

Technical College of the Lowcountry  
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**EEM 171  
ELECTRICAL INSTALLATION**

**COURSE DESCRIPTION**

This course is a study of electrical wiring techniques commonly used in commercial, industrial, and residential applications. Emphasis will be placed on compliance with the national electrical code.

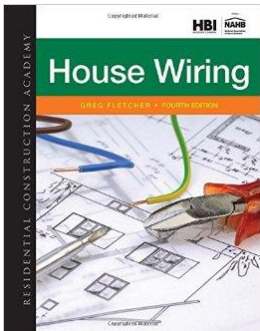
Prerequisite: RDG 100 or instructor approval. 4 Cr (4 lect/pres, 0 lab, 0 other)

**COURSE FOCUS**

This course will give students hands on experience with installing circuits, receptacle outlets, switches.

**TEXT AND REFERENCES**

Residential Construction Academy: House Wiring, 4e, Greg Fletcher.



**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. bend and install emt
2. install video voice and data wiring and equipment
3. demonstrate electrical safety
4. use various cable and conduit
5. install service entrances
6. recognize residential electrical system common hardware and materials
7. understand general and electrical safety procedures

8. complete wiring diagrams
9. practice using common hand and power tools
10. recognize common hardware and materials
11. follow safety guidelines
12. troubleshoot electrical wiring systems
13. explain utility company requirements
14. control lighting load
15. complete service calls
16. cut ream and thread rigid metal conduit
17. install outlet boxes
18. diagram receptacle and lighting outlet locations
19. determine conductor ampacity
20. calculate general number lighting circuits
21. describe residential service entrance parts
22. locate structural house parts
23. use test and measurement instruments
24. set-up and use saws and drills
25. demonstrate electrical hand tool safe use and care
26. use residential wiring tools
27. recognize pole parts and switches
28. explain material safety data sheet
29. find national electrical code information
30. check wiring systems
31. differentiate residential wiring test and measurement instruments
32. follow NEC checklist
33. choose proper overcurrent protection device
34. define lamp and lighting terminology
35. define common video voice and data cable installation terms
36. comprehend special residential wiring situations
37. choose specific residential switch
38. select appropriate raceway size and type
39. choose appropriate cable type
40. discuss wiring method conductor type and electrical box selection
41. select common overhead service entrance equipment materials
42. calculate branch circuit sizing and loading
43. connect metallic or nonmetallic electrical boxes to house framing
44. comprehend residential building plans
45. demonstrate agility and manual dexterity
46. characterize residential electrical hand tools
47. identify residential wiring hardware and materials
48. explain switch styles
49. analyze fire extinguisher types
50. classify fires
51. define material safety data sheets
52. list general and electrical safety practices
53. select and use proper personal protective equipment
54. cite specific OSHA provisions
55. identify common electrical hazards
56. cite national electric code examples
57. characterize national electrical code
58. understand shock hazard

- 59. identify electrical wire colors
- 60. determine required circuits

## STUDENT CONTRIBUTION

The student is expected to be prepared for class and to be in class on time. Cell phones are not allowed to be used in the classroom. This includes texting. All electronic devices including cell phones, pagers, computers, iPod, iPad must be turned off during class.

Approved by: Kenneth Flick Developed/Revised: 03/2017  
Ken Flick, Division Dean for Business/Industrial Division

## 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, WWVW 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVA 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](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 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](http://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](http://www.tcl.edu/textalert.asp)

## **COURSE EVALUATION**

The grading scale is as follows:

90 - 100 = A

80 - 89 = B

70 - 79 = C

60 - 69 = D

Below 60 = F

## **COURSE SCHEDULE/OUTLINE**

The class meets for 1 lecture/presentation hours per week for a total of 16 weeks during fall and spring semesters.

Hand out syllabus and talk about rules of class and school policies.

Show which book to use and where to get it.

Chapter 1 ( Residential Workplace Safety ) House Wiring 3rd edition PowerPoint.

Stress the Definition of Qualified Person from the NEC.

Chapter 2 & 3 ( Hardware and Materials & Tools ) House Wiring 2<sup>nd</sup> edition PowerPoint.

Tour lab, identify wires, hardware and materials & tools.

Clean up any left over wire in displays.

Chapter 9 ( General Requirement for Rough-in Wiring ) House Wiring 3rd edition PowerPoint.

Give read chapter 10 for homework assignment.

Two hour of lab work to include use of tools to Striping & Bending wires. Identifying wire type and sizes.

Complete Chapter 9 ( General Requirement for Rough-in Wiring ) House Wiring 3rd edition PowerPoint.

Start with page 316 of House Wiring 3rd edition ( Dwelling unit required receptacle outlets)

Two hour lab work to include Rough-in three outlets. Must be neat and in a workmanlike manner.

General requirements: NEC 110.7, insulation integrity & 110.12, installed work must be in a neat and workmanlike manner. pg 299

Lab work – Proper rough-in out boxes and wires.

Know the use of Jug handles. Pg 369

Complete simple circuit receptacle outlet to switch to light.

Complete a switch loop circuit installation.

## **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.

### **Definition**

**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**

- 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.
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

Developed/Revised: January 9, 2017