BIO 101

Biological Sciences I

Course Description
This course is a study of the scientific method, basic biochemistry, cell structure and function, cell physiology, cell reproduction and development, Mendelian genetics, population genetics, natural selection, evolution, and ecology.

Prerequisites: ENG 100, MAT 102, RDG 100.

4.0 Cr (3.0 lect/pres, 3.0 lab, 0 other)

Course Focus
The purpose of this general education core course is to enable the student to gain an appreciation and working knowledge of basic biological principles. Instruction will be equally divided between interactive lecture and hands-on lab.

Text and References


BIO 101 CORE CURRICULUM COMPETENCIES
All courses approved for the general education core curriculum help students develop communication skills and/or critical thinking.

This course develops critical thinking skills through instruction that emphasizes the understanding of Biological Sciences concepts from several sub-disciplines. This understanding will be demonstrated by assessments on the common final exam. The student will demonstrate the following critical thinking objectives:

- Following standard Scientific Method, students will interpret laboratory observations and data, and determine relevance of their findings to expected values.
- Students will recognize key biological assumptions and make inferences justified by data and observations.
Course Goals
The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives. (*designates a CRUCIAL goal)

1. Identify unifying Biological themes
2. List evolutionary evidence *
3. Explain Darwin's evolutionary concepts
4. Link natural selection and evolution *
5. Describe hypothesis formation
6. Define experimental variables *
7. Draw atomic structure *
8. Contrast atomic number and mass
9. Distinguish atomic and ionic structures
10. Characterize bonding types
11. Characterize four major macromolecules
12. Outline steps in hydrolysis and dehydration synthesis
13. Identify nucleotide parts
14. Identify ATP structure
15. Label protein structure
16. Explain enzyme function
17. Justify biological importance of water *
18. Describe ph biologically
19. Explain cell theory principles
20. Assign organelle functions
21. Know membrane parts
22. Analyze membrane significance
23. Connect lipid biochemistry with membrane function
24. Differentiate among membrane proteins
25. Discriminate among cell transport mechanisms *
26. Label relative solution concentrations
27. Predict solution and solute movement *
29. Give kinetic and potential energy examples
30. Graph exergonic and endergonic reactions *
31. Define activation energy
32. Understand ATP role in biological reactions *
33. Consider mitochondrial and chloroplast genetic contributions
34. Define catabolism and anabolism *
35. Define oxidation and reduction
36. Describe eukaryotic glycolysis *
37. State glucose oxidation equation
38. Outline eukaryotic aerobic metabolism
39. Track energy formation in aerobic metabolism *
40. Tell anaerobic metabolism steps
41. Compare catabolic outcomes *
42. State photosynthesis equation
43. Trace photosynthetic electron movement
44. Follow photosynthesis energy
45. Contrast cyclic and noncyclical photosynthesis
Characterize cell cycle stages
List cell parts needed for mitosis
Identify meiotic stages
Trace chromosomes during meiosis
Scrutinize crossing over
Compare gene segregation and independent assortment
Predict evolutionary meiotic mutation consequences
Recount DNA discovery history
Model DNA replication
Link mutation with genetic consequences
Perform DNA separation
Model protein synthesis
Describe gene expression controls
Debate genetic engineering
Summarize cell communication methods
Tell cell signaling types

Student Contributions:
Classes are designed to employ a variety of teaching techniques. In order to maximize learning, required readings should be done prior to a unit. If a student is falling behind in lab performance or academic achievement, it is imperative to seek immediate assistance from the instructors.

Course Evaluation:
- Student progress will be evaluated through a series of tests, quizzes in-class and out of class assignments and will be detailed in the attachment to this syllabus.
- Blackboard: lecture notes, handouts, podcasts, study hints, tutor information, syllabi, and other course information is available on the course blackboard page.
- Laboratory Component: This course has a required lab component which supplements the information presented in lecture. The lab will be independently evaluated primarily through lab practicals, in class and out of class lab assignments (such as research papers). For specific details about lab evaluations, please refer to the attachment to this syllabus.

GRADING SCALE:
90-100 = A
80-89 = B
70-79 = C
60-69 = D
Below 60= F

Course Schedule
The class meets for 2.5 lecture/presentation hours and 3 lab hours per week.

ADA STATEMENT
The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.
ACADEMIC MISCONDUCT
There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.

It is the student’s responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification.

The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the TCL Student Handbook, the Division Office, and the Learning Resources Center.

ATTENDANCE
The College’s statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.

- Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
- Students taking an online/internet class must sign in and communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
- Reinstatement requires the signature of the division dean.
- In the event it becomes necessary for a student to withdraw from the course OR if a student stops attending class, it is the student’s responsibility to initiate and complete the necessary paperwork. Withdrawing from class may have consequences associated with financial aid and time to completion.
- When a student exceeds the allowed absences, the student is in violation of the attendance policy. The instructor MUST withdrawal the student with a grade of “W”, “WP”, or “WF” depending on the date the student exceeded the allowed absences and the student’s progress up to the last date of attendance or
- Under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.
- Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.
- A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.
- A copy of TCL’s STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL) is on file in the Division Office and in the Learning Resources Center.

HAZARDOUS WEATHER
In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCO 98.3, WGZO 103.1, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLHV 101.1, WSOK 1230 AM, WAEV 97.3, WTQC TV, WTGS TV, WJWJ TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. [www.tcl.edu/textalert.asp](http://www.tcl.edu/textalert.asp)
EMERGENCY TEXT MESSAGE ALERT
Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. Participants receive immediate notification of emergency events and weather cancelations via text messaging on their cell phones. Participants can also opt in to receive non-emergency news and announcements. Go to www.tcl.edu. On the homepage, click on “emergency TextAlert at TCL” and fill out the form or go to www.tcl.edu/textalert.asp

GRADING METHODOLOGY
The final grade must be 70 or more (a grade “C” or better) in order to pass the course and progress to the next course. Students absent from an examination or presentation will receive a “0” grade for the examination unless other arrangements are made with the individual instructor prior to the examination or presentation day or on the examination or presentation day before the test/presentation is scheduled to be given.

The student is responsible for notifying the instructor for the reason of the absence. It is also the responsibility of the student to contact the appropriate instructor to arrange to make up the examination. Arrangements may be completed by telephone.

If the instructor is not available, a message should be left on the instructor’s voice mail AND with another member of the faculty or administrative assistant. The make-up exam will be scheduled and the instructor will decide the method of examination. Messages sent by other students are unacceptable.

Revised: 9/20/2012

Reviewed/Approved by Dean of Arts & Sciences 9/24/2012