

COURSE OUTLINE
Industrial Technology 205
CAQI/QM/QS Air Distribution Module

I. Catalog Statement

Industrial Technology 205 examines the practical fundamentals and theory behind basic air distribution systems. The course reviews the basic physical properties of air, common definitions used in the trade, psychrometrics, the comfort index and indoor air quality. The course also reviews the skill sets required to properly design, install, commission, maintain, service and diagnose air distribution systems.

Total Lecture Units: 1.0

Total Course Units: 1.0

Lecture Hours: 16.0

Total Faculty Contact Hours: 16.0

Recommended Preparation: ENGL 120 or ESL 151.

II. Course Entry Expectations

Prior to enrolling in the course, the student should be able to:

1. summarize, analyze, and synthesize information, express and apply standards for judgment, compare and contrast, and evaluate evidence in order to form and state reasoned opinions;
2. demonstrate a command of grammar, diction, syntax, and mechanics sufficient for college level work: control of standard English at the sentence level, with few major errors in grammar and punctuation.

III. Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

1. understand residential and commercial duct systems;
2. understand the characteristics of quality duct designs.

IV. Course Content

Total Faculty Contact Hours = 16

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| A. Properties of Air | 4 hours |
| 1. Most used formulas for properties of air | |
| 2. How to use psychrometric charts | |
| 3. Typical heating and cooling processes | |
| 4. Airflow requirements | |
| 5. Airflow instruments and tools | |

6. Positive and negative static pressure
- B. Duct Design 4 hours
1. Various duct designs
 2. Examples of residential and commercial duct systems
 3. Target airflow rates
 4. Airflow measurement methods
 5. Fan laws for calculating fan performance
 6. Types of pulleys, fans, and blowers
- C. Installation Considerations 4 hours
1. Direct delivery
 2. Duct noise elimination
 3. Run length
 4. Divergence and convergence angles
 5. Insulation
 6. Dampers
- D. Modification, Testing, and Compliance 4 hours
1. How to modify and improve commercial duct systems
 2. Testing commercial duct systems
 3. Building and commissioning commercial duct systems
 4. 2014 Title-24 effecting change out situations of ducting systems

V. Methods of Instruction

The following instructional methodologies may be used in the course:

1. lecture;
2. demonstrations;
3. multi-media.

VI. Out of Class Assignments

The following out of class assignments may be used in the course:

1. essay (e.g. explain the difference between residential and commercial duct systems);
2. essay (e.g. explain how 2014 Title-24 now affects commercial duct installations).

VII. Methods of Evaluation

The following methods of evaluation may be used in the course:

1. quizzes;
2. final examination.

VIII. Textbook

Institute of Heating and Air Conditioning Industries, Inc. *IHACI – Air Distribution Module*.

Glendale: Institute of Heating and Air Conditioning Industries, 2014. Print.
12th Grade Textbook Reading Level.

IX. Student Learning Outcomes

Upon successful completion of the required coursework, the student will be able to:

1. demonstrate knowledge about air flow measurements;
2. explain the characteristics of quality duct designs;
3. explain the key differences between residential and commercial systems.