



**BUILDING MAINTENANCE
TECHNOLOGY
BUILDING MAINTENANCE
TECHNICIAN - HVAC
SKILLS STANDARDS
OD43703**

COMPETENCY-BASED EDUCATION: OKLAHOMA'S RECIPE FOR SUCCESS

BY THE INDUSTRY FOR THE INDUSTRY

Oklahoma's *CareerTech* system of competency-based education uses industry professionals and certification standards to identify the knowledge and abilities needed to master an occupation. This industry input provides the foundation for development of instructional materials that help prepare the comprehensively trained, highly skilled employees demanded by our workplace partners.

TOOLS FOR SUCCESS

CareerTech relies on three basic instructional components to deliver competency-based instruction: skills standards, curriculum materials, and competency assessments.

Skills standards provide the foundation for competency-based instruction in Oklahoma's *CareerTech* system. The skills standards outline the knowledge, skills, and abilities needed to perform related jobs within an industry. Skills standards are aligned with national skills standards; therefore, a student trained to the skills standards possesses technical skills that make him/her employable in both state and national job markets.

Curriculum materials contain information and activities that teach students the knowledge and skills outlined in the skills standards. In addition to complementing classroom instruction, curriculum resources provide supplemental activities to enhance learning and provide hands-on training experiences.

Competency Assessments test the student over material outlined in the skills standards and taught using the curriculum materials. When used with classroom performance evaluations, written competency assessments provide a means of measuring occupational readiness.

Although each of these components satisfy a unique purpose in competency-based education, they work together to reinforce the skills and abilities students need to gain employment and succeed on the job.

MEASURING SUCCESS

Written competency assessments are used to evaluate student performance. Results reports communicate competency assessment scores to students and provide a breakdown of assessment results by duty area. The results breakdown shows how well the student has mastered skills needed to perform major job functions and identifies areas of job responsibility that may require additional instruction and/or training.

Group analysis of student results also provides feedback to instructors seeking to improve the effectiveness of career and technology training. Performance patterns in individual duties indicate opportunities to evaluate training methods and customize instruction.

TRUE TO OUR PURPOSE

"Helping Oklahomans succeed in the workplace" defines the mission of Oklahoma *CareerTech* and its competency-based system of instruction. Skills standards, curriculum, and assessments that identify and reinforce industry expectations provide accountability for programs and assure *CareerTech*'s continued role in preparing skilled workers for a global job market

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**BUILDING MAINTENANCE TECHNOLOGY
 BUILDING MAINTENANCE TECHNICIAN – HVAC
 SKILLS STANDARDS
 Desired Skill Level Ratings**

Duty A: Braze, Cut, Fit, and Solder Pipe

Duty B: Tools and Their Use

Duty C: Parts and Their Use

Duty D: Test/Troubleshoot Component Parts

Duty E: Service Motors and Components

Duty F: Mechanical State Codes and Regulations

Duty G: Cut, Fit, Clean, and Assemble PVC Pipe

Desired Skill Level: The level of training necessary for the student to be employable in the occupation specified:

- 4 – Skilled Can perform the task independently with no additional training
- 3 – Moderately Skilled Has performed the task independently during training program; limited additional training may be required
- 2 – Limited Exposure Has practiced task during training program; additional training is required to develop the skills
- 1 – No Exposure No experience or knowledge in this area
- * - Not Rated Tasks included for the benefit of the student’s development only

***DSL = Desired Skill Level**

DUTY A: Braze, Cut, Fit, and Solder Pipe

CODE	TASK	DSL
A.01	Braze/solder tubing	3
A.02	Bend tubing	3
A.03	Cut tubing	3
A.04	Flare copper tubing	3
A.05	Cut and thread steel pipe	3
A.06	Swage tubing	3
A.07	Select fittings	3
A.08	Select tubing and pipe	3

DUTY B: Tools and Their Use

CODE	TASK	DSL
B.01	Select common tools/usage	3
B.02	Select specific tools/use	4

B.03	Maintain tools	3
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DUTY C: Parts and Their Use

CODE	TASK	DSL
C.01	Troubleshoot major component parts and use	4
C.02	Determine refrigeration cycle	3
C.03	Identify wire by type, size, and use	3
C.04	Interpret wiring diagram	4
C.05	Interpret service manual/equipment plate	4
C.06	Determine size/make/model of unit	3

DUTY D: Test/Troubleshoot Component Parts

CODE	TASK	DSL
D.01	Verify power at unit	4
D.02	Test thermostat controls	3
D.03	Adjust/calibrate thermostat controls	2
D.04	Test capacitors	3
D.05	Test potential relay	2
D.06	Test and install window unit switches and thermostats	3
D.07	Determine common, start, and run terminals	3
D.08	Test compressor for ground	3
D.09	Remove, test, replace fuse	3
D.10	Check breaker, size, and type	3
D.11	Clean evaporator coil	3
D.12	Clean condenser coil/comb fins	3

DUTY E: Service Motors and Components

CODE	TASK	DSL
E.01	Locate motor name plate	4
E.02	Test balance of fan blades	2
E.03	Clean, lubricate, service motor	3
E.04	Maintain service records	3
E.05	Inspect/replace motor (same type and size)	4
E.06	Inspect/replace belts/pulleys	3

DUTY F: Mechanical State Codes and Regulations

CODE	TASK	DSL
F.01	Review state mechanical code requirement	3
F.02	Review local mechanical code requirement	3
F.03	Determine window unit sizing	2

F.04	Determine CFM/air changes for window units	2
F.05	Review EPA requirements for refrigerant containment	3

DUTY G: Cut, Fit, Clean, and Assemble PVC Pipe

CODE	TASK	DSL
G.01	Select fittings	3
G.02	Select tubing and pipe	3
G.03	Cut pipe	3
G.04	Clean and assemble pipe/fittings	3
G.05	Grade pipe for drainage	3