# 11/8/2020

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 3 September 2020

Term and Year of Implementation: Spring 2021

**Course Title:** Pipefitting Level 4

**BRCC Course Rubric:** PIPE 1419

**Previous Course Rubric**: PIPE 2416 and PIPE 2426

**Lecture Hours per week-Lab Hours per week-Credit Hours**: 3-12-9

**Per semester: Lecture Hours-Lab Hours-Instructional Contact Hours**: 45-180-225

**Louisiana Common Course Number:**

**CIP Code:** 46.0502

**Course Description:** Covers the National Center for Construction Education and Research (NCCER) Pipefitting Level 4 Modules 1 - 9: Advanced Blueprint Reading, Advanced Fabrication, Stress Relieving and Aligning, Steam Traps, In-Line Specialties, Special Piping, Hot Taps, Maintaining Valves, and Introduction to Supervisory Roles. Successful completion of this course requires passing the NCCER Level 4 Pipefitting Modules 1 - 9 Exams with a 70% or higher. This course requires a lab fee.

**Prerequisites:**  PIPE 1326

**Co-requisites:** None

**Suggested Enrollment Cap:** 15

**Learning Outcomes.** *Upon successful completion of this course, the students will be able to:*

1. Interpret piping and instrument drawings (P&IDs), isometric drawings (ISOs), spool drawings, plan views, section views, GPS coordinates, control points, and elevation.

2. Sketch an ISO from a plan view.

3. Demonstrate the appropriate method to layout and fabricate three-piece and four-piece mitered turns of various degrees, 45-degree laterals using various means, and a type 1 pipe support.

4. Demonstrate the proper method to align pipe flanges to rotating equipment nozzles, to solder and braze copper tubing joints, and to bend pipe to a specified radius.

5. Demonstrate the proper method to remove and install threaded and flanged valves, to replace valve stem O-rings and bonnet gaskets, and to repack a valve.

**Assessment Measures.** Assessment of all learning outcomes will be measured using the following methods:

1. Practical demonstrations and skills performances.

2. Homework assignments, quizzes, and tests.

3. NCCER Pipefitting Level 4 Modules 1 - 9 Exams.

**Information to be included on the Instructor’s Course Syllabi:**

* ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
* ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor’s and/or the department’s policy for make-up work. For example in a speech course, “Speeches not given on due date will receive no grade higher than a sixty” or “Make-up work will not be accepted after the last day of class”.
* ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
* ***General Policies*:** Instructors’ policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
* ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
* ***Safety Concerns:*** In some courses, this may be a major issue. For example, “No student will be allowed in the lab without safety glasses”. General statements such as, “Items that may be harmful to one’s self or others should not be brought to class”.
* ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

**Expanded Course Outline:**

I. Advanced Blueprint Reading

A. Piping and Instrument Drawings (P&IDs)

B. Reading and Interpreting P&IDs

C. Reading and Interpreting Isometric Drawings (ISOs)

D. Following a Single Line

E. Drawing ISOs

II. Advanced Pipe Fabrication

A. Calculating Simple Offsets

B. Calculating Three-Line Offsets

C. Laying Out and Fabricating Tank Heating Coils

D. Fabricating Mitered Turns

E. Laying Out and Fabricating a Fishmouth

F. Fabricating Using Charts

G. Performing Geometric Layout

H. Pipe Supports

III. Stress Relieving and Aligning

A. Thermal Expansion and Stress Relief

B. Stress Relief Methods

C. Aligning Pipe

IV. Steam Traps

A. Types of Steam Traps

B. Steam Trap Installation

C. Troubleshooting Steam Traps

D. Maintaining Steam Traps

V. In-Line Specialties

A. Safety

B. Types of In-Line Specialties

C. Storage and Handling

VI. Special Piping

A. Installing Flared and Compression Joints Using Copper Tubing

B. Soldering and Brazing Copper Tubings and Fittings

C. Pipe Bends

D. Installing Glass-Lined Piping

E. Hydraulic Fitted Compression Joints

F. Grooved Piping Systems

VII. Hot Taps

A. Safety

B. Mechanical Fittings

C. Other Fittings

D. Operating Hot Tap Machines and Stopples

VIII. Maintaining Valves

A. Removing and Installing Valves

B. Valve Stem O-Rings

C. Bonnet Gaskets

D. Repacking Valves

IX. Introduction to Supervisory Roles

A. Introduction to Supervision

B. Leadership

C. Safety Responsibilities