



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

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ACR 250 DUCT FABRICATION

Course Description

This course instructs the proper procedures for designing and fabricating duct systems for HVAC.
3 Cr (3 lect/pres, 0 lab, 0 other)

Course Focus

The course covers the correct method to design and install duct systems using Manual D and current codes. The course outline is chapters 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

Text and References

Residential Duct Systems, Manual D: Hank Ruthowski, Air Conditioning Contractors of America.
Publisher: Air Conditioning Contractors of America, Arlington, VA.
Published: 1994 ISBN: N/A

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. review OSHA standards
2. state the effects of substance abuse
3. discuss importance of GFCI
4. demonstrate proper use of power tools
5. practice safe work habits
6. draw an extended plenum system
7. draw a reducing plenum system
8. draw a flexible duct system
9. establish return air paths
10. explain types of ductwork
11. classify perimeter duct systems
12. discuss duct materials
13. identify primary equipment
14. identify secondary equipment
15. show air side devices
16. convert velocity to metric units
17. convert pressure to metric units
18. graph duct pressures

19. graph blower performance
20. graph duct curve
21. plot system operating point
22. *calculate effective length
23. calculate friction rate
24. check velocity limits
25. change system resistance
26. determine cooling factor
27. determine heating factor
28. understand friction rate charts
29. *use duct calculator
30. explain types of duct fittings
31. design a metal duct system
32. design a flex duct system
33. identify duct connections
34. show duct tools
35. demonstrate use of duct tools
36. make pittsburgh seam
37. explain bending tools
38. assemble round metal duct system
39. assemble flex duct system
40. cut metal with snips
41. use metal forming tools
42. use duct board tools
43. cut duct board
44. assemble duct board
45. install duct board

Student Contributions

Each student will spend at least 6 hours per week preparing for class. Attendance is critical in this class.

Course Evaluation

The student will design a duct system using Manual D. The student will build and test the duct system. There will be one open book exam worth a maximum of 10 points. The duct design is worth a maximum of 50 points. The lab project is building and testing a duct system is worth a maximum of 40 points.

Grading:

- 90 - 100 A
- 80 - 89 B
- 70 - 79 C
- 60 - 69 D
- 0 - 59 F

Course Schedule

The class meets for 3 lecture/presentation hours per week.

Approved by: Kenneth Flick
Ken Flick, Division Dean for Business/Industrial Division

Developed/Revised: 9/21/2012

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*

o 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, 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 TextAlert at TCL” and fill out the form or go to www.tcl.edu/textalert.asp