

## BIO 110 - **INTRODUCTORY BIOLOGY** – FALL, 2013 (SECTION 81)

LECTURE: TUESDAY AND THURSDAY 6:00 – 7:27 PM

LAB: 7:30 – 9:26PM THURSDAY

### **Course Description:**

Students will investigate the nature of science and critically analyze scientific data and current biological issues. Basic biological concepts including cell structure and function, molecular biology, biotechnology, nutrient cycles, and evolution are presented in the context of current issues. This course is designed for non-science majors, and includes a laboratory component. Prerequisites: ENG 085, 090, and MAT 020

The main focus of this course is improving scientific literacy. The course material provides the biological foundation of concepts and terms to understand current topics. Although this is an introductory course, “introductory” doesn’t mean “easy”, but that the course does not require background knowledge in biology. Students will need to spend significant time studying to succeed – JCC’s recommendation is 2 hours per week per credit hour = 8 hours a week for this course. Students successfully completing the course should develop lifelong skills to critically evaluate scientific information.

### **Course Objectives:**

Students successfully completing this course should be able to:

- Describe the nature of science as a self correcting process.
- Identify cell structures and describe their functions.
- Explain the origin of cancer cells and factors affecting their growth.
- Understand the basic structure and function of DNA.
- Describe basic biotechnology procedures and applications
- Understand the mechanisms of evolutionary change and how evolution differs from non-scientific explanations.
- Understand the factors affecting global warming and other human impacts on the environment

**Instructor:** Prof. Michael Dexter

**Phone:** (517) 437-3343 x 3054

**Office:** First door on right, by main entrance

**e-mail:** [dextermichaela@jccmi.edu](mailto:dextermichaela@jccmi.edu)

<b>Office Hours:</b> Monday and Wednesday: 12:00 – 4:00 p.m. (Other times by appointment)
--

### **Required Materials:**

Text: Biology: Dimensions of Life, Presson & Jenner, ISBN 978-0-07-295267-4

Lab Packet : available at the bookstore

Course Pack: available at the bookstore

Calculator: especially helpful in lab; cell phones or other electronic devices may not be used during exams or quizzes

**Associate Degree Outcomes:**

The Board of Trustees has determined that all JCC graduates should develop or enhance certain essential skills while enrolled in the college. The Associate Degree Outcomes addressed in this class are:

ADO 4: Scientific Reasoning. Students will be able to design and carry out valid experiments to assess a given hypothesis, and to draw appropriate conclusions based on the results.

ADO 7: Critical Thinking. Students will learn to critically analyze and interpret scientific data from scientific experiments, as in the analysis carried out in numerous labs that involve interpreting and graphing data.

Incompletes - Consistent with JCC policy, incompletes are granted with instructor permission only in situations where a student is passing the course and encounters an unusual emergency that prevents him or her from completing coursework.

Instructor Absence/School Closing: If I am unable to attend class, the building secretary will be notified, and a notice will be posted outside our room. If the college is closed due to inclement weather, announcements are made on local radio stations. With the exception of these two situations, **ASSUME WE WILL HAVE CLASS.**

Plagiarism and Cheating - Be sure that homework and any assignments are your own work. Copying anyone else's work is **plagiarism**, and plagiarized work will **not be accepted**. Evidence of plagiarism or cheating on any exam, lab, lab quiz or assignment will result in a "0" score for that assignment and notification of the Academic Dean - please see the attached JCC Academic Honesty Policy.

Extra Credit - is not given in the course. Focus your time and energy on completing course assignments and studying for lab quizzes and lecture exams.

Course Help and Special Needs - if you have special needs that I should be aware of in order to help you to best learn course material, please let me know as soon as possible. Students requiring special assistance (including those affected by the Americans With Disabilities Act) should contact the Center for Student Success in Bert Walker Hall, Room 123, 796-8415. Tutoring services are free at JCC - if at any point in the course you feel that you would benefit from a tutor, contact me and/or the CSS.

JetNet Resources – reliable computer access is necessary for this course, as some course materials can be accessed only through the JetNet course management system. I will post announcements and grades, as well as many other course materials like discussion papers through this system. Simply type in the URL <http://classes.jccmi.edu>. or access JetNet through the JCC web page by choosing "Online classes".

Grading Scale - Grades will be rounded to the nearest percent. Grades may be curved at the instructor's discretion.

<u>Percent</u>	<u>Grade</u>	<u>Percent</u>	<u>Grade</u>	<u>Percent</u>	<u>Grade</u>
90 - 100%	4.0	75 - 79 %	2.5	60 - 64 %	1.0
85 - 89 %	3.5	70 - 74 %	2.0	55 - 59 %	0.5
80 - 84 %	3.0	65 - 69 %	1.5		

### Student Responsibilities:

Attendance - I expect that you will do your best to attend every class. Because testing is primarily from lectures, and discussion papers are only accepted from those completing a discussion in person, missing class will negatively affect your grade.

Keep Up With Homework - If you miss class, it is your responsibility to find out if homework is due on the day you return. In-class assignments cannot be made up.

Contribute to a courteous learning environment – Our class time is valuable. Please be punctual, especially on exam days, to avoid disruption to others and to be aware of class announcements. Anyone who interferes with the learning of others will be asked to leave class. This includes talking while I am talking, texting or using cell phones or other devices during class, or being disruptive or disrespectful to others.

Study - This is a difficult course that will take significant study time outside of class. You will need to use the text and electronic resources, review notes and do study questions to prep for exams and lab quizzes.

### **Grading:**

Lecture accounts for 75% of the overall grade, and is described here. To determine your overall course grade at any point, use the following formula:

$$\text{Course \%} = (\text{Lecture \%} \times 3) + (\text{Lab \%}) / 4$$

Exams – There will be five exams in the course, which may include multiple choice, short answer, fill-in, problem solving, and essay. The lowest of the first four exam scores will be automatically dropped if no exams have been missed. The final exam score may not be dropped.

A missed exam for whatever reason (illness, car trouble, bad weather, etc.) will count as the drop exam – there are no makeup exams. Subsequent missed exams will count as a “zero” except at my discretion, in very unusual circumstances that can be documented, like hospitalization or death in the immediate family.

Homework assignments - will be accepted up to one class day late, but with a 20% point reduction of possible points after the first five minutes of class time the day they are due. Unless otherwise directed, all assignments should be typed, and will not be accepted otherwise. In class assignments cannot be made up. Deadlines are usually not negotiable, and technology failure is not an excuse for late work. Protect your work carefully, including saving early and often, backing up work in more than one place, etc.

Discussion - Reading assignments will be assigned periodically throughout the semester. The papers will be assigned for you to critically read and provide written feedback. Discussion papers **MUST** be typed and will be graded on both content and grammar. They will only be accepted in person during the class period they are due, after participating in the discussion. Participation in the class discussion is a component of your final grade. See the discussion paper guidelines on the following page.

### Discussion Question Requirements:

Discussion is our opportunity to critically consider concepts that are being discussed in lecture. It is expected that you read the discussion articles thoroughly, most likely more than once. You will be given a series of questions to answer based on the reading assignment. When answering the questions be sure to:

1. Write complete sentences and paragraphs (at least 3 sentences) for each question. Answers of less than three sentences will lose a minimum of 1 pt.
2. Include the questions in the same document with your answers. Discussion responses without the questions included will not be accepted.
3. Use correct grammar, punctuation and sentence structure. These common errors will cause a loss of points.

Using "scientist" when you mean the plural, "scientists"

Using "it's" for "its" possessive – "its" possessive does not have an apostrophe

Incorrect spelling of key words in the article

Correctly using "then" (usually a reference to time or sequence) vs. "than" – (used for comparison)

Incorrect matching of singular and plural nouns with the correct form of the verb

Using apostrophes incorrectly to designate plural forms of nouns. Apostrophes are typically appropriate for contractions or to indicate possession.

4. Give responses in your own words, except for brief references to the author's actual words, where you should use quotation marks. Using the author's words rather than your own will minimally cause a loss of 1 pt. per response, or the paper may be returned to you as unacceptable.
5. Have your responses in a hard copy and in a typed format at the beginning of the class they are due. This is the **only way** they will be accepted. You must be present for a discussion to get discussion points.
6. Address all parts of the question asked, and support your answers with examples.

Each discussion paper will be worth 15 points. If you miss a discussion assignment, you may do one make-up assignment that consists of a 2 page typed review of an article from a science magazine that you will get from me or may need to find if copies are unavailable (on-line versions are not acceptable). A rubric for the makeup will be provided to you. You must obtain the makeup article within a week of the date the original discussion was due, and you will have one week to complete the makeup.

### **Academic Honesty Policy**

Academic honesty is expected of all students. It is the ethical behavior that includes producing their own work and not representing others' work as their own, either by plagiarism, by cheating, or by helping others to do so.

**Plagiarism** is the failure to give credit for the use of material from outside sources. Plagiarism includes but is not limited to:

- Using data, quotations, or paraphrases from other sources without adequate documentation
- Submitting others' work as your own
- Exhibiting other behaviors generally considered unethical

**Cheating** means obtaining answers/material from an outside source without authorization. Cheating includes, but is not limited to:

- Plagiarizing in all forms
- Using notes/books without authorization
- Copying
- Submitting others' work as your own or submitting your work for others
- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical

### **Collaboration**

While JCC encourages students to collaborate in study groups, work teams, and with lab partners, each student should take responsibility for accurately representing his/her own contribution.

### **Consequences/Procedures**

A faculty member who suspects a student of academic dishonesty may penalize the student by taking appropriate action up to and including assigning a failing grade for the paper, project, report, exam or the course itself. Instructors should document instances of academic dishonesty in writing to the Dean of Faculty.

### **Student Appeal Process**

In the event of a dispute, both students and faculty should follow the Conflict Resolution Policy. The policy is presented in the Student Rights and Responsibilities section of the student handbook. The first step of this process is to set up a scheduled conference with the **instructor** to discuss the issues of concern.

**Tentative Topics Schedule\*:** (\* Schedule may be altered as events in science arise)

<u>Date:</u>	<u>Topic:</u>	<u>Thursday Lab/Discussion:</u>	<u>Chapter Reading:**</u>
8/27	Introduction		Chapter 1
8/29	The Nature of Science	Lab Safety/Experimentation I	Chapter 1
9/3	How Does Science Work?	Nature of Science Discussion	Chapter 1
9/5	What is Life?	Experimentation II	Chapter 1
9/10	Statistical Significance		Chapter 1, JetNet Sources
9/12	Statistical significance	Measurement	Chapter 1, JetNet Sources
9/17	Standard Error and P-Values		Chapter 1, JetNet Sources
9/19	<b>Lecture Exam #1</b> (SG 1-3)	Biostatistics and Forensics	
9/24	<b>Fall Convocation – No Classes</b>		
9/26	The Chemistry of Life	Forbes/Dawkins Discussion	Chapter 5
10/1	Carbohydrates		Chapter 5
10/3	Lipids	MHC Discussion/Microscope	Chapter 5
10/8	Lipids and Your Health	Cells / <b>Lab Quiz #1</b>	Chapter 5
10/10	Proteins	<b>(Measurement, Biostats, Microscope)</b>	Chapter 5
10/15	<b>Lecture Exam #2</b> (SG 4-5)		
10/17	Nutrients & Nucleic Acids	Cancer Warrior	Chapter 6, Chapter 7
10/22	Plasma Membranes & Cell Structure		Chapter 6 & 7, 10.1, 11
10/24	Cell Structure (continued)	Epidemiology / <b>Lab Quiz #2 (Cells, Cancer Warrior)</b>	
10/29	Cancer Basics		Chapter 14
10/31	<b>Lecture Exam #3</b> (SG 6-8)	DNA Structure and Extraction	
11/5	Mutations		Chapter 11
11/7	Cancer Biology and Treatment	Genetics / <b>Lab Quiz #3</b>	Chapter 16
11/12	Biotechnology – DNA Fingerprinting		Chapter 16
11/14	Genetic Engineering, PCR	Biotechnology / DNA Fingerprinting	
11/19	Mitochondrial DNA		Chapter 16
11/21	<b>Lecture Exam #4</b> (SG 9-10)	Evidences for Evolution	
11/26	Darwin's dangerous idea		Chapter 17.4, 20.1
11/28	<b>Thanksgiving Break – No Classes</b>		
12/3	Evidences for Evolution		Chapter 17, Chapter 18
12/5	Natural selection	Natural Selection / Population Genetics / <b>Lab Quiz #4</b>	
12/10	The Biosphere / Global Change		Chapter 21, Chapter 25
12/12	<b>*Lecture Exam V</b> (SG 11-13)		

\*\* Discussion papers and additional chapter sections may be required for each topic

JCC Learning Contract – BIO 110- F11

I have read the BIO 110 course information packet (course information, course calendar and academic honesty policy). I understand the information they contain. However, I would like public/private clarification (circle one) on the items I have described below:

.....

Print Name \_\_\_\_\_

Signature \_\_\_\_\_

The return of this sheet is an assignment worth 2 pts.