOR GRADING. WE WILL ALSO HAVE WEEKLY LAB QUIZZES.

**READING ASSIGNMENTS**

YOU WILL BE REQUIRED TO COMPLETE AND TURN IN FOUR OUTSIDE READING ASSIGNMENTS. **THEY ARE DUE** ON THE LAST CLASS DAY OF EACH MONTH...JANUARY, FEBRUARY, MARCH, APRIL. THEY WILL NOT BE ACCEPTED AFTER THE LAST CLASS DAY EACH MONTH. THESE READING ASSIGNMENTS MAY BE FOUND IN THE USCA LIBRARY FROM ANY OF THE FOLLOWING SOURCES: DISCOVER, SCIENCE, NATURE, SCIENCE NEWS, NATURAL HISTORY (on line), SCIENTIFIC AMERICAN, SCIENCE TEACHER, AND AMERICAN BIOLOGY TEACHER. WITH PERMISSION FROM YOUR PROFESSOR, YOU MAY USE OTHER SOURCE MATERIAL SUCH AS OTHER JOURNALS, NEWSPAPERS, AND NEWSMAGAZINES. EACH READING ASSIGNMENT MUST BE TWO OR THREE PARAGRAPHS DESCRIBING THE NATURE AND CONTENT OF THE ARTICLE. EACH PAPER MUST BE TYPEWRITTEN AND DOUBLE-SPACED AND IT MUST BE PROPERLY REFERENCED.PLEASE REMEMBER THAT IF YOU JUST COPY THESE FROM THE JOURNAL, IT IS **PLAGARISM** AND THAT IS A VIOLATION OF THE USCA HONOR CODE AND IS A SERIOUS MATTER!

YOU WILL BE OBSERVED IN CLASS/LAB DISCUSSIONS, QUESTIONS, AND OTHER CLASSROOM/LAB INTERACTIONS. THERE WILL BE NUMEROUS OPPORTUNITIES FOR YOU TO SPEAK AND WRITE ABOUT BIOLOGY...**CLASS DISCUSSIONS AND QUESTIONS ARE ENCOURAGED!**

**GRADE COMPONENTS:**

<u>LECTURE</u>	
THREE HOUR EXAMS.....	55%
FINAL EXAM(COMPREHENSIVE).....	15%
<u>LAB</u>	
LAB NOTEBOOKS/REPORTS(80%) & LAB QUIZZES(20%).....	25%
<u>PARTICIPATION</u>	
READINGS AND OTHER MATERIAL.....	5%

**GRADING SCALE:**

100-93 = A; 92-88 = B+; 87-81 = B; 80-76 = C+; 75-70 = C; 69-65 = D+; 64-60 = D; 59-0 = F.

**MAKE-UP EXAMS:** THERE ARE NO MAKE-UP EXAMS. SHOULD YOU MISS AN EXAM FOR A DOCUMENTED EXCUSABLE REASON, AN ALTERNATE EXAM MAY BE GIVEN DURING THE LAST WEEK OF CLASSES. ONLY ONE EXAM WILL BE TREATED IN THIS MANNER; ANY OTHER MISSED EXAMS WILL BE COUNTED AS A ZERO. DUE TO THE NATURE OF LAB ITSELF, MAKE-UP LABS CANNOT BE GIVEN!

**ATTENDANCE:** STUDENTS WILL BE ALLOWED A TOTAL OF SIX (6) UNEXCUSED ABSENCES FROM THIS COURSE. YOU SHOULD NOTE THAT I MAY IMPOSE A PENALTY FOR ABSENCES IN EXCESS OF SIX OF THE REGULARLY SCHEDULED CLASS/LAB MEETINGS BY ASSIGNING THE GRADE OF “F” FOR THE COURSE. ATTENDANCE IS TAKEN FOR EACH CLASS/LAB. THEREFORE, I URGE YOU TO ATTEND ALL CLASSES/LABS, AND TO **BE PREPARED AND BE ON TIME**. REGARDLESS OF THE REASON YOU ARE ABSENT, **YOU ARE RESPONSIBLE FOR ALL CLASS/LAB ASSIGNMENTS.**

**DISABILITY STATEMENT:** IF YOU HAVE A PHYSICAL, PSYCHOLOGICAL, AND/OR LEARNING DISABILITY WHICH MIGHT AFFECT YOUR PERFORMANCE IN THIS CLASS, PLEASE CONTACT THE OFFICE OF DISABILITY SERVICES, 126A B&E, (803) 641-3609, AS SOON AS POSSIBLE. THE DISABILITY SERVICES OFFICE WILL DETERMINE APPROPRIATE ACCOMMODATIONS BASED ON MEDICAL DOCUMENTATION.

**WRITING CENTER:** USCA PROVIDES A WRITING CENTER LOCATED ON ROOM 201 OF THE H&SS BUILDING. IF YOU NEED EXTRA ASSISTANCE ON ANY WRITING ASSIGNMENT FOR THIS OR ANY OTHER CLASS THAT YOU ARE TAKING, PLEASE TRY THE WRITING CENTER.

**WRITING PORTFOLIO:** ALSO REMEMBER THAT WRITTEN WORK THAT YOU COMPLETE FOR THIS CLASS CAN BE INCLUDED IN YOUR WRITING PORTFOLIO REQUIREMENT. FOR FURTHER INFORMATION ON THE WRITING PORTFOLIO REQUIREMENT, PLEASE CONSULT YOUR CURRENT USCA BULLETIN.

**TENTATIVE LECTURE SCHEDULE**

<b>DATE</b>	<b>WEEK</b>	<b>TOPIC</b>	<b>CHAPTERS</b>
9 Jan 03	1	Introduction/The Science as a Way of Learning	1
14 16	2	The Science as a Way of Learning The Fundamental Building Blocks	1 2
21 23	3	The Fundamental Building Blocks Water, pH and Biological Molecules	2 3
28 30**	4	Water, pH and Biological Molecules The Cell	3 4
4 Feb 6	5	The Cell The Plasma Membrane	4 5
11 13	6	The Plasma Membrane <b>EXAM I</b>	5 *
18 20	7	Energy Energy / <b>LAST DAY TO DROP w/ "W"</b>	6 6
25 27**	8	How Cells Harvest Energy How Cells Harvest Energy	7 7
4 Mar 6	9	Photosynthesis Photosynthesis	9 9
10-14	10	<b>SPRING BREAK...No Classes!!!!</b>	*
18 20	11	Mitosis and Cytokinesis Mendel and Inheritance	10 11
25 28**	12	<b>EXAM II</b> Chromosomes and Inheritance	* 12
1 Apr 3	13	DNA Structure and Replication DNA Structure and Replication	13 13
8 10	14	Protein Synthesis <b>No Classes!!!</b>	14 *
15 17	15	Protein Synthesis <b>EXAM III</b>	14 *
22 24**	16	Biotechnology Biotechnology/ <b>LAST CLASS</b>	15 15
28 29/30	17	<b>Last day of classes.</b> <b>Reading Days</b>	* *
1 May **	18	<b>FINAL EXAM, TUESDAY...11AM</b> <b>Last Class of Each Month...Paper is Due!!!</b>	<b>Comprehensive</b>

### TENTATIVE LABORATORY SCHEDULE

DATE	WEEK	TOPIC	LAB EXERCISE
Jan 9	1	<b>No Labs</b>	*
Jan 14/16	2	<b>Measurement Techniques</b>	Bio 101 #1 Lab Manual
Jan 21/23	3	Analysis of Measurement Results Recitation	*
Jan 28/30	4	<b>Organic Molecules in Cells</b>	Bio 101 #2 Lab Manual
Feb 4/6	5	Analysis of Organic Molecules Results Recitation	*
Feb 11/13	6	<b>Cells and Microscopy</b>	Bio 101 #3 Lab Manual
Feb 18/20	7	Analysis Cells and Microscopy Results Recitation	*
Feb 25/27	8	<b>Enzymes</b>	Bio101 #4 Lab Manual
Mar 4/6	9	Analysis of Enzymes Results Recitation	*
Mar 11/13	10	<b>Spring Break - No Labs!!!</b>	*
Mar 18/20	11	<b>Photosynthesis</b>	Bio 101 #5 Lab Manual
Mar 25/27	12	Analysis of Photosynthesis Results Recitation	*
Apr 1/3	13	<b>Chi Square and Mendelian Genetics</b>	Bio 101#7&8 Lab Manual
Apr 8/10	14	<b>No Labs</b>	*
Apr 15/17	15	Analysis of Chi Square, Mendelian Genetics Results Recitation	*
Apr 22/24	16	<b>No Labs</b>	*

**Laboratory schedule.** Each assigned laboratory assignment is comprised of one or more sessions. In general, the first session is a "wet" laboratory exercise. During these labs, the student will complete experiments that require development of a hypothesis, experimental design, hypothesis testing, and drawing conclusions. The notes and results of these exercises must be maintained in the laboratory notebook. The general procedure for each exercise will be obtained from the laboratory manual and your instructor.

**Data analysis and Recitation.** Each laboratory exercise will be followed by a second laboratory period that will be used by student laboratory groups to compose a laboratory report based on the data collected from the previous "wet" lab. Each laboratory group will synthesize individual results into a single written report to be turned into the instructor. The format of this report will be that of a scientific paper. Approximately one-hour of this period will be designated as a recitation period during which the instructor and students will discuss biological concepts and principles in a small group setting. Eighty percent (80%) of your grade for each lab will be determined by the grade that you receive on your notebook and group lab report.

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