EEM 105
Basic Electricity

Course Description
This course is a survey of basic electrical principles, circuits and measurements.
2 Cr (2 lect/pres, 0 lab, 0 other)

Course Focus
This course will focus on basic electrical principals as they relate to residential construction.

Text and References
Electricity for the Trades, 2/e
Frank D. Petruzella

Frank Petruzella's *Electricity for the Trades, 2e* is a practical text for students' first course in electricity. Having worked as both a tradesman and classroom instructor, Petruzella provides a uniquely practical, hands-on approach to learning electrical fundamentals, with a wealth of applications and procedures apprentices will use in their work. The second edition has been updated with a new full-color design and more information on a wide range of topics. It features coverage of key background topics, with an emphasis on safety and tools of the trade, and DC and AC circuit essentials. Inductance and capacitance are covered in an applied way, preparing students for subsequent work with motors and generators. The text contains a wealth of illustrations and worked examples related directly to trades-oriented work.

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. state basic safety rules
2. place trench barricades
3. identify personal protection equipment
4. learn first aid and CPR
5. discuss OSHA origin and responsibilities
6. display hazard warning
7. discuss protective clothing
8. control ground tools and equipment
9. comprehend electric generation
10. understand wiring color code system
11. identify wire sizes
12. use Ohms law
13. differentiate AC and DC atoms
14. consider electrical safety
15. define key terms and concepts
16. demonstrate straight ladder placement
17. choose proper wire size and type
18. read equipment and tool instructions
19. keep work area clear
20. plan work
21. place barriers and guards
22. learn lock out and tag out procedures
23. avoid overhead lines
24. avoid electrical hazards
25. avoid wet conditions
26. wear personal protective equipment
27. use protective equipment
28. practice electrical hazard prevention
29. make work environment safe
30. use specialized tools
31. demonstrate tool safety
32. take protective measures

Student Contributions
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 for texting or personal use. All electronic devises including cell phones, pagers, computers, IPod, IPad must be turned off or on vibrate during class.

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, WZGR 104.9, WFXH 1130 AM, WLHV 101.1, WSOY 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

BROADCAST LEARNING FORMAT: This class is being taught in a broadcast learning format. Images and word of class participants may be transmitted live or on a delayed basis to other locations. Classes may be rebroadcast due to extenuating circumstance.

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 14 weeks during fall semester.

Hand out syllabus and talk about rules of class and school policies.
Chapter 1 (Safety) Electrical Principals PowerPoint.
Stress the Definition of Qualified Person from the NEC.
Chapter 2 (Basic Electrical Theory) Electrical Principals PowerPoint.
http://www.allaboutcircuits.com/vol_1/index.html (Conductors, insulators, and electron flow)
OSHA PowerPoint on electrical safety.
Watch the NFPA 71A video.
Watch the 1945 video on Principals of Electricity part 1 and part 2 (www.youtube)
Watch the video on wire sizes.
Chapter 3 (Electrical Quantities and Ohm’s Law) PowerPoint in electrical principal.
SC State Rankings (http://tonto.eia.doe.gov/state/state_energy Rankings.cfm?keyid=18&orderid=1)
Pictures of Hover Dam. Hydropower generation
http://tonto.eia.doe.gov/energyexplained/index.cfm?page=electricity_in_the_united_states
Alternative energy / Wind turbine experiment & view solar panels

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

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: October 7, 2019