



TECHNICAL COLLEGE OF THE LOWCOUNTRY

Technical College of the Lowcountry
921 Ribaut Road
Beaufort, SC 29901

Arts & Sciences Division
Building 9, Room 102
843-525-8281

CHM 105

General Organic and Biochemistry

Course Description

This course is a study of the fundamental principles of chemistry, including atomic and molecular structure, common substances and reactions, introduction to organic chemistry and biochemistry.

CHM 105 will transfer to the University of South Carolina – Beaufort (USCB) as a requirement in the Bachelor of Science Nursing program. However, if you are planning to transfer to another college or university, you will need to contact that institution to see if this course will transfer.

Prerequisites: MAT 102

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

Course Focus

This is a course in chemical principles including the structure of and energy associated with matter; quantitative kinetic and equilibrium analysis of chemical and physical processes. Inorganic and organic chemistry will be covered including the structure and function of biological macromolecules and metabolism. Chemical processes and concepts will be explored through their practical application in the technologies with an emphasis on laboratory techniques. Specifically designed for non-science majors.

Text and References

Timberlake, Karen. Chemistry: An Introduction to General, Organic, and Biological Chemistry, loose-leaf bundled with MasteringChemistry access code/eText, 13th Edition. Pearson Prentice Hall, 2015. ISBN: 978-0134557335.

Standalone Mastering chemistry access code/e-text. ISBN: 978-0134553269.

O’Neal, William G. Exploring General, Organic, & Biochemistry in the Laboratory, (loose-Leaf), 1st Edition. Morton Publishing Company, 2017. ISBN: 978-1617316180.

Core Curriculum Competencies

All courses approved for the general education core curriculum helps students develop communication skills and/or critical thinking. Students will demonstrate achievements by assessments on the departmental final

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exam and on testing developed by individual instructors. This course develops critical thinking skills through instruction that emphasizes the understanding of the scientific disciplines of general, organic and biological chemistry, as demonstrated in the following:

- A formal research paper requiring the student to develop, evaluate, and synthesize credible information on a given topic
- This research project allows the student to:
 - Apply standard scientific methods and interpret laboratory observations and data
 - Make inferences justified by data and observations
 - Explain relevance of finding to chemical principles, or expected results
 - Identify key assumptions of chemical science
- Periodic exams, homework and a standardized finale examinations also test critical thinking ability

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. List metric units
2. Make accurate and precise measurements *
3. Use significant digits
4. Convert measurements
5. Characterize matter phases
6. Apply ideal gas law *
7. State kinetic molecular theory
8. Trace atomic history
9. Draw atoms
10. State quantum theory
11. Draw electron arrangements
12. Relate periodic table organization
13. Define periodicity
14. Examine periodic trends *
15. Apply octet rule
16. Distinguish chemical bonds
17. Identify chemical properties
18. Apply inorganic nomenclature *
19. Write chemical formulas *
20. Calculate atomic weight
21. State molecular orbital theory *
22. Draw Lewis structures
23. Predict molecular shapes
24. Recognize hybrid orbitals
25. Examine intermolecular forces
26. Balance chemical equations
27. Use chemical mole
28. Quantify reaction and product amounts
29. Calculate using limiting reactant
30. Identify reaction types
31. Construct ionic equations *
32. Express solution concentration

33. Apply stoichiometry to aqueous calculations
34. Define state function *
35. Identify energy changes
36. Measure heat changes
37. Calculate change in enthalpy *
38. State thermodynamic laws
39. Construct phase change diagram
40. Calculate pH
41. Link auto ionization to pH
42. Perform acid base titration
43. Define nuclear radiation
44. Define radioactive half-life
45. Identify nuclear radiation types
46. Classify organic molecules *
47. Write iupac names
48. Draw structural formulas
49. Draw cis-trans isomers.*
50. Identify alcohols
51. Identify aldehydes and ketones
52. Classify carboxylic acids
53. Identify esters
54. Identify amines and amides
55. Demonstrate dehydration synthesis *
56. Identify aromatic compounds
57. Describe benzene bonding
58. Write alcohol reactions *
59. Write thiol reactions
60. List organic redox products
61. Classify carbohydrates
62. Build polysaccharides
63. Define glycosidic bond
64. Draw Hayworth structures
65. Distinguish saturated and unsaturated fatty acids *
66. Identify chiral carbon
67. Predict hydrogenation products *
68. Understand hydrocarbon addition reactions
69. Draw amino acids
70. Identify quaternary protein structure
71. Describe protein function
72. Assemble nucleotides *
73. Distinguish DNA and RNA
74. Draw DNA structure
75. Explain enzyme catalysis *
76. Explain enzyme inhibition
77. Trace protein synthesis *

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.

TCL GRADING SCALE:

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

Course Schedule

Students must attend 2.5 lecture hours per week, 3.0 lab hours per week and plan online time of 0.5 hours per week.

STATEMENT OF NON-DISCRIMINATION

The Technical College of the Lowcountry is committed to a policy of equal opportunity for all qualified applicants for admissions or employment without regard to race, gender, national origin, age, religion, marital status, veteran status, disability, or political affiliation or belief.

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) 525-8219 or (843) 525-8242 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.

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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** complete an assignment designated by 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 contact the instructor via e-mail requesting to be withdrawn from the class.** Withdrawing from class may have consequences associated with financial aid and time to completion. Students are strongly encouraged to consult with Financial Aid prior to withdrawing from any class, particularly if the student is currently on a warning or probation status.
 - When a student exceeds the allowed absences, the student is in violation of the attendance policy. The instructor **MUST** withdraw 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.

ONLINE ATTENDANCE PROCEDURE

For all online courses, students must complete an assignment designated by the instructor during the first week of classes. The instructor will drop the student from the course if the initial assignment is not completed.

Instructors will withdraw students from the class when 90% attendance is not maintained. Attendance in an online course is defined by regular course access and by timely completion of assignments as required by the instructor. Each student will be expected to access the web class at least once a week and complete 90% of assignments on time. Additional access is encouraged and may be necessary for successful completion of classes.

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Failure to log in and complete assignments will result in the student being withdrawn from the course. The instructor will assign a grade of "W," "WP," or "WF" based upon the student's academic standing as the last date of attendance, which is the last login. Students are responsible for any financial matters associated with an administrative withdrawal. If a fails to email the instructor (using the my.tcl.edu email account) requesting to be dropped from the course and has not submitted the initial assignment required during the first week of class, the instructor will assign a "Never Attended" code in the student information system (web-advisor) no later than ten calendar days after the first day of the class. Students who are dropped as a result of never attending the course are still responsible for all fees associated with the course.

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, WWVW 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. <http://www.tcl.edu/current-students/text-alert>

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 cancellations 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 <http://www.tcl.edu/current-students/text-alert>

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.

SAFETY ADDENDUM

Purpose

The purpose of this safety addendum is to provide each student with safety guidelines during an incident, emergency, or disaster at TCL. In addition, it provides students guidelines for lockdown procedures, evacuation procedures, and active shooter.

Definitions

An incident is any event, potential or actual, that may impact normal operations but has no immediate health or life threatening consideration or serious effect on the overall functional capacity of the College. An event of

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this nature should be reported to the Office of the Vice President for Administrative Services. Also notify the off-site campus administrator if applicable.

An emergency is any incident, potential or actual, which may endanger life or health or which affects an entire building or buildings, and will disrupt the overall operations of the College. Outside emergency services will probably be required, as well as major efforts from campus support services. Major policy considerations and decisions will usually be required from the college administration during times of crises. An emergency should be reported immediately by directly using **911** if life or health/injury considerations exist and then to the Office of the President or Vice President for Administrative Services as quickly as possible. Also notify the off-site campus administrator if applicable.

A disaster is any event or occurrence that has taken place and has seriously impaired or halted the operations of the College. In some cases, mass personnel casualties and severe property damage may be sustained. A coordinated effort of all campus-wide resources is required to effectively control the situation. Outside emergency services will be essential. In all cases of disaster, an Emergency Control Center will be activated, and the appropriate support and operational plans will be executed. The disaster should be immediately reported, first by calling **911** and then to the Office of the President or Vice President for Administrative Services. Also notify the off-site campus administrator if applicable.

Types of Emergencies

- Hurricane
- Tornado
- Fire
- Biochemical or Radiation Spill
- Explosion/Bomb
- Downed Aircraft (crash which directly impacts campus operations)
- Utility Failures
- Violent or criminal behavior
- Psychological Crisis

Procedures:

Active Shooter

Run/hide/fight (<http://www.fbi.gov/about-us/cirg/active-shooter-and-mass-casualty-incidents/run-hide-fight-video>)

Building Evacuation

1. Building evacuations occur when an alarm sounds and/or upon notification by Security or the Emergency Director.
2. When the building evacuation alarm is activated during an emergency, individuals should exit according to the building evacuation plan and alert others to do the same.
3. Once outside, individuals should proceed to a clear area that is at least 500 feet away from the affected building. Streets, fire lanes, hydrant areas and walkways should be kept clear for emergency vehicles and personnel.

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4. Individuals should not return to an evacuated building unless told to do so by Security or the Emergency Director.
5. Individuals should assist persons with disabilities in exiting the building. Elevators are reserved for disabled persons

Campus Evacuation

1. A uniformed Security Guard, the Emergency Director, or an Emergency Resource Team member will announce evacuation of all or part of the campus grounds.
2. All persons (students and staff) are to immediately vacate the campus, or in the case of a partial evacuation relocate to another part of the campus grounds as directed.

Lockdown

1. Clear the halls
2. Report to the nearest classroom/office
3. Assist those needing special assistance
4. Ensure classroom/office doors are closed and locked
5. Turn off lights
6. Stay away from doors and windows (out of the line of sight)
7. BE QUIET and follow instructor's directions
8. Silence cell phones
9. Wait for the "All Clear" before leaving