

# EDISON STATE COLLEGE

Division of Arts and Sciences

---

---

## COMMON COURSE SYLLABUS

**PROFESSOR:** WILLIAM H. WILCOX, Ph.D.

**OFFICE LOCATION:** SC-104 (Bldg. G)

**EMAIL:** bwilcox@edison.edu

**PHONE:** 941 626-2881

**OFFICE HOURS:** As Posted, or call for appt.

**SEMESTER:** Spring 2010

### I. COURSE NUMBER AND TITLE, CATALOG DESCRIPTION, CREDIT HOURS:

#### **BSC 1010 – BIOLOGICAL SCIENCE I – AA – 3 CREDIT HOURS**

This introduction to cell biology is designed to meet entrance requirements for upper division majors in biology, psychology or other pre-professional programs. The course addresses and integrates concepts associated with the basic physical and chemical properties of living matter as they relate to the structure and function of the cell, cell reproduction, Mendelian and molecular genetics (DNA replication and gene expression), energy metabolism, metabolic control systems, and cell to cell communication systems.

### II. PREREQUISITES FOR THE COURSE:

Minimum score of {(SAT-R 440 quantitative and 440 verbal) or (ACT-E 19 math, 18 reading and 17 English) or (FCELP 72 math, 83 reading and 83 sentence skills)} and {BSC 1005 or high school biology} with a "C" or better

Corequisite: BSC1010L

### III. GENERAL COURSE INFORMATION:

- The chemical basis of life
- Functional organization of prokaryotic and eukaryotic cells
- The cell theory as evidenced in prokaryotic and eukaryotic cell cycles and associated mechanisms of control
- The role of chromosomes in heredity, their prokaryotic and eukaryotic structure and replication (DNA biosynthesis)
- The "anatomy" of prokaryotic and eukaryotic genes, their transcription and translation and the regulation of these processes
- The origin of new genetic variations (mutations) as errors in DNA replication, crossing over or non-disjunction
- Genetic engineering and the Human Genome Project
- The functional roles of proteins, the products of gene expression
- Patterns of Mendelian inheritance and the protein basis of the origin of alleles

# EDISON STATE COLLEGE

Division of Arts and Sciences

---

---

- An introduction to energy and metabolism (role of enzymes in catabolism and anabolism)
- The structural and functional roles of membranes with an emphasis on the functions associated with lipids and proteins
- Catabolic energy yielding metabolisms associated with carbohydrates, fatty acids or amino acid skeletons associated with fermentation or respiration and the energy consuming, anabolic process of photosynthesis
- Cell communication mechanisms and their role in control of metabolic pathways and gene expression

## IV. LEARNING OUTCOMES AND ASSESSMENT:

### **GENERAL EDUCATION COMPETENCIES:**

General education courses must meet at least four out of the five following outcomes. All other courses will meet one or more of these outcomes.

*Communication (COM):* To communicate effectively using standard English (written or oral).

*Critical Thinking (CT):* To demonstrate skills necessary for analysis, synthesis, and evaluation.

*Technology/Information Management (TIM):* To demonstrate the skills and use the technology necessary to collect, verify, document, and organize information from a variety of sources.

*Global Socio-cultural Responsibility (GSR):* To identify, describe, and apply responsibilities, core civic beliefs, and values present in a diverse society.

*Scientific and Quantitative Reasoning (QR):* To identify and apply mathematical and scientific principles and methods.

### **ADDITIONAL COURSE COMPETENCIES:**

At the conclusion of this course, students will be able to demonstrate the following additional competencies:

LEARNING OUTCOMES	ASSESSMENTS	GENERAL EDUCATION COMPETENCY
Construct the atomic structure of simple elements using the periodic table.	Successfully complete one or more of the following: exams; quizzes; collaborative problem solving exercises; or data interpretation and analysis exercises.	CT, QR
Critically discuss the special properties of water that make it a necessary component of life.	Successfully complete one or more of the following: exams; quizzes; writing assignments; debates; oral, written, or electronic presentations; discussion forums; or data interpretation and analysis exercises.	QR, CT, COM

# EDISON STATE COLLEGE

Division of Arts and Sciences

Identify molecular bonds and apply bonding concepts to the four major organic molecules of life.	Successfully complete one or more of the following: exams; quizzes; debates; oral, written, or electronic presentations; discussion forums; or data interpretation and analysis exercises.	QR, CT
Compare and contrast the similarities and differences between prokaryotic and eukaryotic cell structure and function.	Successfully complete one or more of the following: exams; quizzes; writing assignments; oral, written, or electronic presentations; discussion forums; or data interpretation and analysis exercises.	QR, CT, TIM, COM
Analyze and appraise critical functions played by the lipid and protein components of cell compartmentalization of eukaryotic cells.	Successfully complete one or more of the following: exams; quizzes; writing assignments; debates; oral, written, or electronic presentations; discussion forums; or data interpretation and analysis exercises.	QR, CT, TIM
Defend the current theories of enzyme structure and function and the role of enzymes in metabolism the role of enzymes in metabolism.		QR, CT, COM
Critically discuss the energy yielding, catabolic pathways of glycolysis and cellular respiration, and evaluate the significance of fermentation, and their significance to living organisms.		QR, CT, COM
Explain the anabolic pathways associated with photosynthesis and their significance to living organisms.		QR, CT, COM
Analyze the concepts involved in cell-to-cell communication.	Successfully complete one or more of the following: exams; quizzes; writing assignments; debates; oral, written, or electronic presentations; or discussion forums.	CT, COM
Compare and contrast cell cycles of prokaryotic and eukaryotic cells and associated controls.		QR, CT, COM
Analyze Mendelian patterns of inheritance and solve simple genetics problems.	Successfully complete one or more of the following: exams; quizzes; writing assignments; debates; case studies; oral, written, or electronic presentations; discussion forums; collaborative problem solving exercises; or data interpretation and analysis exercises.	QR, CT
Determine relationships between molecular genetics and Mendelian inheritance.		QR, CT
Describe and explain the		QR, CT, COM

# EDISON STATE COLLEGE

Division of Arts and Sciences

---

---

processes involved in the replication and repair of DNA.		
Appraise the role of transcription and translation of genes in cellular control.	Successfully complete one or more of the following: exams; quizzes; writing assignments; debates; oral, written, or electronic presentations; discussion forums; or data interpretation and analysis exercises.	CR, CT
Analyze and appraise methods used to genetically engineer an organism or to map its entire genome.	Successfully complete one or more of the following: exams; quizzes; writing assignments; debates; oral, written, or electronic presentations; discussion forums; collaborative problem solving exercises; or data interpretation and analysis exercises.	COM, GSR, QR, CT

## V. DISTRICT-WIDE POLICIES:

### **PROGRAMS FOR STUDENTS WITH DISABILITIES**

Edison State College, in accordance with the Americans with Disabilities Act and the College's guiding principles, offers students with documented disabilities programs to equalize access to the educational process. Students needing to request an accommodation in this class due to a disability, or who suspect that their academic performance is affected by a disability should contact the Office of Adaptive Services at the nearest campus.

Lee Campus	Taeni Hall S-116A	(239) 489-9427
Charlotte Campus	Student Services SS-101	(941) 637-5626
Collier Campus	Admin. Bldg. A-116	(239) 732-3918
Hendry/Glades Ctr.	LaBelle H.S.	(863) 674-0408

## VI. REQUIREMENTS FOR THE STUDENTS:

Do well on tests, and be nice.

## VII. ATTENDANCE POLICY:

Absences and tardiness are not considered in grading as long as tardy students enter the lab without making disruptive sounds. See disruptive behavior under VIII Grading Policy. However, the number one problem employers tell us they have with Edison graduates, and the number one cause of termination, is their inability to arrive on time and prepared for work. Do not embarrass yourself or Edison with tardiness.

Brief quizzes will be given at the start of class. Class will start at the scheduled time as shown by the clock in the classroom. It is a good idea to arrive 5 minutes early. Students arriving late will not be allowed to take a quiz in progress.

# EDISON STATE COLLEGE

Division of Arts and Sciences

---

No makeup quizzes or exams are provided unless arrangements are made significantly in advance.

If you encounter an unforeseen problem that will cause you to be late call my cell phone at 941 626-2881 at least 5 MINUTES PRIOR TO THE START OF CLASS and let me know. Failure to call will require that you seek any material you miss from your fellow classmates.

Any student encountering a real problem will have my full support and assistance regardless of the above requirements.

(12/26/09)

## VIII. GRADING POLICY:

Percent scores will be converted to grades based on the following, unless otherwise modified as discussed below:

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

Your grade is comprised of your scores on quizzes (1/3), exams (1/3) and your portfolio (1/3).

Quizzes will be given during most classes. Many quizzes will be given at the beginning of class.

Exam grades will be computed by adding up the exam scores and the comprehensive final exam score and dividing by the total number of exams. I reserve the right to overweight the final exam when students perform exceptionally well on the final.

Make up exams are not be provided unless arrangements are made significantly in advance.

Portfolio grades will be based 25% on format, 25% on content, and to assure the student did the portfolio largely unassisted and acquired the information in their portfolio, half the portfolio score will be based on exams covering portfolio topics.

Disruptive behavior, especially tardy students making noise upon entering, will result in 3 points per disruptive event being deducted from your final lab average. Behavior will be judged disruptive if in the professor's opinion it interferes with fellow student's ability to hear or focus on class activities.

(Note: The "incomplete" grade ["I"] will be given only when unusual circumstances warrant. An "incomplete" is not a substitute for a "D," "F," or "W."

# EDISON STATE COLLEGE

Division of Arts and Sciences

---

---

**IX. REQUIRED COURSE MATERIALS:**

*Biology* by Campbell, Reece, et. al, 8<sup>th</sup> Edition. Some find CD and collateral materials helpful, but they are not required.

**X. RESERVED MATERIALS FOR THE COURSE:**

Other special learning resources may be announced from time to time

**XI. CLAST COMPETENCIES INVOLVED IN THIS COURSE.**

Successful students need to be able to read and comprehend technical information, take good notes, arrive on time and be nice.

**XII. CLASS SCHEDULE: The class will progress through these chapters in sequence.**

1. Introduction: Themes in the Study of Life  
Unit 1: The Chemistry of Life
2. The Chemical Context of Life Periodic Chart of Elements
3. Water and the Fitness of the Environment
4. Carbon and the Molecular Diversity of Life
5. The Structure and Function of Macromolecules
6. The Cell  
Unit 2: The Cell
7. Membranes
8. An Introduction to Metabolism
9. Cellular Respiration: Harvesting Chemical Energy
10. Photosynthesis
11. Cell Communication
12. The Cell Cycle: mitosis and binary fission  
Unit 3: Genetics
13. Meiosis and Sexual Life Cycles
14. Mendel and the Gene Idea
15. Chromosomal Basis of Inheritance
16. The Molecular Basis of Inheritance
17. From Gene to Protein
18. Regulation of Gene Expression 1
19. Viruses
20. Biotechnology

**XIII. ANY OTHER INFORMATION OR CLASS PROCEDURES OR POLICIES:**

# EDISON STATE COLLEGE

Division of Arts and Sciences

---

TBA