Course Outline

Building and Construction Trades

REVISED: July/2022

Job Title
Air Conditioning Technician

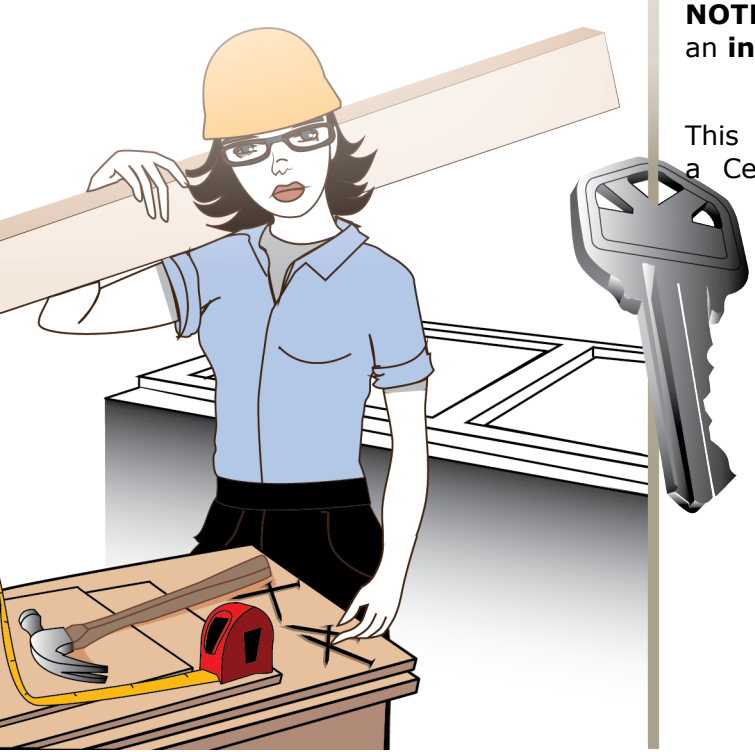
Career Pathway:
Mechanical Systems Installation and Repair

Industry Sector:
Building and Construction Trades

O*NET-SOC CODE:
49-9021.00

CBEDS Title:
Heating, Ventilation, and Air Conditioning (HVAC) Systems

CBEDS No.:
5516



79-10-50

Air Conditioning/Refrigeration: Fundamentals

Credits: 10 **Hours:** 120

Course Description:
This competency-based course is designed to provide training in the commercial refrigeration and air conditioning field. Instruction includes orientation, safety, matter and heat, basic electricity, metal working techniques, principles of air flow, electric motor selection, troubleshooting and maintenance, cooling control systems, evaluate air conditioning and electrical components in a cooling system, heat pumps, customer relations, employability skills and resume preparation. The competencies in this course are aligned with the California High School Academic Content Standards and the California Career Technical Education Model Curriculum Standards.

Prerequisites:
None.

NOTE: For Perkins purposes this course has been designated as an **introductory** course.

This course **cannot** be repeated once a student receives a Certificate of Completion.

Los Angeles Unified School District
Division of Adult and Career Education
Instructional and Couseling Services Unit
Adult Curriculum Office
adultinstruction.org

COURSE OUTLINE COMPETENCY-BASED COMPONENTS

A course outline reflects the essential intent and content of the course described. Acceptable course outlines have six components. (Education Code Section 52506). Course outlines for all apportionment classes, including those in jails, state hospitals, and convalescent hospitals, contain the six required elements:

(EC 52504; 5CCR 10508 [b]; Adult Education Handbook for California [1977], Section 100)

COURSE OUTLINE COMPONENTS	**LOCATION**
GOALS AND PURPOSES	Cover

The educational goals or purposes of every course are clearly stated and the class periods are devoted to instruction. The course should be broad enough in scope and should have sufficient educational worth to justify the expenditure of public funds.

The goals and purpose of a course are stated in the COURSE DESCRIPTION. Course descriptions state the major emphasis and content of a course, and are written to be understandable by a prospective student.

PERFORMANCE OBJECTIVES OR COMPETENCIES	pp. 7-13

Objectives should be delineated and described in terms of measurable results for the student and include the possible ways in which the objectives contribute to the student's acquisition of skills and competencies.

Performance Objectives are sequentially listed in the COMPETENCY-BASED COMPONENTS section of the course outline. Competency Areas are units of instruction based on related competencies. Competency Statements are competency area goals that together define the framework and purpose of a course. Competencies fall on a continuum between goals and performance objectives and denote the outcome of instruction.

Competency-based instruction tells a student before instruction what skills or knowledge they will demonstrate after instruction. Competency-based education provides instruction which enables each student to attain individual goals as measured against pre-stated standards.

Competency-based instruction provides immediate and continual repetition. In competency-based education the curriculum, instruction, and assessment share common characteristics based on clearly stated competencies. Curriculum, instruction and assessment in competency-based education are: explicit, known, agreed upon, integrated, performance oriented, and adaptive.

COURSE OUTLINE COMPETENCY-BASED COMPONENTS (continued)

COURSE OUTLINE COMPONENTS	LOCATION
INSTRUCTIONAL STRATEGIES	p. 15
Instructional techniques or methods could include laboratory techniques, lecture method, small-group discussion, grouping plans, and other strategies used in the classroom. Instructional strategies for this course are listed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructional strategies and activities for a course should be selected so that the overall teaching approach takes into account the instructional standards of a particular program, i.e., English as a Second Language, Programs for Adults with Disabilities.	
UNITS OF STUDY, WITH APPROXIMATE HOURS ALLOTTED FOR EACH UNIT	Cover
The approximate time devoted to each instructional unit within the course, as well as the total hours for the course, is indicated. The time in class is consistent with the needs of the student, and the length of the class should be that it ensures the student will learn at an optimum level. Units of study, with approximate hours allotted for each unit are listed in the COMPETENCY AREA STATEMENT(S) of the course outline. The total hours of the course, including work-based learning hours (community classroom and cooperative vocational education) is listed on the cover of every CBE course outline. Each Competency Area listed within a CBE outline is assigned hours of instruction per unit.	pp. 7-13
EVALUATION PROCEDURES	p. 15
The evaluation describes measurable evaluation criteria clearly within the reach of the student. The evaluation indicates anticipated improvement in performances as well as anticipated skills and competencies to be achieved. Evaluation procedures are detailed in the TEACHING STRATEGIES AND EVALUATION section of the course outline. Instructors monitor students' progress on a continuing basis, assessing students on attainment of objectives identified in the course outline through a variety of formal and informal tests (applied performance procedures, observations, and simulations), paper and pencil exams, and standardized tests.	
REPETITION POLICY THAT PREVENTS PERPETUATION OF STUDENT ENROLLMENT	Cover
After a student has completed all the objectives of the course, he or she should not be allowed to reenroll in the course. There is, therefore, a need for a statement about the conditions for possible repetition of a course to prevent perpetuation of students in a particular program for an indefinite period of time.	

ACKNOWLEDGMENTS

Thanks to KHAM NGUYEN, STEWART TADA for developing and editing this curriculum. Acknowledgment is also given to ERICA ROSARIO for designing the original artwork for the course covers.

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1.0 Academics
Analyze and apply appropriate academic standards required for successful industry sector pathway completion leading to postsecondary education and employment. Refer to the Building and Construction Trades academic alignment matrix for identification of standards.

2.0 Communications
Acquire and accurately use Building and Construction Trades sector terminology and protocols at the career and college readiness level for communicating effectively in oral, written, and multimedia formats.

3.0 Career Planning and Management
Integrate multiple sources of career information from diverse formats to make informed career decisions, solve problems, and manage personal career plans.

4.0 Technology
Use existing and emerging technology to investigate, research, and produce products and services, including new information, as required in the Building and Construction Trades sector workplace environment.

5.0 Problem Solving and Critical Thinking
Conduct short, as well as more sustained, research to create alternative solutions to answer a question or solve a problem unique to the Building and Construction Trades sector using critical and creative thinking, logical reasoning, analysis, inquiry, and problem-solving techniques.

6.0 Health and Safety
Demonstrate health and safety procedures, regulations, and personal health practices and determine the meaning of symbols, key terms, and domain-specific words and phrases as related to the Building and Construction Trades sector workplace environment.

7.0 Responsibility and Flexibility
Initiate, and participate in, a range of collaborations demonstrating behaviors that reflect personal and professional responsibility, flexibility, and respect in the Building and Construction Trades sector workplace environment and community settings.

8.0 Ethics and Legal Responsibilities
Practice professional, ethical, and legal behavior, responding thoughtfully to diverse perspectives and resolving contradictions when possible, consistent with applicable laws, regulations, and organizational norms.

9.0 Leadership and Teamwork
Work with peers to promote divergent and creative perspectives, effective leadership, group dynamics, team and individual decision making, benefits of workforce diversity, and conflict resolution as practiced in the SkillsUSA career technical student organization.

10.0 Technical Knowledge and Skills
Apply essential technical knowledge and skills common to all pathways in the Building and Construction Trades sector, following procedures when carrying out experiments or performing technical tasks.

11.0 Demonstration and Application
Demonstrate and apply the knowledge and skills contained in the Building and Construction Trades anchor standards, pathway standards, and performance indicators in classroom, laboratory, and workplace settings, and through the SkillsUSA career technical student organizations.

C. Mechanical Systems Installation and Repair Pathway

The Mechanical Systems Installation and Repair pathway provides students with competencies fundamental for preparing for employment or advanced training in heating, ventilation, air-conditioning (HVAC) and appliance installation, maintenance, and repair. The pathway includes preparation for a Class C California License and EPA certification.

Sample occupations associated with this pathway:

- HVAC Installation and Maintenance Specialist
- Plumbing Installer
- Sheet Metal Fabricator
- Mechanical Engineer/Technician
- Mechanical Construction Field Manager

C1.0 Demonstrate an understanding of the methods and devices used to improve air quality and comfort.

C2.0 Describe the basic components and concepts of heating, air-conditioning, and refrigeration.

C3.0 Demonstrate an understanding of the scientific theories and physical properties of heat and matter.

C4.0 Analyze the effects and reactions of fluids, pressures, and temperatures on refrigerants.

C5.0 Demonstrate skills necessary to fabricate and service the tubing, piping, and fittings utilized in accordance with accepted industry standards.

C6.0 Demonstrate the skills necessary to service, maintain, and repair heating, air-conditioning, and refrigeration system components and accessories.

C7.0 Demonstrate a practical knowledge of basic electricity and skills necessary to service and maintain the electrical components of heating, air-conditioning, and refrigeration equipment.

C8.0 Troubleshoot electrical control systems, motors, and their components.

C9.0 Demonstrate a practical knowledge of solid-state electronics.

C10.0 Demonstrate a practical knowledge of combustion heating systems.

C11.0 Demonstrate practical knowledge of systems designed to improve air quality.

COMPETENCY-BASED COMPONENTS
for the Air Conditioning/Refrigeration Fundamentals Course

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
A. ORIENTATION AND SAFETY Understand, apply, and evaluate classroom and workplace policies and procedures used in accordance with federal, state, and local safety and environmental regulations.	1. Describe the scope and purpose of the course. 2. Describe the overall course content as a part of the Linked Learning Initiative. 3. Describe classroom policies and procedures. 4. Describe the different occupations in the Building and Construction Trades Industry Sector, which have an impact on the role of air conditioning technicians. 5. Describe the opportunities available for promoting gender equity and the representation of non-traditional populations in the air conditioning field. 6. Describe the purpose of the California Occupational Safety and Health Administration (Cal/OSHA) and its laws governing air conditioning technicians. 7. Describe the impact of Environmental Protection Agency (EPA) legislation on the Building and Construction Trades Industry Sector practices. 8. Describe and demonstrate the procedures for contacting proper authorities for the removal of hazardous materials based on the EPA standards. 9. Describe the National Electrical Code (NEC) and its role in safeguarding the work conditions of air conditioning technicians. 10. Describe and demonstrate the use of the Safety Data Sheet (SDS) as it applies to the air conditioning field. 11. Describe the role of the Leadership in Energy and Environmental Design (LEED) Green Building Rating System™, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), and National Association of Home Builders (NAHB) in increasing the use of green and sustainable technology in California. 12. Describe the federal, state, and local Building and Safety Codes and their applications to the air conditioning field. 13. Describe the provisions of the California Title 24 Energy Efficiency Standards (a.k.a. 2008 California Green Building Standards Code) as they relate to the Building and Construction Trades Industry Sector. 14. Describe classroom and workplace first aid and emergency procedures based on the American Red Cross (ARC) standards. 15. Describe how each of the following insures a safe workplace: a. employees' rights as they apply to job safety b. employers' obligations as they apply to safety c. adherence to pressure vessel guidelines d. adherence to electrical shock hazard (NFPA 70E) prevention guidelines	**Career Ready Practice:** 1, 3, 7, 8, 12 **CTE Anchor:** Academics: 1.0 Career Planning & Management: 3.4, 3.6 Health & Safety: 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12 Responsibility & Flexibility: 7.3 Ethics & Legal Responsibilities: 8.2, 8.3, 8.7 Technical Knowledge & Skills: 10.1, 10.2, 10.5 **CTE Pathway:** C1.8, C1.9, C4.8

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(5 hours)	e. adherence to mechanical safety guidelines f. adherence to safe lifting guidelines 16. Pass the safety test with 100% accuracy.	
B. MATTER AND HEAT Understand how the three states of matter affect heat. (15 hours)	1. List the three states of matter. 2. Differentiate among the three states of matter. 3. Describe molecular movement. 4. State the first law of thermodynamics. 5. Describe the first law of thermodynamics. 6. State the second law of thermodynamics. 7. Describe the second law of thermodynamics. 8. Describe temperature measurement. 9. Define British Thermal Unit (BTU). 10. List the five changes of state. 11. Describe: a. solidification b. liquefaction c. vaporization d. condensation e. sublimation 12. Describe how changes of state are used in the refrigeration cycle. 13. List the heat transfer methods. 14. Describe: a. conduction b. convection c. radiation 15. Describe insulation.	**Career Ready Practice:** 1, 12 **CTE Anchor:** Academics: 1.0 Technical Knowledge & Skills: 10.1 **CTE Pathway:** C2.1, C3.1, C3.2, C3.3, C4.2
C. BASIC ELECTRICITY Understand the principles of basic electricity. (10 hours)	1. Explain Ohm's Law. 2. Calculate Ohm's Law problems. 3. Describe series circuits. 4. Describe parallel circuits. 5. Describe series/parallel circuits. 6. Know how to use schematics. 7. Design and draw schematics. 8. Describe alternating current (AC) and direct current (DC). 9. Describe refrigeration and air conditioning applications for AC and DC. 10. Identify various power supplies. 11. Describe single-phase and three-phase electrical power. 12. Analyze and repair basic electrical problems. 13. Demonstrate the ability to read and wire a diagram.	**Career Ready Practice:** 1, 8, 11 **CTE Anchor:** Academics: 1.0 Ethics & Legal Responsibilities: 8.1 Technical Knowledge & Skills: 10.1, 10.2 **CTE Pathway:** C7.1, C7.2, C7.3, C7.4, C7.5, C7.6

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
D. METAL WORKING TECHNIQUES Understand how to cut, form, and join sheet metal and tubing. (15 hours)	1. Differentiate between welding, brazing, and soldering. 2. Demonstrate the ability to weld, braze, solder, and flow nitrogen to keep pipes clean. 3. Perform proper procedure to adjust oxygen and acetylene tank. 4. Demonstrate the ability to cut and bend tubing. 5. Demonstrate the ability to cut and form sheet metal.	**Career Ready Practice:** 1, 5, 10 **CTE Anchor:** Academics: 1.0 Problem Solving & Critical Thinking: 5.1, 5.2, 5.3, 5.4 Technical Knowledge & Skills: 10.1, 10.2 Demonstration & Application: 11.1 **CTE Pathway:** C5.2, C5.3, C5.4, C5.5, C5.7
E. PRINCIPLES OF AIR FLOW Understand the principles of air flow as they relate to temperature control. (10 hours)	1. Describe various ways of making air flow. 2. Describe natural and forced convection. 3. Draw a typical room air flow system, showing discharge, return, and air flow patterns. 4. Define resistance pressures. 5. Describe various air flow measuring instruments. 6. Know how to use air friction charts. 7. Describe the effects that various types and sizes of ducts have on air flow. 8. Describe noise considerations in choosing ducting. 9. Describe various types of fans. 10. Know how to choose the proper size and style fan for various conditions. 11. Calculate the motor size required to change a system from one volume to another. 12. Describe various air distribution problems such as balancing, volume, and noise. 13. Design a properly sized disposable filter.	**Career Ready Practice:** 1, 5, 11, 12 **CTE Anchor:** Academics: 1.0 Problem Solving & Critical thinking: 5.2, 5.3, 5.4 Technical Knowledge & Skills: 10.1, 10.2 **CTE Pathway:** C1.5, C11.4, C11.5, C11.6
F. ELECTRIC MOTOR SELECTION Understand the various types of motors used in refrigeration and air conditioning.	1. Describe single-phase and three-phase motors. 2. Differentiate among split-phase, capacitor-start, permanent-split, capacitor, capacitor-start-capacitor-run, shaded-pole motors, three-phase motor, and electronically commutated motor. 3. Describe efficiency versus cost in choosing electric motors. 4. List various motor controls and accessories. 5. Describe various motor control problems and their solutions. 6. Describe various methods of improving motor efficiency.	**Career Ready Practice:** 1, 5 **CTE Anchor:** Academics: 1.0

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(10 hours)		Problem Solving & Critical Thinking: 5.1, 5.4 Technical Knowledge & Skills: 10.1 **CTE Pathway:** C7.2, C8.3, C8.7, C8.8
G. TROUBLESHOOTING AND MAINTENANCE Demonstrate troubleshooting and maintenance techniques. (15 hours)	1. List at least three principles of maintenance. 2. Identify principles of troubleshooting. 3. Demonstrate logical thought. 4. List at least three ways of correcting existing problems in: a. an electric heating system b. a gas appliance 5. Describe various ways of preventing the reoccurrence of a problem. 6. Demonstrate the ability to perform a normal maintenance check on a gas furnace. 7. Demonstrate the ability to maintain: a. electronic air cleaners b. various types of cooling systems c. heat pumps	**Career Ready Practice:** 1, 5, 10 **CTE Anchor:** Academics: 1.0 Problem Solving & Critical Thinking: 5.1, 5.2, 5.3, 5.4 Technical Knowledge & Skills: 10.1, 10.2 Demonstration & Application: 11.1 **CTE Pathway:** C6.3, C6.4, C6.10, C8.1, C10.2, C10.3, C10.4, C10.7
H. COOLING CONTROL SYSTEMS Demonstrate troubleshooting and maintenance techniques. (10 hours)	1. List various types of cooling control systems. 2. Describe: a. electronic cooling control systems b. pneumatic cooling control circuits c. multi-zone cooling control circuits 3. Draw a multi-zone electrical control system schematic diagram. 4. Differentiate among the various cooling control systems.	**Career Ready Practice:** 1, 5, 12 **CTE Anchor:** Academics: 1.0 Problem Solving & Critical Thinking: 5.3 Technical Knowledge & Skills: 10.1 Demonstration & Application: 11.1 **CTE Pathway:** C8.1, C8.3, C8.4

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
I. EVALUATE AIR CONDITIONING AND ELECTRICAL COMPONENTS IN A COOLING SYSTEM Understand how to troubleshoot and repair various air conditioning and electrical components in a cooling system. (15 hours)	1. Demonstrate the ability to troubleshoot: a. a compressor electrically b. control boards 2. Evaluate the ability to test cooling system by using temperature and pressure. 3. Know how to perform a refrigerant-system change-out. 4. Describe equipment-system interface. 5. Demonstrate the ability to perform a dehydration and evaluation of a system.	**Career Ready Practice:** 1, 5, 8, 10, 11 **CTE Anchor:** Academics: 1.0 Problem Solving & Critical Thinking: 5.1, 5.2, 5.3, 5.4 Ethics & Legal Responsibilities: 8.1 Technical Knowledge & Skills: 10.1, 10.2 Demonstration & Application: 11.1 **CTE Pathway:** C6.1, C6.2, C6.6, C6.7, C6.10, C6.11, C8.1
J. HEAT PUMPS Understand the operation of heat pump system. (10 hours)	1. Describe the operation of heat pumps in a: a. cooling mode b. heating mode c. defrost mode 2. Compare heat pump systems with other temperature control systems. 3. Describe the Coefficient of Performance (CoP) for a heat pump. 4. Describe component isolation in heat pumps. 5. Describe the auxiliary heat in heat pumps. 6. Demonstrate the ability to diagnose and solve problems in heat pumps.	**Career Ready Practice:** 1, 5, 8, 10, 11 **CTE Anchor:** Academics: 1.0 Problem Solving & Critical Thinking: 5.1, 5.2, 5.3, 5.4 Ethics & Legal Responsibilities: 8.1, 8.3 Technical Knowledge & Skills: 10.1, 10.2, 10.5 Demonstration & Application: 11.1 **CTE Pathway:** C1.4, C6.10, C8.5

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
K. CUSTOMER RELATIONS Understand the importance of customer relations in a service industry. (3 hours)	1. Describe the importance of customer relations. 2. Write up a sample work order that the client understands. 3. Explain the importance of a client follow-up. 4. Keep your workspace clean. 5. Write up a sample estimate of costs. 6. Describe proper appearance of a service person.	**Career Ready Practice:** 1, 2, 3, 5, 7, 8, 9, 12 **CTE Anchor:** Academics: 1.0 Communications: 2.1, 2.2, 2.3, 2.5 Career Planning & Management: 3.2 Problem Solving & Critical Thinking: 5.1, 5.2, 5.3, 5.4 Responsibility & Flexibility: 7.2, 7.3, 7.4, 7.5, 7.6, 7.7 Ethics & Legal Responsibilities: 8.1, 8.3, 8.4, 8.5, 8.7 Leadership & Teamwork: 9.6 Technical Knowledge & Skills: 10.1, 10.2, 10.3 **CTE Pathway:** C1.5, C1.6, C1.8, C11.4, C11.5
L. EMPLOYABILITY SKILLS & RESUME PREPARATION Understand job seeking procedures and their importance in the trade.	1. Explain employer requirements for soft skills such as: a. punctuality and attendance b. time management c. flexibility and adaptability d. interpersonal skills e. work ethic f. communication and collaboration g. teamwork h. critical thinking and problem solving i. leadership and responsibility j. ethical behavior k. cultural and diversity differences 2. Create/revise a resume, cover letter, and/or a portfolio. 3. Review the role of online job searching platforms and career websites.	**Career Ready Practice:** 1, 2, 3, 4, 5, 7, 8, 9 **CTE Anchor:** Academics: 1.0 Communications: 2.2, 2.3, 2.4, 2.5 Career Planning & Management: 3.2, 3.3, 3.4, 3.6, 3.8 Technology: 4.1, 4.3 Problem Solving & Critical Thinking: 5.1

COMPETENCY AREAS AND STATEMENTS	MINIMAL COMPETENCIES	STANDARDS
(2 hours)	4. Complete and/or review an on-line job application. 5. Interview skills to get the job: a. do's and don'ts for job interviews b. how to dress for the job 6. Create sample follow-up letters. 7. Explain the importance of the continuous upgrading of job skills as it relates to: a. certification, licensure, and/or renewal b. professional organizations/events c. industry association and/or organized labor	Responsibility & Flexibility: 7.2, 7.3, 7.4, 7.7 Ethics & Legal Responsibilities: 8.4 Leadership & Teamwork: 9.2, 9.3, 9.4, 9.6 Demonstration & Application: 11.5 **CTE Pathway:** C1.9

SUGGESTED INSTRUCTIONAL MATERIALS and OTHER RESOURCES

TEXTS AND SUPPLEMENTAL BOOKS

Herman, Stephen L. and Bennie Sparkman. Electricity and Controls for HVAC/R, 7th Edition. Cengage Learning, 2014.

Smith, Russell E. Electricity for Refrigeration, Heating and Air Conditioning, 11th Edition. Cengage Learning, 2022

Tomczyk, John, Silberstein, Eugene, Whitman, Bill, and Johnson, Bill. Refrigeration and Air Conditioning Technology, 9th Edition, Cengage Learning, 2021

RESOURCES

Employer Advisory Board members

CTE Model Curriculum Standards
http://www.cde.ca.gov/ci/ct/sf/documents/buildingconstruct.pdf

COMPETENCY CHECKLIST

TEACHING STRATEGIES and EVALUATION

METHODS AND PROCEDURES

A. Lectures and discussions

B. Multimedia presentations

C. Visual aids

D. Projects

E. Individualized instruction

EVALUATION

SECTION A – Orientation and Safety – Pass the safety test with 100% accuracy.

SECTION B – Matter and Heat – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION C – Basic Electricity – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION D – Metal Working Techniques – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION E – Principles of Air Flow – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION F – Electric Motor Selection – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION G – Troubleshooting and Maintenance – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION H – Cooling Control Systems – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION I – Evaluate Air Conditioning & Electrical Components in a Cooling System – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION J – Heat Pumps – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION K – Customer Relations – Pass all assignments and exams with a minimum score of 80% or higher.

SECTION L – Employability Skills & Resume Preparation – Pass all assignments and exams with a minimum score of 80% or higher.

Standards for Career Ready Practice

1. **Apply appropriate technical skills and academic knowledge.**
   Career-ready individuals readily access and use the knowledge and skills acquired through experience and education. They make connections between abstract concepts with real-world applications and recognize the value of academic preparation for solving problems, communicating with others, calculating measures, and performing other work-related practices.

2. **Communicate clearly, effectively, and with reason.**
   Career-ready individuals communicate thoughts, ideas, and action plans with clarity, using written, verbal, electronic, and/or visual methods. They are skilled at interacting with others: they are active listeners who speak clearly and with purpose, and they are comfortable with terminology that is common to workplace environments. Career-ready individuals consider the audience for their communication and prepare accordingly to ensure the desired outcome.

3. **Develop an education and career plan aligned with personal goals.**
   Career-ready individuals take personal ownership of their educational and career goals and manage their individual plan to attain these goals. They recognize the value of each step in the educational and experiential process, and they understand that nearly all career paths require ongoing education and experience to adapt to practices, procedures, and expectations of an ever-changing work environment. They seek counselors, mentors, and other experts to assist in the planning and execution of education and career plans.

4. **Apply technology to enhance productivity.**
   Career-ready individuals find and maximize the productive value of existing and new technology to accomplish workplace tasks and solve workplace problems. They are flexible and adaptive in acquiring and using new technology. They understand the inherent risks—personal and organizational—of technology applications, and they take actions to prevent or mitigate these risks.

5. **Utilize critical thinking to make sense of problems and persevere in solving them**
   Career-ready individuals recognize problems in the workplace, understand the nature of the problems, and devise effective plans to solve the problems. They thoughtfully investigate the root cause of a problem prior to introducing solutions. They carefully consider options to solve a problem and, once agreed upon, follow through to ensure the problem is resolved.

6. **Practice personal health and understand financial literacy.**
   Career-ready individuals understand the relationship between personal health and workplace performance. They contribute to their personal well-being through a healthy diet, regular exercise, and mental health activities. Career-ready individuals also understand that financial literacy leads to a secure future that enables career success.

7. **Act as a responsible citizen in the workplace and the community.**
   Career-ready individuals understand the obligations and responsibilities of being a member of a community and demonstrate this understanding every day through their interactions with others. They are aware of the impacts of their decisions on others and the environment around them, and they think about the short-term and long-term consequences of their actions. They are reliable and consistent in going beyond minimum expectations and in participating in activities that serve the greater good.

8. Model integrity, ethical leadership, and effective management.

Career-ready individuals consistently act in ways that align with personal and community-held ideals and principles. They employ ethical behaviors and actions that positively influence others. They have a clear understanding of integrity and act on this understanding in every decision. They use a variety of means to positively impact the direction and actions of a team or organization, and they recognize the short-term and long-term effects that management's actions and attitudes can have on productivity, morale, and organizational culture.

9. Work productively in teams while integrating cultural and global competence.

Career-ready individuals contribute positively to every team, as both team leaders and team members. To avoid barriers to productive and positive interaction, they apply an awareness of cultural differences. They interact effectively and sensitively with all members of the team and find ways to increase the engagement and contribution of other members.

10. Demonstrate creativity and innovation.

Career-ready individuals recommend ideas that solve problems in new and different ways and contribute to the improvement of the organization. They consider unconventional ideas and suggestions by others as solutions to issues, tasks, or problems. They discern which ideas and suggestions may have the greatest value. They seek new methods, practices, and ideas from a variety of sources and apply those ideas to their own workplace practices.

11. Employ valid and reliable research strategies.

Career-ready individuals employ research practices to plan and carry out investigations, create solutions, and keep abreast of the most current findings related to workplace environments and practices. They use a reliable research process to search for new information and confirm the validity of sources when considering the use and adoption of external information or practices.

12. Understand the environmental, societal, and economic impacts of decisions.

Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact other people, organizations, the workplace, and the environment. They are aware of and utilize new technologies, understandings, procedures, and materials and adhere to regulations affecting the nature of their work. They are cognizant of impacts on the social condition, environment, workplace, and profitability of the organization.

Statement for Civil Rights

All educational and vocational opportunities are offered without regard to race, color, national origin, gender, or physical disability.