



TECHNICAL COLLEGE OF THE LOWCOUNTRY

Technical College of the Lowcountry
921 Ribaut Rd.
Beaufort, SC 29901

Robert Beach
Industrial Technology Division
Building 14, Room 115
843-525-8299
rbeach@tcl.edu

EEM 117 AC/DC CIRCUITS I

COURSE DESCRIPTION

This course is a study of direct and alternating current theory, Ohm's Law, series, parallel, and combination circuits. Circuits are constructed and tested.

4 Cr (4 lect/pres, 0 lab, 0 other)
(Prerequisites NONE)

TEXT AND REFERENCES

ACDC PRINCIPLES AND APPLICATIONS 2ND ED ISBN: 978-0-8269-1357-9

COURSE GOALS

The following list of course goals will be addressed in the course. These goals are directly related to the performance objectives (Addendum A). (*designates a CRUCIAL goal)

1. calculate Amp-hours from a model circuit
2. utilize Oscilloscope instrument
3. construct RCL circuits
4. construct AC Inductive- Capacitive circuits
5. define Capacitive Reactance term
6. construct Inductive circuits
7. construct RC circuit components
8. define Power term
9. calculate voltage division in a Series resistive current
10. construct DC series-parallel resistive circuits
11. define Lambda value
12. analyze Series RCL circuits
13. design power supply circuits
14. predict DC resistive circuit characteristics calculator
15. learn Basic Atomic theory
16. learn basic Scientific calculator functions
17. learn Electron flow theory
18. interpret Resistor color code values
19. define Ohm's Law quantities
20. learn basic passive component schematic symbols

21. define Current term
22. calculate Ohm's Law properties
23. analyze DC series resistive circuits
24. calculate Total resistance in a DC series circuit
25. calculate Voltage division in a DC Series resistive circuit
26. learn metric prefix "nano" term
27. calculate total voltage in a DC series circuit
28. calculate total current in a DC parallel resistive circuit
29. define Resistance term
30. learn metric prefix Kilo term
31. learn metric prefix Mega term
32. learn metric prefix "micro" term
33. apply metric prefixes quantities
34. construct DC series resistive circuits
35. analyze DC parallel resistive circuits
36. learn metric prefix "milli" term
37. learn Schematic symbol resistor
38. calculate current division in a DC parallel resistive circuit
39. construct DC parallel resistive circuits
40. analyze DC series-parallel resistive circuits
41. analyze Capacitive reactance properties
42. learn schematic symbol capacitor
43. utilize Digital Multi-meter instrument
44. troubleshoot DC Series resistive circuit
45. troubleshoot AC resistive circuit
46. read DC oscilloscope
47. analyze Parallel LC circuits
48. calculate Power in a circuit
49. define Capacitance term
50. learn schematic symbol inductor
51. troubleshoot DC Parallel resistive circuit
52. read AC signal oscilloscope
53. troubleshoot DC Resistive Capacitive circuit
54. define Inductance term
55. calculate Capacitive reactance models
56. analyze Inductive circuit characteristics
57. define Impedance term
58. solve Impedance circuit
59. calculate Lambda for a signal
60. calculate Impedance from model circuits

STUDENT CONTRIBUTION

Each student will spend at least 6 hours per week preparing for class. Attendance is critical in this class and participation in class discussions greatly enhances the learning experience for all students.

Student Attendance Policy: See student handbook within the TCL Catalog.

Each week students will turn in assignments as specified by the instructor. In addition, tests are to be completed as assigned. Students will also complete mid-term and final exam to demonstrate their knowledge of the material.

COURSE EVALUATION

The grading scale is as follows:

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

Grading Policy

Exams	20%
Final	20%
Lab	20%
Multisim	20%
Homework	20%

COURSE SCHEDULE

The class meets for 4 lecture/presentation 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.

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.

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, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVA 101.1, WSOK 1230 AM, WAEV 97.3, WTOG 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 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 www.tcl.edu/textalert.asp

SYLLABUS 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 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

1. Hurricane
2. Tornado
3. Fire
4. Biochemical or Radiation Spill
5. Explosion/Bomb
6. Downed Aircraft (crash which directly impacts campus operations)
7. Utility Failures
8. Violent or criminal behavior
9. 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.
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