This course syllabus is a set of guidelines for BIOL 1406. Both North Lake College and the 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:
Charles Siegel, MS
Best way to reach me: charlessiegel@dcccd.edu
Office: Room A-248
Telephone: (972) 273-3415

Office Hours (Room A-248):
11:00am-2:00pm, Tue
9:30am-10:30am, Wed
11:00am-12:00pm, Thur
Additional appointments by request.

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 Lecture, 3 Lab.).

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.

SAGE Scholars
NOTE: This biology course qualifies for 4.0 credit hours toward the North Lake College Sustainability Awareness and Global Education or SAGE Scholars Honor initiative (formerly Green Diploma). The class meets the social, economic and environmental sustainability and global citizenship components, as well as satisfies the curriculum, methodology and personal responsibility criteria for the program. Upon earning 12.0 credit hours (with a C grade average or higher) in designated SAGE courses and earning 20 hours of service learning, students will be recognized and awarded a SAGE Scholars Honor at graduation. For more information about our SAGE Scholars Honor, please visit the following website: https://www.northlakecollege.edu/about-us/sustainable-campus/Pages/Sage-Scholars.aspx.

Course Information
- Biology for Science Majors I (BIOL-1406)
- Credit hours: 4
- Class meeting times by section number:
### Required Textbooks and Materials

**Scantrons:**
- Scantron: long (Form 882E), one (1) is required for Lecture.
- Quiztron: short quiz scantron, six (6) are required for Lecture.

**English Dictionary:**
- Any standard dictionary of the English language is recommended, but not required.

**Required Lab Manual:**
*Biography 1406 Laboratory Manual for North Lake College*
by Khamankar, V., et al.
Blue Door Publishers

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Required Lecture Textbook:
Pearson’s *Campbell Biology, 10th edition (access code NOT required).*
Benjamin Cummings Publisher
ISBN-10: 0321775651

This Lecture Textbook is Available in North Lake College Bookstore as:
*Campbell Biology: Second Custom Edition for North Lake College, Volume 1 (126987117X)*

Volume 1 of the custom edition contains only those chapters needed for BIOL 1406.

Course Outline – Corresponds to chapters in textbook
1. Introduction to Biology
2. Chemistry of Life
3. Water
4. Carbon Chemistry
5. Biomolecules
6. The Cell
7. Membrane Structure and Function
8. Energy, Enzymes and biochemical reactions
9. Cellular Respiration
10. Photosynthesis
11. Cell Communication
12. Cell Cycle and Mitosis
13. Meiosis
14. Mendelian Genetics
15. Human Genetics
16. DNA structure and function
17. Protein Synthesis
**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 endosymbiont 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
BIOL 1406 Biology for Science Majors I (Lecture)

Upon successful completion of this course, students will:
1. Describe the characteristics of life.
2. Explain the methods of inquiry used by scientists.
3. Identify the basic requirements of life and the properties of the major molecules 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.

Specific Course Learning Outcomes
BIOL 1406 Biology for Science Majors Laboratory I (Lab)

Upon successful completion of this course, students will:
1. 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 scientific investigations.
4. Describe the characteristics of life.
5. Explain the methods of inquiry 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.

Means of Assessment of Course Learning Outcomes
Learning outcomes will be assessed by: 1) examinations, quizzes, and graded assignments in lecture, and 2) each of the units completed in lab will be assessed by either lab report, quiz or other activities determined to be appropriate by the instructor, including lab practical exams.
Attendance Policy:
Lectures and laboratory require attendance and on-time arrival. Laboratory experiments are offered during designated weeks and cannot be set up again. No absence is permitted from lecture exams and lab practical without penalty except in extreme circumstances. Prior communication with the lecture and laboratory instructors is required for work, religious, and sports related absences.

- It is the student’s responsibility to sign-in at the beginning of each lecture on the form provided by the instructor. This is the only record kept of the student’s attendance in lecture. If you do not sign-in at class time, you will be marked absent. If you forget to sign-in, you will be marked absent. No exceptions.
- Classes begin promptly at the times listed when you registered. Important information concerning the class – including changes to assignment or exam schedules -- is presented during the first few minutes of class. If late or absent from class, it is the student’s responsibility to find out from other students what was missed.

Evaluation Procedures

Lecture Grades:
Lecture points are 70% of the total course grade (65% consists of lecture exam points; plus 5% consisting of combined points from lecture quizzes and assignments).

Lecture Exams:
- Lecture exam points are 65% of the total course grade.
- There are six lecture exams. Each lecture exam is valued at 100 points.
- The lowest test score out of the six lecture exams will be dropped from the point total for final grade determination.
- Lecture Exams #1 through #5 are administered at the North Lake College Testing Center via Blackboard.
  - Enough time is provided to complete each lecture exam. No make-up lecture exams are allowed. Repeat: No make-up lecture exams are allowed. If a student faces unavoidable and extreme circumstances -- such as, hospitalization, bereavement or other extreme situations – the instructor will evaluate the situation if provided official written documentation. Problems with transportation, traffic, work schedules, demands of other courses, vacations, arriving late, forgetting, feeling unprepared, procrastination, etc., are not valid reasons for missing any exam, quiz, or assignment.
- Lecture Exam 6 -- the Final Exam -- is administered in the classroom at the time and date scheduled by North Lake College.
  - The Instructor does not have any control over the date of any Final Exam. Furthermore, students are only allowed to take the Final Exam at the time, date and place scheduled by the College for their section.
Lecture Quizzes and Assignments

- Points from lecture assignments and lecture quizzes will be combined to count toward 5% of the total course grade.
- Lecture Quizzes (10 points each)
  - Students must be prepared to be quizzed over the assigned reading material at the beginning of each lecture.
  - Quizzes given in the classroom may or may not be pre-announced. Students should bring a small (quiz) scantron to each class with the assumption that a quiz will be given.
  - Lecture quizzes are typically given at the start of class as an incentive for students to arrive on time. However, quizzes may be given at any time during the lecture.
  - Several Lecture quizzes will also be taken on Blackboard.
  - Assignments and quizzes may be given in class or online.
  - Quizzes cannot be made up if missed.

Laboratory Grades:

Your lab grade is 30% of your total course grade in Biology 1406. Check your registration receipt for correct time of the laboratory. Laboratory instructors will discuss requirements and the laboratory syllabus during first laboratory meeting. Your grade for laboratory is based on pre- and post-lab quizzes, lab reports, journals and lab practical exams. Details will be given by the lab instructor.

Students are required to attend laboratory. Your grade in lab is based on a percentile of all graded exams, quizzes, reports and other projects as may be assigned during the semester. **Lab practical exams cannot be made up.**

COURSE GRADING SCALE

Your final course grade is a combination of both lecture and lab, with lecture representing 70% and lab 30% of the final grade:

A = 90%--100%
B = 80%--89.99%
C = 70%--79.99%
D = 60%--69.99%
F = 0%--59.99%

The instructor reserves the right to make changes to any part of this document as deemed necessary by the instructor for overall class success, evaluation, class policies and completion of the class.
Discipline/ Course/ Department/Policies

Students are expected to fully participate in lecture class and laboratory activities. Cell phones should be turned off or set to silent during class unless an exercise requires use. No texting or other inappropriate use of electronic devices will be permitted in class. Whether the use of electronics is proper or not will be determined by the instructor. All students are expected to abide by the college Student Code of Conduct.

CHILDREN IN CLASS AND UNACCOMPANIED CHILDREN POLICY:
The institution strives to protect an environment most conducive to teaching and learning for all enrolled students. Minor children may not be brought to the laboratory, classrooms, or the Testing Centers.

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) and are 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 311.

eCAMPUS/Blackboard
1. Class notes and announcements are posted on the web on ECAMPUS at [ecampus.dcccd.edu](ecampus.dcccd.edu)
2. You are expected to access "eCAMPUS" on a regular basis to stay up to date with the class information.
3. Make sure you enter your email address. Let me know if you need help with "eCAMPUS".
4. All students can apply for a free email address/internet access at the Computing Center.

TESTING CENTER
Students will take five (5) Lecture Exams at the North Lake College Testing Centers. Students must be familiar with Testing Center Policies found at: [https://www.northlakecollege.edu/services/academic-support/testing-centers/pages/default.aspx](https://www.northlakecollege.edu/services/academic-support/testing-centers/pages/default.aspx)

Questions? Please visit the Testing Center (A425) or call 972-273-3160
INSTITUTIONAL POLICIES
Institutional Policies relating to this course are accessed at the following link:

Cheating, Plagiarism and Collusion
Scholastic dishonesty is a violation of the Code of Student Conduct and Hazing. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism and collusion.

Cheating includes copying from another student’s test or homework paper; using materials not authorized; collaborating with or seeking aid from another student during a test; knowingly using, buying, selling, stealing or soliciting (asking for) the contents of an un-administered test; and substituting for another person to take a test.

Plagiarism is the appropriating (taking in a way that is illegal or unfair), buying, receiving as a gift or obtaining by any means another’s work and the unacknowledged submission or incorporation of it in one’s own written work.

Collusion is the unauthorized collaboration with another person in preparing written work for fulfillment of course requirements.

Academic dishonesty is a serious offense in college. You can be given a failing grade on an assignment or test, can be failed for the class or you can even be suspended from college.
Your enrollment indicates acceptance of the DCCCD Code of Student Conduct and Hazing.

Drop Date: Last day to drop with a "W" is 03-May-2019.

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.
Program Level Objectives

| Measurable Student Learning Outcomes (SLOs) | 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. | Laboratory demonstration, practical application by use of the microscope through guided activities, practice with microscope use in laboratory. | Timed individual demonstration of use. Correct application on 80% of measured items. Evaluation based on a rubric. |
| | 2. Describe the unique characteristics of water that make it essential to life on earth. | Assigned readings, lecture and discussion in class, related laboratory activities. | Ten question quiz to be administered after the completion of the topic. The class goal is 70% correct response. |
| | 3. Demonstrate an understanding of the significance of cellular respiration and an understanding of the major energy transforming events of the process. | Assigned readings, lecture and discussion in class, play out the major steps of the aerobic respiratory pathway and related laboratory activities. | Ten question quiz to be administered after the completion of the topic. The class goal is 70% correct response. |

The instructor reserves the right to make changes to any part of this document as deemed necessary by the instructor for overall class success, evaluation, class policies and completion of the class.