



Technical College of the Lowcountry
921 Ribaut Rd.
Beaufort, SC 29902

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ACR 206
ADVANCED ELECTRICITY FOR HVAC/R

Course Description

This course includes the theory of operation and a practical application of electrical and electronic components and circuits used to control HVAC/R systems.
2 Cr (2 lect/pres, 0 lab, 0 other)

Course Focus

The instructor will instruct A/C Current, Power Distribution and Voltage Systems. The instructor will include electrical installation of HVAC/R systems. Basic motors, components for motors and controls for motors will be instructed. Units 17, 18, 19 and 20 will be covered.

Text and References

Refrigeration & Air Conditioning Technology, 7th. Edition, Whitman, Johnson, Tomczyk & Silberstein

Publisher: Delmar Cengage Learning, Clifton Park, N.Y.

Published: 2012

ISBN: 1-1116-4447-0

Refrigeration & Air Conditioning Technology Lab Manual, 7th. Edition, Whitman, Johnson, Tomczk & Silberstein.

Publisher: Delmar Cengage Learning, Clifton Park, N.Y.

Published: 2012

ISBN: 1-1116-4448-9

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. differentiate direct & alternating current
2. differentiate single & three phase
3. summarize power distribution
4. understand inductance in A/C
5. comprehend power generation
6. classify voltage systems
7. understand wire size
8. give copper wire advantages
9. give aluminum wire disadvantages
10. calculate voltage drop
11. list disconnect switch enclosures
12. list electrical panels
13. install circuit breaker
14. articulate electro magnetism
15. describe motor torque
16. describe motor operation
17. diagnose shaded pole motor
18. disassemble shaded pole motor
19. assemble shaded pole motor
20. check run capacitor
21. combine run capacitors
22. operate psc motor
23. operate three phase motor
24. change motor rotation
25. classify compressor terminals
26. operate motor starting relays
27. troubleshoot ecm motors
28. troubleshoot potential relay
29. select potential relay
30. classify v belts

Student Contributions

Each student must complete all reading and written assignments.

In addition, chapter tests are to be completed as assigned.

Students will also complete a final exam/project to demonstrate their knowledge of the material.

The student will not be allowed in the lab with any type of open toe shoe. (flip flops etc.)

No cell phones are allowed to be used in the classroom or lab. This includes texting.

No recording of classes is allowed.

The student must have all required books by the second class of the semester. No copies of any books or manuals are allowed.

The student is expected to be in class on time.

Course Evaluation

There will be four open book exams worth a maximum of 10 points.

There will be a lab project worth a maximum of 30 points.

There will be a final closed book exam worth a maximum of 60 points.

Course Schedule

The class meets for 2 lecture/presentation hours per week.

Approved by: *Kenneth Flick* Developed/Revised: 3-4-2013
Ken Flick, Division Dean for Business/Industrial Technology

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 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.

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