This course syllabus is intended as a set of guidelines for Biology 1406. Both North Lake College and your instructor reserve the right to make modifications in content, schedule, and requirements as necessary to promote the best education possible within prevailing conditions affecting this course.

Instructor Information:

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972-273-3516
C-324
Office Hours – MTWRF 2:00 AM – 4:00PM

Course Information

Biology for Science Majors I
Biology 1406
Section numbers: 7511
Credit hours: 4
Class meeting time: 5:45pm MTWRF

Course description: 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 Lec, 3 Lab). Coordinating Board Academic Approval Number 2601015103

Course prerequisites: 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 Texas Success Initiative (TSI) Reading and Writing standards AND DCCCD Writing score prerequisite requirement.

Required or Recommended Textbooks and Materials

Biology, Campbell, Benjamin Cummings, 9th ed., 2011. ISBN:

Course Objectives

1. Recognize the characteristics that distinguish living things from nonliving.
2. Identify the tools used in biological studies such as the microscope, experimental design, scientific problem solving and interrelations between science, technology and society.
3. Define the basic characteristics of matter, the atom, atomic theory and chemical bonding as it relates to the formation of the molecules of life.
4. Describe the unique characteristics of water that make it essential to life on earth.
5. Recognize the properties of carbon that make it central to the molecules of life and the role of functional groups in the characteristics of carbon compounds.
6. Identify the four major groups of biomolecules, their chemical characteristics, the roles they play in life and their basic structural characteristics.
7. Recognize the cell as the structural and functional unit of life while reviewing the cell theory, cellular structure and function, Prokaryotic vs. Eukaryotic cells and the endosymbiotic theory.
8. Describe the fluid mosaic model of membrane structure.
10. Define energy, its role in chemical reaction and reaction mechanisms and the role of enzymes in biological reactions.
11. Review the process of cellular respiration and alternative respiratory pathways recognizing the essential nature of respiration in cellular processes.
12. Recognize the essential nature of photosynthesis to life on earth, identifying the major steps in the process and environmental factors that impact photosynthetic efficiency.
13. Explain the concept of cellular communications at the molecular level focusing on the transduction pathway.
14. Review the role of mitosis and meiosis in the lifecycles of eukaryotes, recognizing the basic steps in each process and identifying how they differ.
15. Identify the basic mechanisms of classical genetics and how they relate to the continuity of life.
16. Explain how DNA was determined to be the genetic material, its molecular structure and how the structure of DNA relates to its role in genetic continuity and expression.
17. Identify the process of protein synthesis and its role in the expression of the genetic code.
Specific Course Learning Outcomes

Students will master the concept of the cell as the structural and functional unit of life.
Students will master basic concepts of chemistry and atomic theory.
Students will understand the role of biological molecules in the chemistry of life.
Students will master basic concepts of cellular physiology such as cellular respiration and photosynthesis.
Students will understand basic principles of heredity.
Students will master basic concepts of molecular genetics including the structure and functions of DNA and RNA in relation to the production of proteins.

Course Outline – Corresponds to chapters in text

<table>
<thead>
<tr>
<th></th>
<th>1. Introduction</th>
<th>2. Basic Chemistry</th>
<th>3. Chemistry of Water</th>
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<td>16.</td>
<td>DNA</td>
<td>17. Protein Synthesis</td>
<td>18. Regulation of Gene Expression</td>
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Means of Assessment of Course Learning Outcomes

Learning outcomes will be assessed by examinations in both lecture and laboratory. Additionally each of the twelve units completed in lab will be assessed by either lab report, quiz or other activities deemed appropriate by the instructor.

Evaluation Procedures

Your grade will be determined from a combination of 6 lecture exams to be given during the semester. Each lecture exam and lab exam is valued at 100 points. The lowest score for lecture exams 1-5 will be dropped from the point total for final grade determination. IF A LECTURE EXAM IS MISSED, MAKE UP MUST BE COMPLETED WITHIN TWO CLASS DAYS AFTER THE EXAM. THE MAKEUP EXAM MAY BE AN ESSAY OR OBJECTIVE EXAM. THE ONLY EXCUSED ABSENCE FROM A LECTURE EXAM IS EITHER SEVERE ILLNESS OR BEREAVEMENT. A SECOND LECTURE EXAM CAN NOT BE MADEUP.
Lecture pop test and/or additional lab assignments may be assigned during the semester. If so the total number of points required for a given grade will change, but your final grade will always be based upon a percentage of the total points, i.e. 90-100 for an A, 80 to 89.99 for a B and so on. **IF GIVEN LECTURE POP TEST CAN BE MADE UP IF MISSED, NO MATTER WHAT THE REASON.**

### Exams and Assignments

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<tr>
<td>Lecture Exams (6)</td>
<td>500</td>
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<tr>
<td>Lab Exam (4)</td>
<td>400</td>
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<td>900</td>
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### Grading Scale

Your final grade will be a combination of both lecture and lab, with lecture representing 70% and lab 30% of the final grade.

### Discipline/ Course/ Department/Policies

Students are expected to be on time for all class activities and to fully participate in class activities. Cell phones should be turned to silent and be put away during class activities. All students are expected to abide by the college Student Code of Conduct.

### INSTITUTIONAL POLICIES

**ACADEMIC DISHONESTY**
The Student Code of Conduct prohibits academic dishonesty and prescribes penalties for violations. According to this code, which is printed in the college catalog, "academic dishonesty", includes (but is not limited to) cheating, fabrication, facilitating academic dishonesty, plagiarism, and collusion". Academic dishonesty may result in the following sanctions, including, but not limited to:
1. A grade of zero or a lowered grade on the assignment or course.
2. A class grade of “F”.
3. Suspension from the college.

**NOTIFICATION OF ABSENCE DUE TO RELIGIOUS HOLY DAY(S)**
Students who will be absent from class for the observance of a religious holiday must notify the instructor in advance. Please refer to the Student Obligations section of the college catalog for more explanation. You are required to complete any assignments or take any examinations missed as a result of the absence within the time frame specified by your instructor.
REQUIREMENTS OF THE AMERICANS WITH DISABILITIES ACT
In accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, any student who feels that he or she may need any special assistance or accommodation because of an impairment or disabling condition should contact the ADA/ACCESS Office at (972) 273-3165 or visit Room A-430 at North Lake College. It is the policy of NLC to provide reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to contact the ADA/ACCESS Office.

DROP POLICY
If you are unable to complete this course, you must officially withdraw by June 25, 2011. Withdrawing is a formal procedure which you must initiate; your instructor cannot do it for you.

All Dallas County Community Colleges charge a higher tuition rate to students registering the third time for a course. This rule applies to the majority of credit and Continuing Education / Workforce Training courses. Developmental Studies and some other courses are not charged a higher tuition rate. Third attempts include courses taken at any DCCCD college since the fall 2002 semester. For further information, go online to: http://www.DCCCD.edu/thirdcourseattempt.

FINANCIAL AID STATEMENT
Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate are also subject to this policy.

To apply for financial aid in the DCCCD, students must complete FAFSA (Free Application for Federal Student Aid) on the web at http://www.fafsa.ed.gov.

COUNSELING SERVICES
Counseling services for personal issues are provided to all students currently enrolled at North Lake College. These services are provided by licensed professionals who are bound by confidentiality (within ethical parameters) at no charge. With the assistance of a counselor, students are able to identify, understand, resolve issues and develop appropriate skills. To make an appointment call 972-273-3333 or visit A 430.

STOP BEFORE YOU DROP
For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions.
Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access: https://www1.dcccd.edu/coursedrops.
**WRITING CENTER (A309)**
The Writing Center supports and supplements classroom instruction by providing focused, individualized writing instruction in response to the specific needs of the student. Its services are available to all North Lake students, not just those enrolled in English classes. The tutors are skilled writing specialists who can help students clarify writing tasks, understand instructors' requirements, develop and organize papers, explore revision options, detect grammar and punctuation errors, and properly use and document sources. Rather than merely editing or "fixing" students' papers, the Writing Center staff focuses on helping students develop and improve their writing skills.

Located in Room A309, the Writing Center is open 8:00 AM to 9:30 PM Monday through Thursday and 8:00 AM to 5:00 PM on Friday. Saturday hours are 9:00 AM to 2:00 PM during fall and spring semesters. Hours will vary during other sessions. Students who have scheduled an appointment in advance will have a tutor available to work with them at their scheduled time. Walk-ins are welcome, but they may have to wait for an opening or make an appointment for a later time, perhaps a later day. To schedule an appointment, come by the Writing Center, call 972-273-3089, or email nlcwritingcenter@dcccd.edu.

**Exemplary Educational Objectives**

This course satisfies all of the Exemplary Educational Objectives for the natural sciences. They are:

1. To understand and apply method and appropriate technology to the study of natural sciences.
2. To recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry and to communicate findings, analyses and interpretation both orally and in writing.
3. To identify and recognize the differences among competing scientific theories.
4. To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values, and public policies.
5. To demonstrate knowledge of the interdependence of science and technology and their influence on, and contribution to, modern culture.
Core Curriculum Intellectual Competencies

This course reinforces 6 of the 6 Core Curriculum Intellectual Competencies defined by the Texas Higher Education Coordinating Board. The CCI’s identified by the DCCCD which are reinforced by Biology 1406 are as follows:

This course reinforces all 6 of the Core Curriculum Intellectual Competencies defined by the Texas Higher Education Coordinating Board.

1. **READING**: Reading at the college level means the ability to analyze and interpret a variety of printed materials--books, articles and documents. A core curriculum should offer students the opportunity to master both general methods of analyzing printed materials and specific methods for analyzing the subject matter of individual disciplines.

2. **WRITING**: Competency in writing is the ability to produce clear, correct and coherent prose adapted to purpose, occasion, and audience. Although correct grammar, spelling and punctuation are each a sine qua non in any composition, they do not automatically ensure that the composition itself makes sense or that the writer has much of anything to say. Students need to be familiar with the writing process including how to discover a topic and how to develop and organize it, how to phrase it effectively for their audience. These abilities can be acquired only through practice and reflection.

3. **SPEAKING**: Competence in speaking is the ability to communicate orally in clear, coherent and persuasive language appropriate to purpose, occasion and audience. Developing this competency includes acquiring poise and developing control of the language through experience in making presentations to small groups, to large groups and through the media.

4. **LISTENING**: Listening at the college level means the ability to analyze and interpret various forms of spoken communication.

5. **CRITICAL THINKING**: Critical thinking embraces methods of applying both qualitative and quantitative skills analytically and creatively to subject matter in order to evaluate arguments and to construct alternative strategies. Problem solving is one of the applications of critical thinking, used to address an identified task.

6. **COMPUTER LITERACY**: Computer Literacy at the college level means the ability to use computer-based technology in communicating, solving problems and acquiring information. Core-educated students should have an understanding of the limits, problems and possibilities associated with the use of technology and should have the tools necessary to evaluate and learn new technologies as they become available.
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<tr>
<th>Learning Activity</th>
<th>Learning Outcomes</th>
<th>Assessment</th>
<th>EEO’s &amp; CCIC’s</th>
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<tbody>
<tr>
<td>1. Demonstrate the correct use of the compound light microscope; the ability to set up, locate a specimen, focus correctly and prepare the microscope for storage after use.</td>
<td>Laboratory demonstration, practical application by use of the microscope through guided activities, practice with microscope use in laboratory.</td>
<td>Timed individual demonstration of use. Correct application on 80% of measured items</td>
<td>EEO 1, 2 and CCIC 1, 2, 4</td>
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<td>2. Describe the unique characteristics of water that make it essential to life on earth.</td>
<td>Assigned readings, lecture and discussion in class, related laboratory activities.</td>
<td>Imbedded questions in Lecture Exam 2. Correct response on 70% of imbedded questions.</td>
<td>EEO 1, 4 and CCIC 1, 2, 4</td>
</tr>
<tr>
<td>3. Demonstrate an understanding of the significance of cellular respiration and an understanding of the major energy transforming events of the process.</td>
<td>Assigned readings, lecture and discussion in class, play out the major steps of the aerobic respiratory pathway and related laboratory activities.</td>
<td>Imbedded questions in Lecture Exam 3. Correct response on 70% of imbedded questions.</td>
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