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

Tony Brewer
Industrial Technology Division
Building 14, Room 115
843-525-8299

EEM 275
TECHNICAL TROUBLESHOOTING

COURSE DESCRIPTION

This course consists of a systematic approach to troubleshooting. Techniques used to analyze proper circuit and component operation and malfunctions are studied.
3 Credits

TEXT AND REFERENCES

The following textbooks are downloadable as PDF files.

http://www.allaboutcircuits.com/vol_1/index.html
http://www.allaboutcircuits.com/vol_2/index.html
http://www.allaboutcircuits.com/vol_3/index.html
http://www.allaboutcircuits.com/vol_4/index.html
http://www.allaboutcircuits.com/vol_5/index.html

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.Practice safe techniques of desoldering
2. Learn operating characteristics of switches
3. Learn piezo electric theory
4. Construct voltage regulator circuits
5. Learn voltage regulator theory
6. Learn electret microphone theory
7. Learn PNP transistor biasing techniques
8. Learn NPN transistor biasing techniques
9. Learn how to use the Cadet circuit trainer
10. Construct a half-wave rectifier
11. Research microphone construction project
12. Construct a stereo microphone
13. Learn the procedure for kitting a stereo microphone
14. Learn to read circuits from a printed circuit board (pcb).
15. Review proper techniques of soldering
16. Learn operating characteristics of triacs
17. Learn operating characteristics of SCRs
18. Learn operating characteristics of NPN transistors
19. Learn operating characteristics of PNP transistors
20. Learn types of fuses
21. Learn types of switches
22. Construct a bridge rectifier
23. Learn FET theory
24. Learn troubleshooting techniques for diodes

25. Learn troubleshooting a power supply
26. Learn proximity switch characteristics
27. Learn basic photo resistor operating characteristics
28. Review Lambda principles
29. Construct piezo electric circuits
30. Learn troubleshooting techniques for an amplifier
31. Take a comprehensive final examination
32. Download "Troubleshooting and Repair of Consumer and Electronic" equipment
33. Learn MOSFET theory
34. Construct resonant circuits
35. Define circuit impedance
36. Learn how to use PCB design software
37. Learn Bridge- Rectifier operation
38. Learn semiconductor manufacturing process
39. Learn PCB manufacturing process
40. Calculate circuit resonance
41. Learn diode troubleshooting techniques
42. Learn Printed Circuit Board architecture
43. Review basic DC principles
44. Review basic AC principles
45. Calculate circuit impedance

Course Evaluation

There will be four major assignments that will reinforce the stated course objectives.
Each will be worth 100 points. Each will be a blog posting.

Course Schedule

The class meets for 3 lecture/presentation hours per week on Wednesday evenings (5:20-7:50pm). Course content will be taught in the order that the content goals are presented in the syllabus. The schedule for this course is provided on Blackboard.

Approved by: *Kenneth Flick* Developed/Revised: 5/13
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. Reinstatement requires the signature of the division dean.
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, 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. 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 Text Alert at TCL" and fill out the form or go to www.tcl.edu/textalert.asp