

## **PIPEFITTER/STEAMFITTER/MARITIME PIPEFITTER (GREENE COUNTY CENTER)**

### **Purpose**

The Jones College Postsecondary Pipefitter/Steamfitter/Maritime Pipefitter Program includes a basic core of courses designed to prepare a student for a variety of entry- level positions in the industrial setting. The program is designed with the use of the competencies and objectives as prepared by the National Center for Construction Education and Research (NCCER), along with applicable national, state, and local codes.

The student must complete 30 hours of required program courses and 2 hours of a college orientation course to receive a Career Certificate; 45 hours of required program courses and 2 hours of a college orientation course to receive a Technical Certificate; and 60 hours of required program courses and 2 hours of a college orientation course to receive an Associate of Applied Science Degree.

The scope of Jones College is to make available, human, financial and physical resources necessary for quality programming, educational programs to meet the interests and needs of students; resources to work with agencies and industries to enhance economic development; educational support services to meet the needs of students and educational programs; and educational improvement through continuous planning and assessment.

### **Program Description**

The Pipefitting program will promote the scope of providing an educational program designed to provide well trained students for entry level positions in the industrial setting. The program will prepare individuals to design, install, and test industrial

and commercial piping systems and automatic fire and exposure protection systems. Includes instruction in water systems, steam systems, heating and cooling systems, lubricating systems, piping materials, installation tools operation and maintenance, valve installation and repair, technical mathematics, blueprint interpretation, compatible with the competencies and objectives of the National Center for Construction Education and Research and applicable national, state, and local codes and standards.

**Program Length:**

Two Semesters Three Semesters  
Four Semesters

**Degree(s) Offered:**

Career Certificate Technical Certificate  
Associate in Applied Science

**Admissions Requirements:**

The admission requirements for the Pipefitting Program will follow the general admission requirements of Jones College. These requirements are:

- A completed application for admission which is provided by the Admissions and Record’s Office.
- A final transcript of high school work showing date of graduation, or acceptable General Educational Development (GED) scores must be provided when applicable. ~~General Educational Development (GED) scores must be provided when applicable.~~ Jones College accepts only regular diplomas from accredited high schools.
- ~~Official composite score of 16 on the American College Test (ACT)~~
- ~~Composite ACT score below 16 will be enrolled in the required pre-requisite courses according to the Course Placement Guide.~~
- ~~For some technical certificate programs an ACT Work Keys Career Readiness Credential may be accepted for admissions purposes in place of the ACT. See the appropriate program for more details.~~
- Must have good manual dexterity, arm-hand steadiness, near vision, active listening, and information ordering skills.
- Receive a negative test result on drug screen test conducted by a certified laboratory approved by the college.

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**PIPEFITTING**

**Career Certificate Option**

The following advisement plan is a recommended course of study. An academic advisor may alter course sequence to meet individual student needs. In addition, an academic advisor may recommend additional or different courses depending upon student career plans and/or requirements of the college or university to which the student plans to transfer.

**Fall Semester**

SSP 1002 Smart Start Pathway .....	2
CTE 1143 NCCER Core .....	3

MPT 1112 Introduction to Maritime/Pipefitting .....	2
MPT 1121 Principles of Pipefitting Math .....	1

MPT 1133 Pipefitting Tools and Equipment .....	3
MPT 1142 Pipefitting Systems and Drawings .....	2
MPT 1212 Oxyfuel Cutting and Brazing .....	2
<del>MPT 1152 Rigging Equipment and Practices .....</del>	<del>2</del>
<del>MPT 1172 Ladders and Scaffolding .....</del>	<del>2</del>
Total .....	17

**Spring Semester**

MPT 1162 Advance Piping Math .....	2
MPT 1222 Butt Weld Pipe Fabrication .....	2
MPT 1232 Socket Weld Pipe Fabrication .....	2
MPT 1241 Threaded Pipe Fabrication .....	1
MPT 1311 Fiberglass and Plastic Pipe .....	1
MPT 1322 Identifying Valves, Flanges, and Gasket .....	2
MPT 2173 Advanced Pipe Drawing .....	3
MPT 1342 Routing Trimming and Testing Piping Systems .....	2
Total .....	15

**PIPEFITTING**

**Technical Certificate Option**

The following advisement plan is a recommended course of study. An academic advisor may alter course sequence to meet individual student needs. In addition, an academic advisor may recommend additional or different courses depending upon student career plans and/or requirements of the college or university to which the student plans to transfer.

**First Year Fall Semester:**

SSP 1002 Smart Start Pathway .....	2
CTE 1143 NCCER Core .....	3
MPT 1112 Introduction to Maritime Pipefitting .....	2
MPT 1121 Principles of Pipefitting Math .....	1
MPT 1133 Pipefitting Tools and Equipment .....	3
MPT 1142 Pipefitting Systems and Drawings .....	2
MPT 1212 Oxyfuel Cutting and Brazing .....	2
<del>MPT 1152 Rigging Equipment and Practices .....</del>	<del>2</del>
<del>MPT 1172 Ladders and Scaffolding .....</del>	<del>2</del>
Total .....	17

**Spring Semester**

MPT 1162 Advance Piping Math .....	2
MPT 1222 Butt Weld Pipe Fabrication .....	2
MPT 1232 Socket Weld Pipe Fabrication .....	2
MPT 1241 Threaded Pipe Fabrication .....	1
MPT 1311 Fiberglass and Plastic Pipe .....	1
MPT 1322 Identifying Valves, Flanges, and Gasket .....	2
MPT 2173 Advanced Pipe Drawing .....	3
MPT 1342 Routing Trimming and Testing Piping Systems .....	2
Total .....	15

**Summer Semester**

MPT 1333 Pipe Installation with Hangers and Supports .....	3
MPT 2181 In-Line Specialties, Standards, and Specifications .....	1

**206 | DIVISION OF INDUSTRIAL SERVICES**

MPT 2253 Advanced Pipe Fabrication .....	3
MPT 2511 Stress Relieving and Aligning .....	1
MPT 2521 Steam Traps .....	1
MPT 2532 Special Piping .....	2
MPT 2541 Maintaining Valves .....	1
MPT 2613 Fundamentals of Leadership .....	3

Total..... 15

**PIPEFITTING**

**Associate in Applied Science Option**

The following advisement plan is a recommended course of study. An academic advisor may alter course sequence to meet individual student needs. In addition, an academic advisor may recommend additional or different courses depending upon student career plans and/or requirements of the college or university to which the student plans to transfer.

**First Year Fall Semester**

SSP 1002 Smart Start Pathway ..... 2  
CTE 1143 NCCER Core..... 3  
MPT 1112 Introduction to Maritime Pipefitting..... 2  
MPT 1121 Principles of Pipefitting Math ..... 1  
MPT 1133 Pipefitting Tools and Equipment..... 3  
MPT 1142 Pipefitting Systems and Drawings ..... 2  
MPT 1212 Oxyfuel Cutting and Brazing ..... 2  
~~MPT 1152 Rigging Equipment and Practices ..... 2~~  
~~MPT 1172 Ladders and Scaffolding ..... 2~~  
Total..... 17

**Spring Semester**

MPT 1162 Advance Piping Math..... 2  
MPT 1222 Butt Weld Pipe Fabrication ..... 2  
MPT 1232 Socket Weld Pipe Fabrication ..... 2  
MPT 1241 Threaded Pipe Fabrication ..... 1  
MPT 2173 Advanced Pipe Drawing ..... 3  
MPT 1342 Routing Trimming and Testing Piping Systems ..... 2  
ENG 1113 English Composition I ..... 3  
Total..... 15

**Summer Semester**

MPT 1333 Pipe Installation with Hangers and Supports ..... 3  
MPT 2181 In-Line Specialties, Standards, and Specifications ..... 1  
MPT 2253 Advanced Pipe Fabrication ..... 3  
MPT 2511 Stress Relieving and Aligning ..... 1  
MPT 2521 Steam Traps ..... 1  
MPT 2613 Fundamentals of Leadership ..... 3  
Social / Behavioral Science ..... 3  
Total..... 15

**Second Year Fall Semester**

MPT 1311 Fiberglass and Plastic Pipe..... 1  
MPT 1322 Identifying Valves, Flanges, and Gasket ..... 2

DIVISION OF INDUSTRIAL SERVICES | 207

MPT 2532 Special Piping ..... 2  
MPT 2541 Maintaining Valves ..... 1  
MAT 1313 College Algebra..... 3  
Total..... 9

**Spring Semester**

~~Humanities / Fine Arts ..... 3~~  
~~ENG 1123 English Composition II ..... 3~~  
SPT 1113 Public Speaking ..... 3  
Total..... 6

## PIPEFITTING

**CTE 1143** – Industrial Maintenance Core Curriculum - This course includes basic safety, introduction to construction math, introduction to hand and power tools, blueprint drawings, and employability and communications. Instructors for this course must be certified as an NCCER Instructor. Three semester credit hours: Two hours lecture and two hours lab.

**MPT 1112** – Introduction to Maritime Pipefitting - This course provides the trainee with an overview of pipefitting, pipefitter responsibilities, and career opportunities. The course also covers basic principles of safety. Two semester credit hours: Two hours lecture.

**MPT 1121** – Principles of Pipefitting Math - This course explains how to use ratios and proportions, solve basic algebra, area, volume, and circumference problems, and solve for right triangles using the Pythagorean Theorem. Instructors for this course must be certified as an NCCER Instructor. One semester credit hour: One hour lecture.

**MPT 1133** – Pipefitting Tools and Equipment - This course covers general hand tool safety and procedures for identifying, selecting, inspecting, using, and caring for pipe vises and stands, pipe wrenches, levels, pipe fabrication tools, and pipe bending tools. This course identifies the hazards and explains general safety procedures that must be followed when using power tools, and explains specific guidelines for using electric and pneumatic power tools. This course explains the applications, proper use, and safety considerations for using engine-driven generators, welding machines, air compressors, pumps, forklift truck, and hydraulic cranes. Instructors for this course must be certified as an NCCER Instructor. Three semester credit hours: Two hours lecture and two hours lab.

**MPT 1142** – Pipefitting Systems and Drawings - This course introduces chemical, compressed air, fuel oil, steam, and water systems and explains how to identify them by color-code. It also explains thermal expansion of pipes and pipe insulation. This course introduces the trainee to plot plans, structural drawings, elevation drawings, as-built drawings, equipment arrangement drawings, P&IDs, isometric drawings, spool sheets, and detail sheets. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and one hour lab.

## 250 | COURSE DESCRIPTIONS Career and Technical Education

**MPT 1212** – Oxyfuel Cutting and Brazing - This course explains the safety requirements for oxyfuel cutting. It identifies oxyfuel cutting equipment and setup requirements. It explains how to light, adjust, and shut down oxyfuel equipment. Trainees will perform cutting techniques that include straight line, piercing, bevels, and washing. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and two hours lab.

~~**MPT 1152** – Rigging Equipment and Practices - This course describes the use and inspection of the basic equipment and hardware used in rigging, including slings, wire ropes, chains, and attaching hardware. It also explains sling angles and describes the use of tuggers, jacks, hoists, and come-alongs. This course describes basic rigging and crane hazards and related safety procedures, provides an overview of personnel lift lifting and lift planning, and introduces load charts and load balancing. It includes instructions for rigging and lifting pipe. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and two hours lab.~~

**MPT 1162** – Advanced Piping Math - This course discusses the use of equivalent and conversion tables and explains how to use right angle trigonometry to calculate takeouts. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: Two hours lecture.

~~**MPT 1172** – Ladders and Scaffolding - This course covers hazards and general safety procedures governing the use of stepladders, straight and extension ladders, fixed scaffolds, and rolling scaffolds. Two semester credit hours: One hour lecture and two hours lab.~~

**MPT 1222** – Butt Weld Pipe Fabrication - This module describes the materials used in butt weld piping systems. It explains how to determine pipe lengths between butt weld fittings, prepare the pipe and fittings for fit-up, and fabricate butt weld fittings. It also describes how to select and install backing rings, fabricate channel iron welding jigs, and use and care for welding clamps. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and two hours lab.

**MPT 1232** – Socket Weld Pipe Fabrication - This module describes the materials used in socket weld piping systems. It explains how to determine pipe lengths between socket weld fittings, prepare the pipe and fittings for fit-up, and fabricate socket weld fittings. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and two hours lab.

**MPT 1241** – Threaded Pipe Fabrication - This course describes the materials used in threaded piping systems. It explains how to determine pipe lengths between threaded pipe fittings, prepare the pipe and fittings for fit-up and assemble the piping system. Instructors for this course must be certified as an NCCER Instructor. One semester credit hour: One hour lecture.

**MPT 1311** – Fiberglass and Plastic Pipe - This module introduces students to piping using fiberglass and plastic as the primary piping material. Instructors for this course must be certified as an NCCER Instructor. One semester credit hour: One hour lecture.

**MPT 1322** – Identifying Valves, Flanges, and Gaskets – This module identifies and provides installation methods for different types of valves. It also covers valve storage and handling. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and two hours lab.

**MPT 2173** – Advanced Pipe Drawing (Intermediate and Advanced) - This module covers P&IDs, plan views, section views, isometric drawings, and spool drawings. It teaches the trainee to work through a set of drawings and extract the information from one drawing that is necessary to interpret other drawings. It explains how to use plan views to draw isometrics and use isometrics to put together spools. The drawings supplied fit together to design a main steam line for a power plant. Instructors for this course must be certified as an NCCER Instructor. Three semester credit hours: Three hours lecture.

**MPT 1342** – Routing Trimming and Testing Piping System - This module explains how to secure the work area and determine field run specifications, load weights for erection equipment, and support needs. It also covers how to erect vessel trim. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and two hours lab.

**MPT 1333** – Pipe Installation with Hangers and Supports - This module explains how to identify, select, and install pipe hangers and supports, including spring can supports. Instructors for this course must be certified as an NCCER Instructor. Three semester credit hours: One hour lecture and four hours lab.

**MPT 2181** – In-line Specialties and Standards and Specifications - This module explains how to read and interpret pipefitting standards, codes, and specifications. It describes how to identify pipe and components according to specifications. Instructors for this course must be certified as an NCCER Instructor. One semester credit hour: One hour lecture.

**MPT 2253** – Advanced Pipe Fabrication - This module presents various piping offsets; three-line, 45-degree, equal spread offsets around a vessel, and three-line, 45-degree, unequal offsets. It also covers how to fabricate tank coils; three, four, and five piece mitered turns; 45-degree laterals using references; and contour markers, dummy legs out of both pipe and structural steel, and mitering procedures. Instructors for this course must be certified as an NCCER Instructor. Three semester credit hours: One hour lecture and four hours lab.

- MPT 2511** – Stress Relieving and Alignment - This module explains thermal expansion methods of stress-relieving, including preheating, interpass heating, and postheating. It also shows how to perform stress-relief and dry washing weld procedures to align pipe flanges to equipment nozzles. Instructors for this course must be certified as an NCCER Instructor. One semester credit hour: One hour lecture.
- MPT 2521** – Steam Traps - This module identifies types of steam traps, including mechanical, thermostatic, and thermodynamic. It explains how to install steam traps and troubleshoot steam trap systems. Instructors for this course must be certified as an NCCER Instructor. One semester credit hour: One hour lecture.
- MPT 2532** – Special Piping - This module explains how to assemble flared and compression joints using copper tubing, how to solder and braze joints using copper tubing, and how to bend pipe to a specified radius. It also explains how to install glass-lined pipe, hydraulic fitted compression joints, and grooved pipe couplings. Instructors for this course must be certified as an NCCER Instructor. Two semester credit hours: One hour lecture and two hours lab.

## COURSE DESCRIPTIONS Career and Technical Education | **251**

- MPT 2541** – Maintaining Valves - This module explains how to remove threaded and flanged valves, how to replace valve stem O-ring and bonnet gaskets, and how to repack a valve stuffing box. It also discusses the purpose of valve packing. Instructors for this course must be certified as an NCCER Instructor. One semester credit hour: One hour lecture.
- MPT 2613** – Fundamentals of Leadership - This module covers the basic skills required for supervising personnel, including diversity, project organization, problem solving, and safety. Instructors for this course must be certified as an NCCER Instructor. Three semester credit hours: Three hours lecture.