COURSE SYLLABUS

BIOLOGY – 1406
GENERAL BIOLOGY for SCIENCE MAJORS-1

EASTFIELD COLLEGE
STEM DIVISION
Spring – 2019 (Second 8-weeks)

INSTRUCTOR INFORMATION
Jeff Hughes
Office: C-342
Phone: 972-860-7328
Email: jeffhughes@dccc.edu

Office Hours
MTWR 12:10pm – 1:10pm

COURSES and CLASS TIMES

BIOL – 1406.43100
- Lecture 9:30am – 12:10pm (MW) Room – C335
- Lab 6:30am – 9:10am (TR) Room – S307

BIOL – 1406.43101
- Lecture 9:30am – 12:10pm (MW) Room – C335
- Lab 9:30am – 12:10pm (TR) Room – S307

COURSE DESCRIPTION

BIOL 1406 Biology for Science Majors I (4 credit hours)
Prerequisite: One of the following must be met: (1) Developmental Reading 0093 AND Developmental Writing 0093; (2) English as a Second Language (ESOL) 0044 AND 0054; or (3) have met the Texas Success Initiative (TSI) Reading and Writing Standards AND DCCCD Writing score prerequisite requirement. An introductory survey of contemporary biology for students majoring in the sciences. Topics emphasized will include the chemical basis of life, structure and function of cells, energy transformations, and molecular biology and genetics. (3 Lecture, 3 Lab) (Coordinating Board Academic Approval Number 2601015103)

RECOMMENDED TEXTS: (Note: recommended only, you will not be required to purchase these texts)


DEVELOPMENTAL COURSES

The Texas Success Initiative (TSI) is a statewide program designed to ensure that students enrolled in Texas public colleges and universities have the basic academic skills needed to be successful in college-level coursework. The TSI requires assessment, remediation (if necessary), and advising of students who attend a public college or university in the state of Texas. The program assesses a student’s basic academic skills in reading, writing, and math. Passing the assessment is a prerequisite for enrollment in many college-level classes such as English 1301/1302, History 1301/1302, Math 1414, etc. Students who do not meet assessment standards may complete prerequisite requirements by taking developmental courses in the deficient area and passing them with a grade of C or higher. In some cases, retesting will also be required. It is up to each student to be aware and informed about requirements that are subject to change. Additional information is available from the TSI office. https://www1.dcccd.edu/cat0910/admiss/tsi.cfm?loc=4

STUDENT LEARNING OUTCOMES (SLO’s)

Your performance in each of these areas will be judged by grades obtained from assignments and exams that measure your understanding of the textbook material and laboratory experiments requiring you to follow a written procedure to collect and analyze scientific information.

BIOL-1406:

Lecture Learning Outcomes
Upon successful completion of this course, students will:
1. Describe the characteristics of life.
2. Explain the reasoning used by scientists.
3. Identify the basic properties of substances needed for life.
4. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
5. Describe the structure of cell membranes and the movement of molecules across a membrane.
6. Identify the substrates, products, and important chemical pathways in metabolism.
7. Identify the principles of inheritance and solve classical genetic problems.
8. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
9. Describe the unity and diversity of life and the evidence for evolution through natural selection.

Lab Learning Outcomes
Upon successful completion of this laboratory-based course, students will:
1. Be able to apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of investigations.
4. Describe the characteristics of life.
5. Explain the reasoning used by scientists.
6. Identify the basic properties of substances needed for life.
7. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
8. Describe the structure of cell membranes and the movement of molecules across a membrane.
9. Identify the substrates, products, and important chemical pathways in metabolism.
10. Identify the principles of inheritance and solve classical genetic problems.
11. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
12. Describe the unity and diversity of life and the evidence for evolution through natural selection.
CORE OBJECTIVES

BIOL-1406 develops the following Core Objectives:

- **Critical Thinking** - to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.

- **Communication** - to include effective development, interpretation and expression of ideas through written, oral and visual communication.

- **Empirical and Quantitative Skills** - to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

- **Teamwork** - to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

Core Objective Development Statements:

- **BIOL 1406 develops Critical Thinking and Empirical and Quantitative Skills** by requiring students to research, analyze and interpret data derived from an experimental setting and drawing a well-informed conclusion of the data through the application of sound biological concepts. Examples: research paper, case studies, and/or lab reports.

- **BIOL 1406 develops Teamwork and Communication** by requiring students to effectively work in a small group on an assigned problem, exercise or course concept that will then be presented in a written, oral or visual format. Example: lab exercises.

The project that will assess these Core Objectives will be an exercise involving the “Molarity.”

- **Note:** *You will receive 10-extra points on your first lab exam for completing the assessment exercise.*
GRADING RATIONALE

Note: The following grading rationale may be modified by the course instructor with a verbal class announcement.

5 Lecture Exams (100 points each) 500 points
3 Lab Exams (100 points each) 300 points
- Core Assessment (10 points Extra Credit on First Lab Exam)
Writing Assignment (100 points) 100 points
Total 900 – possible points

<table>
<thead>
<tr>
<th>Points Earned</th>
<th>Course Grade</th>
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<tbody>
<tr>
<td>800 – 720</td>
<td>A</td>
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<tr>
<td>719 – 640</td>
<td>B</td>
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<tr>
<td>639 – 560</td>
<td>C</td>
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<td>559 – 480</td>
<td>D</td>
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<tr>
<td>479 – 0</td>
<td>F</td>
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Missed Exams: Students missing one (1) Lecture Exam or one (1) Lab Exam, providing they have notified the instructor of the absence prior to the next class they attend, will have an opportunity to make up the grade for that exam by taking a comprehensive exam the week before the final exam. A student will only be allowed to make up the grade for one missed exam. For each exam a student misses after the first one, the student will receive a grade of zero (0).

Writing Assignment (100-points): Students will be required to review an article from a scientific journal and write a two-page (minimum) summary of the article. The article may be of any topic that interests you but it MUST come from a scientific journal. The article you review should be written in scientific format with the following components: abstract, introduction, materials/methods, results, comments/discussion. If you are not sure the article you are considering is satisfactory for the assignment, verify it with your instructor. In order to receive full credit for your review of the article, you will need to address/answer the following objectives:

1. Who conducted the research?
2. What was the purpose for conducting the research? / Why was it important?
3. What was the hypothesis for the study? / What did they expect?
4. How did they conduct the experiment?
5. What were the results of their experimentation?
6. What did these results mean/indicate to the researchers?
7. What impact does this study have on your life? / How does it affect you?

Your journal review must also:
1. Be typed, double-space, 12-point, 1.0-inch margins, paragraph/essay form.
2. Have a cover page with: your name, course number and section; semester.
3. Have a minimum length of 2-pages.
4. Have a copy of the actual journal article stapled to the back for reference.

Helpful Websites for Locating Free Journal Articles:

www.freemedicaljournals.com
www.jwildlifedis.org
ATTENDANCE POLICY

Students are expected to regularly attend all classes in which they are enrolled. Students have the responsibility to attend class and to consult with the instructor when an absence occurs. Instructors are responsible for describing attendance policies and procedures to all students enrolled in their class.

Religious Holidays/Observances:

Absences for observance of a religious holy day are excused. Notification of the absence must be given to the instructor in writing at least two weeks prior to the date of the holy day. A student whose absence is excused to observe a religious holy day is allowed to contract with the instructor to take a make-up examination or complete an assignment within a mutually agreed upon time after the absence.

DROP / WITHDRAWAL POLICY

If you are unable to complete this course, it is your responsibility to withdraw formally. The withdrawal request must be received in the Registrar’s Office by May 4, 2019. Failure to do so will result in your receiving a performance grade, usually an “F.” If you drop a class or withdraw from the college before the official drop/withdrawal deadline, you will receive a “W” (Withdraw) in each class dropped. For more information about drop deadlines, refer to the current printed Credit Class Schedule, contact the Admissions/Registrar’s Office at 972-860-7167 (Room C119), or contact the division office.

If you drop a class via eConnect, make sure to print a copy of the confirmation and keep the copy. In the event of a discrepancy it will be the responsibility of the student to provide documentation of having dropped the class.

INSTITUTIONAL POLICIES

https://www.eastfieldcollege.edu/syllabipolicies

DISCLAIMER

The instructor reserves the right to amend this syllabus as necessary. The guidelines set forth in this syllabus may be changed, deleted, or amended at any time by the instructor. The attached course outline is intended as an aid in helping you know your responsibilities for the semester. It is possible that some changes in the course outline or class policies will be made during the semester. Any changes that are made to the class policies or course outline will be announced in class.
<table>
<thead>
<tr>
<th>DATE</th>
<th>CHAPTER / TOPIC</th>
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<tbody>
<tr>
<td>March 27</td>
<td>Orientation and Chapter-1: “The Study of Life”</td>
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<tr>
<td>April 1</td>
<td>Chapter-2: “The Chemical Context of Life”</td>
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<tr>
<td>April 3</td>
<td>Chapter-4: “Carbon and the Molecular Diversity of Life” and Chapter-5: “The Structure and Function of Macromolecules”</td>
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<td>April 8</td>
<td>Chapter-3: “Water and the Fitness of the Environment”</td>
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<td>April 10</td>
<td>EXAM-1 and Chapter-6: “A Tour of the Cell”</td>
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<tr>
<td>April 15</td>
<td>Chapter-7: “Membrane Structure and Function”</td>
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<td>April 17</td>
<td>Chapter-8: “An Introduction to Metabolism”</td>
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<tr>
<td>April 22</td>
<td>EXAM-2 and Chapter-10: “Photosynthesis”</td>
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<tr>
<td>April 24</td>
<td>Chapter-10: “Photosynthesis” continued</td>
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<tr>
<td>April 29</td>
<td>Chapter-9: “Cellular Respiration”</td>
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<tr>
<td>May 1</td>
<td>EXAM – 3 and Chapter-12: “The Cell Cycle” and Chapter-13: “Meiosis and Sexual Life Cycles”</td>
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<td>○ Note: Saturday May 4th ----- Last Day to Withdraw with a “W”</td>
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<tr>
<td>May 6</td>
<td>Chapter-14: “Mendel and the Gene Idea”</td>
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<tr>
<td>May 8</td>
<td>Chapter-15: “The Chromosomal Basis of Inheritance”</td>
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<td>May 13</td>
<td>EXAM-4 and Chapter-16: “The Molecular Basis of Inheritance”</td>
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<td>May 15</td>
<td>Chapter-17: “From Gene to Protein” and LECTURE EXAM-5</td>
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<td>DATE</td>
<td>CHAPTER / TOPIC</td>
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<tr>
<td>March 27 / 28</td>
<td>Orientation; Lab Safety; Chapter-2: “Metric System”</td>
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<td>April 1 / 2</td>
<td>Chapter-3: “Microscopy”</td>
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<tr>
<td>April 3 / 4</td>
<td>Molecules of Biological Significance: Part-1 (Handout)</td>
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<tr>
<td>April 8 / 9</td>
<td>Molecules of Biological Significance: Part-2 (Handout)</td>
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<tr>
<td>April 10 / 11</td>
<td>LAB EXAM – 1</td>
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<td>April 15 / 16</td>
<td>Chapter – 5: “Chemical Composition of Living Things”</td>
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<tr>
<td>April 17 / 18</td>
<td>Chapter-6: “Cell Structure &amp; Function” and Chapter-8: “Diffusion &amp; Osmosis”</td>
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<td>April 22 / 23</td>
<td>Topic-9: “Photosynthesis”</td>
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<td>April 24 / 25</td>
<td>LAB EXAM – 2</td>
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<tr>
<td>April 29 / 30</td>
<td>Chapter-11: “Mitosis” and Chapter-12: “Meiosis”</td>
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<tr>
<td>May 1 / 2</td>
<td>Chapter-14: “DNA and the Genetic Code”</td>
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<td>• Note: Saturday May 4th ----- Last Day to Withdraw with a “W”</td>
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<td>May 6 / 7</td>
<td>Chapter-13: “Genetics”</td>
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<tr>
<td>May 13 / 14</td>
<td>LAB EXAM – 3</td>
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<tr>
<td>May 15 / 16</td>
<td>NO LABS ----- Lecture Final Exam</td>
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