 BTN 103

Introduction to Biotechnology & Laboratory Rotation

Course Description
This course provides an overview of biotechnology, which prepares individuals for working in medical, research, industrial, and law enforcement forensic laboratories. Course content includes theory, application, and basic laboratory skills.

Prerequisites: ENG 100, MAT 102, RDG 100.

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

Course Focus
This course prepares students in core skills needed for more advanced courses in Biotechnology. Students will use basic laboratory methods and critical thinking skills applied to scientific study. Units of instruction include laboratory safety standards, proper use of lab equipment, the fundamental methods of pipetting & titration, accurate lab documentation.

Text and References

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. Compare and contrast the role of proteins, lipids, and nucleic acids in life
2. Use microscopes to compare different types of cells *
3. Locate cell structures
4. Relate cell structures with their functions
5. Appreciate the structure of DNA
6. Explain how genetic material is copied *
7. Relate genes and heredity to DNA *
8. Explain how proteins are made
9. Explain roles of enzymes in living organisms
10. Discover patterns of inheritance in living organisms
11. Use punnet squares to determine patterns of inheritance in hybrid crosses
12. Extract DNA from known substances *
13. Discover the value of gel electrophoresis in learning the genetic code *
14. Isolate and fingerprint DNA
15. Karyotype chromosomes to discover how sex-linked diseases are inherited
16. Use computer models to solve genetic and heredity problems
17. Research applications of biotechnology *
18. Discuss the role of biotechnology in our society
19. Describe genetic variation and natural selection in evolution
20. Appreciate the importance of glucose to living organisms
21. Describe characteristics of bacteria
22. Utilize scientific methods to solve problems *
23. Use sterile techniques to culture bacteria
24. Describe characteristics of viruses
25. Perform gene transfer in bacteria and yeast
26. Make and screen a CDNA library
27. Discover why bacteria and viruses are essential tools in biotechnology *
28. Appreciate how the immune response is used in the development of industry and medicine *
29. Explain how the immune system combats pathogens
30. Discover how the immune response is used in the development of consumer products

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
Your final grade will be an average of quizzes, tests, reports, attendance and participation.

The grading scale is as follows:
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, WLVH 101.1, WSOK 1230 AM, WAEV 97.3, WTOC 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

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.