

SYLLABUS

INSTITUTION: Danville Community College

DIVISION: Business and Engineering Technology

REVISED: Summer 2014

CURRICULA IN WHICH COURSE IS TAUGHT: Air Conditioning and Refrigeration

COURSE NUMBER AND TITLE: Air 255-01 Air Conditioning Systems

INSTRUCTOR NAME: Mark Bryant

INSTRUCTOR E-MAIL: mbryant@dcc.vccs.edu

INSTRUCTOR OFFICE HOURS: As posted

CREDIT HOURS: 3 **HOURS/WK LEC:** 2 **HOURS/WK LAB:** 3 **LEC/LAB COMB:** 5

TEXTBOOK: Trane Air Conditioning Manual

- I. CATALOG DESCRIPTION:** Studies water-cooled condensers, refrigerant piping design, capacity controls, air washers, water and steam piping arrangements.
- II. RELATIONSHIP OF THE COURSE TO CURRICULA OBJECTIVES:**
- Give the student a broad knowledge of summer air conditioning equipment and systems.
 - To aid in the development of skills and procedures required to be proficient in the application of these systems
- III. REQUIRED BACKGROUND/PREREQUISITIES:**
- Prerequisite: Air 167 and Air 254
- IV. COURSE CONTENT:**
- Water-cooled condensers
 - Air-cooled condensers
 - Refrigerant piping
 - Capacity controls
 - Water and steam piping arrangements
- V. THE FOLLOWING GENERAL EDUCATION OBJECTIVES WILL BE ADDRESSED IN THIS COURSE**
- 1. Communication**
- A competent communicator can interact with others using all forms of communication, resulting in understanding and being understood.
- Degree graduates will demonstrate the ability to
- 1.1 understand and interpret complex materials;
 - 1.2 assimilate, organize, develop, and present an idea formally and informally;
 - 1.3 use standard English;
 - 1.4 use appropriate verbal and non-verbal responses in interpersonal relations and group discussions;
 - 1.5 use listening skills; and
 - 1.6 recognize the role of culture in communication.

2. Critical Thinking

A competent critical thinker evaluates evidence carefully and applies reasoning to decide what to believe and how to act.

Degree graduates will demonstrate the ability to

- 2.1 discriminate among degrees of credibility, accuracy, and reliability of inferences drawn from given data;
 - 2.2 recognize parallels, assumptions, or presuppositions in any given source of information;
 - 2.3 evaluate the strengths and relevance of arguments on a particular question or issue;
 - 2.4 weigh evidence and decide if generalizations or conclusions based on the given data are warranted;
 - 2.5 determine whether certain conclusions or consequences are supported by the information provided;
- and
- 2.6 use problem solving skills.

3. Cultural and Social Understanding

A culturally and socially competent person possesses an awareness, understanding, and appreciation of the interconnectedness of the social and cultural dimensions within and across local, regional, state, national, and global communities.

Degree graduates will demonstrate the ability to

- 3.1 assess the impact that social institutions have on individuals and culture—past, present, and future;
- 3.2 describe their own as well as others' personal ethical systems and values within social institutions; and
- 3.3 recognize the impact that arts and humanities have upon individuals and cultures.
- 3.4 recognize the role of language in social and cultural contexts.
- 3.5 recognize the interdependence of distinctive world-wide social, economic, geopolitical, and cultural systems

4. Information Literacy

A person who is competent in information literacy recognizes when information is needed and has the ability to locate, evaluate, and use it effectively. (adapted from the American Library Association definition)

Degree graduates will demonstrate the ability to

- 4.1 determine the nature and extent of the information needed;
 - 4.2 access needed information effectively and efficiently;
 - 4.3 evaluate information and its sources critically and incorporate selected information into his or her knowledge base;
 - 4.4 use information effectively, individually or as a member of a group, to accomplish a specific purpose;
- and
- 4.5 understand many of the economic, legal, and social issues surrounding the use of information and access and use information ethically and legally.

5. Personal Development

An individual engaged in personal development strives for physical well-being and emotional maturity.

Degree graduates will demonstrate the ability to

- 5.1 develop and/or refine personal wellness goals; and
- 5.2 develop and/or enhance the knowledge, skills, and understanding to make informed academic, social, personal, career, and interpersonal decisions.

6. Quantitative Reasoning

A person who is *competent* in quantitative reasoning possesses the skills and knowledge necessary to apply the use of logic, numbers, and mathematics to deal effectively with common problems and issues.

A person who is quantitatively *literate* can use numerical, geometric, and measurement data and concepts, mathematical skills, and principles of mathematical reasoning to draw logical conclusions and to make well-reasoned decisions.

Degree graduates will demonstrate the ability to

- 6.1 use logical and mathematical reasoning within the context of various disciplines;
- 6.2 interpret and use mathematical formulas;
- 6.3 interpret mathematical models such as graphs, tables and schematics and draw inferences from them;
- 6.4 use graphical, symbolic, and numerical methods to analyze, organize, and interpret data;
- 6.5 estimate and consider answers to mathematical problems in order to determine reasonableness; and
- 6.6 represent mathematical information numerically, symbolically, and visually, using graphs and charts.

7. Scientific Reasoning

A person who is competent in scientific reasoning adheres to a self-correcting system of inquiry (the scientific method) and relies on empirical evidence to describe, understand, predict, and control natural phenomena.

Degree graduates will demonstrate the ability to

- 7.1 generate an empirically evidenced and logical argument;
- 7.2 distinguish a scientific argument from a non-scientific argument;
- 7.3 reason by deduction, induction and analogy;
- 7.4 distinguish between causal and correlational relationships; and
- 7.5 recognize methods of inquiry that lead to scientific knowledge

VI. LEARNER OUTCOMES

VII. EVALUATION

<p>Water-cooled and air-cooled condensers</p> <ul style="list-style-type: none"> • Understand the use and operation • Identify different types and applications • 	<p>Evaluation method</p> <p>Lab exercises Written test Online exam</p>
<p>Cooling Towers</p> <ul style="list-style-type: none"> • Understand their function • Navigate the applications • Identify the different styles 	<p>Evaluation method</p> <p>Lab exercises In class assignments Written test</p>
<p>Refrigeration piping</p> <ul style="list-style-type: none"> • Understand the function • Navigate the types of piping • Identify the proper installation 	<p>Evaluation method</p> <p>Lab exercises In class assignments Written test</p>
<p>Steam piping arrangements</p> <ul style="list-style-type: none"> • Understand piping layouts • Navigate the proper components • Identify the proper installation 	<p>Evaluation method</p> <p>Lab exercises In class assignments Written test</p>