

**BIOL 1951H, Honors Biology: Cellular Processes**  
**Spring Semester 2013, Section A (CRN# 20680, 4 Credit hours)**  
Department of Biology, College of Arts & Science, Valdosta State University

**Lecture (BC 1025):** T & R 2:00 p.m. – 3:15 p.m.

**Laboratory (BC 1046):** W 2:00 p.m. - 3:50 p.m.

**Instructor:** Dr. Brian C. Ring  
Office: BC 2084  
Office hours: **M / W** 11:00 a.m. – 12:00 p.m.  
Phone: 249-4841 (Dept. office 333-5759)  
Email: bcring@valdosta.edu (**please use WebCT first**)

**Pre-Requisites:** None but reserved for students admitted to the Honors Program.

**Course Description:** An introduction to the fundamental principles of cell and molecular biology. Prokaryotic and eukaryotic development will focus on the relationship of structure and function. Cellular solutions to fundamental problems such as cell recognition, energy acquisition and conversion (metabolism), genetic transmission, and cellular reproduction will be discussed. Taught in an enriched, discussion, and project-oriented classroom environment.

**Course Outcomes:** Upon completion of this course the student should be able to:

- 1) Communicate and describe life at the cellular level with a historical and contemporary perspective on humanity both in scientific curiosity and ethical concerns (**HP2, HP5, & GE4**);
- 2) Identify and discuss, among your peers, common methods and themes cells employ for motion, metabolism, gene regulation, reproduction and how multicellular life begins and maintains itself (**HP4 & GE4**);
- 3) Demonstrate scholarly research and presentation skills through primary literature searches, written summaries, and presentation of findings related to the field of cell biology (**HP1, HP2, HP5, GE4**);
- 4) Develop practical laboratory knowledge and skills by guided hands-on experimentation and independent scientific investigation using the scientific method, followed by quantitative analysis and written lab reports (**HP3, HP6, HP7, GE5 & GE7, CCD.1**).

These course outcomes support all of the VSU Honors Program Objectives and the University General Educational Outcomes # 4, 5 & 7 as listed in the VSU Undergraduate Catalogue (see below).

**VSU Honors Program Objectives:**

**HP1.** Effective written communication skills (including ability to use research).

**HP2.** Effective oral communication skills.

**HP3.** Effective quantitative skills.

**HP4.** The ability to analyze and synthesize a broad range of material.

**HP5.** The ability to make meaningful connections between various disciplines.

**HP6.** The ability to formulate a problem, develop a plan of action, and prove or disprove an hypothesis (or to create and produce an original work or do research).

**HP7.** The ability to take greater responsibility for own learning (demonstrate curiosity, motivation, risk-taking characteristics, and the ability to bring to bear logic and knowledge of the issue being discussed).

**VSU General Educational & Core Curriculum Outcomes:**

**GE4.** Students will express themselves clearly, logically, and precisely in writing and in speaking, and they will demonstrate competence in reading and listening.

**GE5.** Students will demonstrate knowledge of scientific and mathematical principles and proficiency in laboratory practices.

**GE7.** Students will demonstrate the ability to analyze, to evaluate, and to make inferences from oral, written, and visual materials.

**CCD.1.** Students will demonstrate understanding of the physical universe and the nature of science, and they will use scientific methods and/or mathematical reasoning and concepts to solve problems.

**Required Materials:**

**Text:** Boyce Rensberger. *Life Itself*. Exploring the realm of the living cell. 1996. 1<sup>st</sup> Ed. Oxford University Press (ISBN # 9780195125009)

Gilbert SF, Tyler AL, Zackin, EJ. *Bioethics & the new embryology*. 2005. Sinauer & Associates, Inc. (ISBN # 9780716773457)

**Laboratory Manual:** Biology 1040L: Organismal Biology Lab Manual. 2009. 8<sup>th</sup> Ed. Cengage Learning (ISBN# 978111107352)

**Graded Course Components:** Your final grade will be based on your performance and participation in lecture and

the laboratory as outlined below.

**Lecture/Discussion Sessions:** (70%) Students will be graded on their performance during lecture time based on the following criteria: **(1)** Chapter Summaries, **(2)** Quizzes, **(3)** Topic Lead, and **(4)** Participation.

Students are responsible for reading the assigned material and completing the chapter summaries before coming to lecture/discussions. The chapter summary questions are posted on the BlazeView Course Page. Chapter summaries may be collected at the beginning or end of a topic session. Quizzes are composed primarily of short answer questions broadly covering the chapter summaries and readings.

Each student will lead at least one lecture topic series (100 pts total) by **a)** serving as moderator(s) of the chapter summary topic (30 pts), **b)** completion of a written sub-topic search (40 pts), and **c)** presentation of the sub-topic (30 pts). More details of this assignment will be provided by the instructor.

Participation is key to the success of this course. We will use the chapter summaries as a guide to our readings and discussion of the course material, but this will not limit our discussion topics. Videos or other material related to the topic will also be presented during lecture time by you and your peers. Students are encouraged to critically think about cell biology as it relates to humanity and form their own questions or objective opinions to present among their peers. Cell biology relates to our everyday lives and it is important that you the student develop the basic knowledge of the field to contemplate throughout your life. New to this semester is the addition of Bioethics where we will discuss

Finally, there are **NO Assignment Make-ups**. Missed assignments are recorded as zero.

**Laboratory:** (30%) Students will be graded on their performance in laboratory based on two major criteria:

**(1)** Laboratory Reports and **(2)** Lab Project Proposal & Paper. All lab reports are due within one week of finishing a lab, generally by the next lab session. The independent lab project proposal and paper will be described in class.

**Grade Calculation & Distribution:** Final grades will be based on a percentage of your cumulative points relative to the total points possible (e.g. 400/500 = 80% = B). See below chart.

Grade Calculation		Grade Distribution		
Category	Possible Points	Letter	Percentage	Point Range
Chapter Sums (24)	120	A	90-100%	450-500
Quiz (2)	40	B	80-89%	400-449
Topic Lead	100	C	70-79%	350-399
Participation	50	D	60-69%	300-349
Lab Reports (5)	50	F	≤ 59%	≤ 299 points
Lab Project Paper	100			
<b>Total</b>	<b>500</b>			

**Mid-term and Attendance:** Students will have several lecture and laboratory assignments to determine their overall grade by the Mid-Term and decide whether to withdraw at the deadline date (**2/28/2013**). Attendance in this course is mandatory and each missed lecture will result in **5 points** lost from your participation grade and missed course time equivalent to greater than 20% (~6 days) will result in a failing grade as per University policy. Attendance may be taken at any time during the lecture or laboratory and used as an indicator of class participation as noted. Laboratories in particular are important not to miss as you will not be able to prepare your lab reports. If you miss more than 2 laboratory sessions you will fail this course as per University policy. If you are late, your attendance may not be acknowledged. The student is responsible for all material missed regardless of the reason for absences. In the event that a student will miss a lecture or lab, s/he should notify the instructor in writing by email and be prepared to provide documentation of the excused absence. It is the instructor's prerogative to accept the excuse or not. **ABSOLUTELY NO LECTURES OR LABORATORIES CAN BE "MADE UP."**

**Student identification:** Students should have in their possession at all times their VSU student identification card. In order to verify the identification of students officially enrolled in the course, it is the instructor's prerogative to request official student photo identification cards at any time during lecture or during exams.

**Academic Dishonesty (e.g. cheating or plagiarism):** A student cheating or plagiarizing will be penalized by receiving a zero for the assignment and will be reported to the dean of students. Refer to the Student Code of Ethics in the VSU Student Handbook.

**Privacy Act (FERPA):** The Family Educational Rights and Privacy Act (FERPA) prohibit the public posting of grades by social security number or in any manner personally identifiable to the individual student. No grades can be given by email or over the telephone, as positive identification cannot be made by this manner.

**Students with Disabilities:** Students requesting classroom accommodations or modifications because of a documented disability must let me know and must also contact the Access Office for Students with Disabilities located in room 1115 Nevins Hall. The phone numbers are 245-2498 (voice) and 219-1348 (tty).

## TENTATIVE LECTURE & LABORATORY OUTLINE:

Week:	Date:	Topics:	Chapter:	Laboratory Topic:
1	Jan. 08 (T)	Course Introduction & Objectives	--	<b>NO LAB</b>
	Jan. 10 (R)	<b>Bioethics Debate Discussion (TLs)</b>	--	
2	Jan. 15 (T)	Life Itself: <b>A Particle of Life</b>	1	Introduction, Safety, & Lab Reports (Exercise 1)
	Jan. 17 (R)	Life Itself: <b>Molecular Motors</b>	2	
3	Jan. 22 (T)	Life Itself: <b>Animation</b>	3	L1: mtDNA Isolation & Amplification from cheek cells
	Jan. 24 (R)	Life Itself: <b>The Living Room Cell</b>	4	
4	Jan. 29 (T)	Life Itself: <b>How Genes Work</b>	5	L2: mtDNA PstI Digestion & Electrophoresis
	Jan. 31 (R)	Continued	--	
5	Feb. 05 (T)	<b>Special Topic: GENOMIC MEDICINE</b>	<b>TBA</b>	L3: Human Physiology of Sense (Ex. 10)
	Feb. 07 (R)	Life Itself: <b>One Life Becomes Two</b>	6	
6	Feb. 12 (T)	<b>Quiz 1: Chapter Summaries 1-6</b>	--	L4: Bacterial Transformation of GFP
	Feb. 14 (R)	Life Itself: <b>Two Lives Become One</b>	7	
7	Feb. 19 (T)	Life Itself: <b>Constructing A Person</b>	8	L5: Analyze GFP bacteria & Embryo Origami of Chicken Development microscopy
	Feb. 21 (R)	Life Itself: <b>Pumping Protein</b>	9	
8	Feb. 26 (T)	Life Itself: <b>Heal Thyself</b>	10	<b>Ideas &amp; Discussion:</b> <b>Independent Lab Proposal</b>
	<b>Feb. 28 (R)</b>	<b>Midterm- last day to drop course</b>	--	
	Feb. 28 (R)	Life Itself: <b>In Self Defense</b>	11	
9	Mar. 05 (T)	Life Itself: <b>Revolution</b>	12	<b>Independent Lab Experiment</b>
	Mar. 07 (R)	<b>Quiz 2: Chapter Summaries 7-12</b>	--	
10	Mar. 12 (T)	Bioethics Unit 1: <b>When Does Human Life Begin?</b>	1	<b>Independent Lab Continued</b>
	Mar. 14 (R)	<b>Student Topic Lead (TL)</b>	2	
11	Mar. 19 (T)	<b>Spring Break- NO CLASS T &amp; R</b>	--	<b>NO LAB</b>
	Mar. 21 (R)		--	
12	Mar. 26 (T)	Bioethics Unit 2: <b>Should Assisted Reproduction Be Regulated?</b>	3	L8: Metabolism (Ex. 11), Record Calories & Energy Expenditure (Ex. 12 & 13)
	Mar. 28 (R)	<b>Student TL</b>	4	
13	Apr. 02 (T)	Bioethics Unit 3: <b>Should We Select The Sex of Our Children?</b>	5	L9: Energy Budget (Ex. 12) & Body Composition (Ex. 13)
	Apr. 04 (R)	<b>Student TL</b>	6	
14	Apr. 09 (T)	Bioethics Unit 4: <b>Should We Allow Human Cloning?</b>	7	L10: Forensic Microscopy (Ex. 6)
	Apr. 11 (R)	<b>Student TL</b>	8	
15	Apr. 16 (T)	Bioethics Unit 5: <b>Should We Use Stem Cells to Repair The Body?</b>	9	L11: Circulation (Ex. 14, circulation anatomy & cycle) <b>Lab Project Paper Due</b>
	Apr. 18 (R)	<b>Student TL</b>	10	
16	Apr. 23 (T)	Bioethics Unit 6: <b>Should We Modify the Human Genome?</b>	11	L12: Circulation Cont. - Blood pressure (Ex. 14)
	Apr. 25 (R)	<b>Student TL</b>	12	

**Grade Breakdown:** Grades are expressed as a percentage of your points (x) divided by the possible (y) as tabulated below. Therefore, you may determine your grade by this method at any point in the semester [e.g. (x/y) X 100].

**Lecture** (350 pts, 70%)

Type	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	CS9	CS10	CS11	CS12	Etc.	Q1	Q2	TL	Par	Total
You																		
possible	5	5	5	5	5	5	5	5	5	5	5	5		20	20	100	50	350

**Lab** (150 pts, 30%)

Type	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	P1	P2	Total
You													
possible	10	10	10	10	10	10	10	10	10	10	10	40	150

CS= Chapter Summary, Q=Quiz, TL= Topic Lead, Par= Participation, L= lab report, P1= lab proposal, P2=lab paper