

COURSE INFORMATION:

Course Prefix/No.:	ACR 150
Course Title:	Basic Sheetmetal
Lecture Hours/Week:	1.0
Lab Hours/Week:	3.0
Credit Hours/Semester:	2.0

[Distance Learning Attendance/VA Statement](#)
[Textbook Information](#)

COURSE DESCRIPTION:

This course covers the tools and procedures required in the fabrication of duct work.

COURSE COMPETENCIES:

Upon successful completion of this course, the student should be competent to perform the following.

Module 1 - Personal Safety and Work Practices

- Identify and wear appropriate clothing.
- Use safety equipment properly (e.g., footwear, hearing protection, hardhat, goggles, gloves).
- Demonstrate good housekeeping practices in the lab.

Module 2 - Hand Tools

- Identify and correctly use the following basic hand tools:
 - *screws*
 - *scratch awl*
 - *sheet metal snips*
 - *various hammers*
 - *tape measure*
 - *pop rivets*
- Demonstrate the use of tin snips, left, right, & straight.
- Identify and correctly use all basic hand-held sheet metal tools.
- Identify and correctly use all basic hand-held tools for duct board.

Module 3 - Sheetmetal Tools and Equipment

- Demonstrate the proper use of sheet metal bending tools.
- Demonstrate the proper use of sheet metal cutting tools.

Module 4 - Air Flow Principles/Duct Design

- Identify the different types of ductwork and fittings.
- Identify the different pressure of ductwork.
- Identify the different types of connections.

Module 5 - Fabrication

- Fabricate the following fittings.

Sheet metal fittings:

- | | |
|------------------|--|
| a. 10x4 | Rectangular duct |
| b. 8x6 to 6x6 | Change joint with three sides straight |
| c. 8x4 to 4x4 | Change joint - center flare, two sides straight |
| d. 8x6 to 6x6 | Change elbow with square throat and heel |
| e. 6x6 to 6x6 | Curved elbow with curved throat |
| f. 8x6 to 6x6 | Curved elbow with curved throat |
| g. 8x6 to 6x6 | Change elbow with square throat and curved wrapper |
| h. 6x6 | Clinch tee with curved throat & straight back |
| i. 8x8 to 6x8 | Y branch with curved throat |
| j. 8x8, 6x8, 6x8 | Y branch with combined heel |
| k. 6x6 | Plain offset with curved heels |
| l. 8x6 to 6x6 | Change offset with curved heels |

Combined:

- | | |
|-------------|------------------|
| m. 8x8 to 6 | Square to round. |
|-------------|------------------|

Fiberglass fittings:

- | | |
|-------------------|----------------|
| n. 8x8 | Straight duct |
| o. 8x8 to 6x8 | Transition |
| p. 8x8 to 8x8 | Ell with vanes |
| q. 10x8, 8x8, 8x8 | Tee joint |

- Fabricate a "Hand" pittsburg.
- Fabricate "Hand" slips and drives.

STANDARDS:

Assignments and attendance must be completed as designated in "Evaluation Strategies/Grading." Criteria for minimal acceptable performance will be provided by the instructor.

REQUIREMENTS:

Attendance Policy

The college attendance policy, stated in the college handbook, will be honored. The instructor will provide specific requirements for the course.

Academic Honesty

Students are expected to adhere to the college policy regarding student conduct as stated in the college handbook.

Assignments

Students are expected to complete all assignments and any supplementary exercises designated by the instructor.

EVALUATION STRATEGIES/GRADING:

Students must complete all modules, including assignments, projects, labs, and tests. Students must earn at least a "C" in order for the course to serve as a prerequisite and for the course to apply towards a certificate.

Grading Scale:

A = 90 - 100
B = 80 - 89.9
C = 70 - 79.9
D = 60 - 69.9
F = 00 - 59.9

Evaluation Method:

Tests may be written or oral and may contain questions that are true or false, short answer, multiple choice, fill in the blank and/or problems. Students should refer to the instructor for the number of tests to be given and the material to be covered on each test. Each test will be of equal weight unless otherwise indicated by the instructor. Lab grades will be based on the completion of the course competencies, team work, safety, class participation, and housekeeping.

Tests/Projects (minimum of four total)	10% of each Module
Lab	5% of each Module
Work Attitude	5% of each Module

20% X 5 modules = 100% Final Grade

Work Attitude is defined as:

- Participation
- Cooperation
- Accountability
- Effort
- Safety
- Time Management
- Responsibility
- Professionalism
- Attendance
- Self Motivation
- Works Independently
- Initiative

ENTRY LEVEL SKILLS:

Students should demonstrate hand/eye coordination, manual dexterity, and be able to work in an industrial environment.

PREREQUISITES/CO-REQUISITES:

None

METHODS OF INSTRUCTION:

Lectures, reading assignments, projects, discussions, video presentations, multi-media presentations, and web content are the major teaching methods used in this course. See instructor for specifics.

LAB EXERCISES (See addendum or instructor for additional details):

Module 1 - Personal Safety and Work Practices

- Identify and wear appropriate clothing.
- Use safety equipment properly (e.g., footwear, hearing protection, hardhat, goggles, gloves).
- Demonstrate good housekeeping practices in the lab.

Module 2 - Hand Tools

- Identify and correctly use the following basic hand tools:
 - *screws*
 - *scratch awl*
 - *sheet metal snips*
 - *various hammers*
 - *tape measure*
 - *pop rivets*
- Demonstrate the use of tin snips, left, right, & straight.
- Identify and correctly use all basic hand-held sheet metal tools.
- Identify and correctly use all basic hand-held tools for duct board.

Module 3 - Sheetmetal Tools and Equipment

- Demonstrate the proper use of sheet metal bending tools.
- Demonstrate the proper use of sheet metal cutting tools.

Module 4 - Air Flow Principles/Duct Design

- Identify the different types of ductwork and fittings.
- Identify the different pressure of ductwork.
- Identify the different types of connections.

Module 5 - Fabrication

- Fabricate the following fittings.

Sheet metal fittings:

r.	10x4	Rectangular duct
s.	8x6 to 6x6	Change joint with three sides straight
t.	8x4 to 4x4	Change Joint - Center flare, two sides straight
u.	8x6 to 6x6	Change elbow with square throat and heel
v.	6x6 to 6x6	Curved elbow with curved throat
w.	8x6 to 6x6	Curved elbow with curved throat
x.	8x6 to 6x6	Change elbow with square throat and curved wrapper
y.	6x6	Clinch tee with curved throat & straight back
z.	8x8 to 6x8	Y branch with curved throat
aa.	8x8, 6x8, 6x8	Y branch with combined heel
bb.	6x6	Plain offset with curved heels
cc.	8x6 to 6x6	Change offset with curved heels

Combined:

dd.	8x8 to 6	Square to round
-----	----------	-----------------

Fiberglass fittings:

ee.	8x8	Straight duct
ff.	8x8 to 6x8	Transition
gg.	8x8 to 8x8	Ell with vanes
hh.	10x8, 8x8, 8x8	Tee joint

- Fabricate a "Hand" pittsburg.
- Fabricate "Hand" slips and drives.