



**National Craft Assessment and Certification Program
S P E C I F I C A T I O N S**

**INDUSTRIAL PIPEFITTER V4
PFT08_03**

September 2013

Focus Statement

An advanced pipefitter:

- Masters mathematical functions and knows their application to pipefitting.
- Is able to properly identify and master hand, power tools, and equipment, including equipment for rigging and their procedures.
- Performs and knows how to fabricate butt weld pipe, threaded pipe, and socket welds.
- Is able to identify and install above, underground, and specialty piping, hangers and supports, valves and in-line specialties.
- Understands how to perform stress relieving, aligning, and testing

Overview

- Three-hour closed-book examination
- May use a basic function, non-printing calculator
- *The Pipefitters Blue Book* by W.V. Graves may be used
- No extra papers, books, notes or study materials are allowed
- The minimum passing score is 75

- A corresponding hands-on Performance Verification is available

NCCER Curriculum

All NCCER knowledge assessments are referenced to NCCER's curriculum modules as listed on this specification sheet. You may order modules from Pearson (800.922.0579) or from NCCER's Online Catalog at www.nccer.org.

Assessment Development

All questions are developed and approved by subject matter experts under the direction of NCCER.

Credentials

Upon successful completion of the knowledge assessment, NCCER will send applicable credentials to the assessment center.

Score Report and Training Prescription

Each candidate will have access to their assessment results including their overall score and recommended training.

NCCER Registry

Knowledge assessment results are recorded in NCCER's Registry and become a part of the portable record of an individual's NCCER credentials.

Knowledge Assessment Contents:

Content Domain	Number of Questions
Safety [08105-06, 08106-06, 08208-06, 08309-07]	16
Math [00102-04, 08204-06, 08304-07]	14
Pipefitting Fundamentals [08102-06, 08103-06, 08201-06, 08303-07]	16
Cutting [08104-06, 08307-07]	8
Fabrication [08205-06, 08206-06, 08207-06, 08402-07]	18
Construction Drawings [08202-06, 08401-07]	11
Rigging [08301-07, 08302-07]	9
Valves, Hangers, and Supports [08203-06, 08308-07, 08403-07]	15
Pipefitting Specialties [08209-06, 08306-07, 08405-07, 08406-07]	18
Total Number of Questions	125

NCCER

13614 Progress Blvd. • Alachua, FL 32615 • 1.888.622.3720 • www.nccer.org



National Craft Assessment and Certification Program
S P E C I F I C A T I O N S

Learning Objectives related to Assessment:

Safety	
Registry ID Number:	Module Title Objectives:
08105-06	Ladders and Scaffolds
	Identify the different types of ladders and scaffolds used on a work site.
	Describe how to safely use ladders and scaffolding.
08106-06	Motorized Equipment I
	Identify and explain the operation and use of the following motor-driven equipment <ul style="list-style-type: none"> • Welding machines • Portable generators • Air compressors • Portable pumps • Aerial lifts • Forklifts • Compaction equipment • Trenching equipment • Backhoe loaders • Mobile cranes
08208-06	Excavations
	Identify and explain the use of shoring materials.
	Determine and set the grade and elevation of a trench.
08309-07	Testing Piping Systems and Equipment
	Perform pretest requirements.
	Perform hydrostatic tests
	Explain how to perform steam blow tests.
Math	
Registry ID Number:	Module Title Objectives:
00102-04	Introduction to Construction Math
	Use a standard ruler, a metric ruler, and a measuring tape to measure.
	Convert fractions to decimals and decimals to fractions.
	Recognize some of the basic shapes used in the construction industry and apply basic geometry to measure them.
08204-06	Pipefitting Trade Math
	Use formulas to solve basic problems.
	Solve area problems.
	Solve volume problems.
	Solve circumference problems.
	Solve right triangle problems using the Pythagorean theorem.
08304-07	Advanced Trade Math
	Perform right angle trigonometry.
	Calculate takeouts using trigonometry.

	Pipefitting Fundamentals
Registry ID Number:	Module Title Objectives:
08102-06	Pipefitting Hand Tools
	Identify tools and state their uses.
08103-06	Pipefitting Power Tools
	Identify and explain the uses of portable grinders.
	Explain the proper and safe operation of machines used in pipe joint preparation: <ul style="list-style-type: none"> • Pipe threaders • Portable power drives • Pipe bevelers
08201-06	Piping Systems
	Identify and explain the types of piping systems.
	Identify piping systems according to color-coding.
	Explain the effects and corrective measures for thermal expansion in piping systems.
08303-07	Standards and Specifications
	Understand and interpret pipefitting standards and codes
	Cutting
Registry ID Number:	Module Title Objectives:
08104-06	Oxyfuel Cutting
	Identify and explain the use of oxyfuel cutting equipment.
08307-07	Field Routing and Vessel Trim
	Determine the load weight for erection equipment.
	Determine the support needs.
	Select and install erection materials.
	Fabrication
Registry ID Number:	Module Title Objectives:
08205-06	Threaded Pipe Fabrication
	Identify and explain the materials used in threaded piping systems.
	Read and interpret screwed fitting joint drawings.
	Identify and explain types of threads.
	Calculate offsets.
08206-06	Socket Weld Pipe Fabrication
	Identify and explain socket weld fittings.
	Read and interpret socket weld piping drawings.
	Determine pipe lengths between socket weld fittings.
08207-06	Butt Weld Pipe Fabrication
	Identify butt weld piping materials and fittings.
	Determine pipe lengths between fittings.
08402-07	Advanced Pipe Fabrication
	Calculate simple piping offsets.
	Fabricate tank heating coils.

	Lay out three- and four-piece mitered turns.
	Perform geometric layout of pipe laterals and supports.
	Construction Drawings
Registry ID Number:	Module Title Objectives:
08202-06	Drawings and Detail Sheets
	Identify parts of drawings.
	Identify types of drawings.
	Interpret drawing indexes and line lists.
08401-07	Advanced Blueprint Reading
	Identify piping arrangement drawings.
	Read and interpret GPS coordinates, control points, and elevation.
	Read and interpret P&IDs, plan views, and section views.
	Identify isometric drawings.
	Rigging
Registry ID Number:	Module Title Objectives:
08301-07	Rigging Equipment
	Identify and describe the uses of common rigging hardware and equipment.
	Perform a safety inspection on hooks, slings, and other rigging equipment.
	Describe common slings and determine sling capacities and angles.
08302-07	Rigging Practices
	Identify and use the correct hand signals to guide a crane operator.
	Valves, Hangers, and Supports
Registry ID Number:	Module Title Objectives:
08203-06	Identifying and Installing Valves
	Identify types of valves that start and stop flow.
	Identify types of valves that regulate flow.
	Identify valves that regulate the direction of flow.
	Identify types of valve actuators.
	Explain how to properly store and handle valves.
08308-07	Pipe Hangers, Supports, & Spring Cans
	Identify types of pipe hangers and supports.
	Identify and explain the types of spring can supports.
	Explain the storing and handling procedures for spring can supports.
08403-07	Stress Relieving and Aligning
	Explain thermal expansion, anchors, and cold springing.
	Explain stress-relief procedures.
	Align pipe flanges to rotating equipment nozzles.
	Specialties
08209-06	Underground Pipe
	Identify and explain the types of underground piping materials.
	Identify the size classifications of underground pipe.

	Identify and explain the use of underground pipe fittings.
08306-07	Introduction to Above Ground Pipe Installation
	Store pipe and materials.
	Identify types of flanges.
	Explain the location of flange bolt holes.
08405-07	In-Line Specialties
	Identify in-line specialties.
08406-07	Special Piping
	Install flared and compression joints, using copper tubing.
	Solder and braze joints, using copper tubing.
	Bend pipe to a specified radius
	Install grooved pipe couplings.