

# ACT 330A: PLUMBING FUNDAMENTALS LAB

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## New Course Proposal

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### Originator

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### Co-Contributor(s)

#### Name(s)

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### Justification / Rationale

Construction is one of the top employment opportunities in the Coachella Valley and with the new Title 24 requirements for Zero Net Energy construction, there is a need for a more educated construction workforce. This course is one of three modules of a non-credit overlay version of CM 020 Introduction to Construction Technology. Module 1 covers tools, equipment, safety and green concepts; Module 2 provides training and review of the basic math skills required for construction; Module 3 provides an awareness of career opportunities in the construction industry and the employability skills required to succeed in those careers. Providing this non-credit version allows those currently unemployed or underemployed to gain the skills and knowledge required to obtain and succeed in construction jobs; providing the modules as a credit overlay allows students to qualify for credit by exam and move into a credit pathway to continue education.

### Effective Term

Fall 2020

### Credit Status

Noncredit

### Subject

ACT - Applied Construction Technolog

### Course Number

330A

### Full Course Title

Plumbing Fundamentals Lab

### Short Title

PLUMBING FUND LAB

### Discipline

#### Disciplines List

Construction Technology

### Modality

Face-to-Face

### Catalog Description

This course is a lab for demonstration of the skills learned in ACT 330 Plumbing Fundamentals. Students are introduced to the mechanics of plumbing including the design, installation, and maintenance of drain, waste, and vent systems in buildings in addition to significant code and health issues, violations, and consequences related to those systems. Methods of measuring, cutting, and joining different materials and schedules of plastic and copper piping are covered along with the peripheral types of fittings and valves used in plumbing. Installation of water heaters, gas piping, and finish fixtures are also demonstrated. Safety procedures are emphasized as students participate in a practical lab or an actual project site under close supervision of trade professionals.

### Schedule Description

Lab for demonstration of Plumbing Fundamentals and developing of skills related to the mechanics of plumbing including the design, installation, and maintenance of drain, waste, and vent systems in buildings in addition to significant code and health issues, violations, and consequences related to those systems. Prerequisite: ACT 330 or concurrent enrollment

**Non-credit Hours**

48

**In-class Hours**

48

**Out-of-class Hours**

0

**Total Semester Hours**

48

**Override Description**

Noncredit override.

**Prerequisite Course(s)**

ACT 330 or concurrent enrollment

**Required Text and Other Instructional Materials****Resource Type**

Book

**Author**

National Center for Construction Education and Research

**Title**

Construction Technology-Trainee Guide

**Edition**

4th

**City**

Gainesville, FL

**Publisher**

Pearson Prentice Hall

**Year**

2016

**College Level**

Yes

**Flesch-Kincaid Level**

12

**ISBN #**

0134130391

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**Class Size Maximum**

20

**Entrance Skills**

Identify types of fittings, valves, hangers and supports used for plastic piping.

**Requisite Course Objectives**

ACT 330-Identify types of materials and schedules of plastic piping.

ACT 330-Identify proper applications of plastic piping.

ACT 330-Identify types of fittings and valves used with plastic piping.

ACT 330-Identify the types of hangers and supports needed for plastic piping.

ACT 330-Explain proper procedures for the handling, storage, and protection of plastic pipes.  
 ACT 330-Explain the proper procedure for pressure testing plastic pipes.

### Entrance Skills

Identify the appropriate materials and handling required for copper piping.

### Requisite Course Objectives

ACT 330-Identify the types of materials and schedules used with copper piping.  
 ACT 330-Identify the material properties, storage, and handling requirements of copper piping.  
 ACT 330-Identify the types of fittings and valves used with copper piping.  
 ACT 330-Identify the techniques used in hanging and supporting copper piping.  
 ACT 330-Describe the proper procedure for measuring, reaming, cutting, and joining copper piping.  
 ACT 330-Identify the hazards and safety precautions associated with copper piping.

### Course Content

- a. Review of Construction Safety and Plumbing Fundamentals.
- b. DWV systems.
- c. Fixture drains.
- d. Traps and vents.
- e. Sizing drains and vents.
- f. Fittings and their applications.
- g. Pipe grade.
- h. Building drain and sewer.
- i. Sewer main.
- j. Waste treatment.
- k. Code and health issues.
- l. Plastic pipe.
- m. Plastic pipe fittings.
- n. Measuring, cutting, and joining plastic pipe and fittings.
- o. Pipe supports.
- p. Pressure testing.
- q. Copper pipe.
- r. Copper fittings and valves.
- s. Measuring, cutting, bending, joining, and grooving copper pipe.
- t. Installing pipe hangers and supports.
- u. Insulating copper pipes.

### Course Objectives

	Objectives
Objective 1	Demonstrate how waste moves from a fixture through the drain system to the environment.
Objective 2	Identify the major components of a drainage system and describe their functions.
Objective 3	Identify the different types of traps and their components.
Objective 4	Demonstrate the importance of traps, and identify the ways traps can lose their seals.
Objective 5	Identify the various types of drain, waste, and vent (DWV) fittings and describe their applications.
Objective 6	Identify significant code and health issues, violations, and consequences related to DWV systems.
Objective 7	Identify types of materials and schedules of plastic piping.
Objective 8	Identify proper applications of plastic piping.
Objective 9	Identify types of fittings and valves used with plastic piping.
Objective 10	Identify the types of hangers and supports needed for plastic piping.
Objective 11	Demonstrate proper procedures for the handling, storage, and protection of plastic pipes.
Objective 12	Demonstrate the proper procedure for pressure testing plastic pipes.

- Objective 13 Identify the types of materials and schedules used with copper piping.
- Objective 14 Identify the material properties, storage, and handling requirements of copper piping.
- Objective 15 Identify the types of fittings and valves used with copper piping.
- Objective 16 Identify the techniques used in hanging and supporting copper piping.
- Objective 17 Demonstrate the proper procedure for measuring, reaming, cutting, and joining copper piping.
- Objective 18 Identify the hazards and safety precautions associated with copper piping.

### Student Learning Outcomes

**Upon satisfactory completion of this course, students will be able to:**

- Outcome 1 Demonstrate appropriate safety procedures for hand and power tools used in plumbing application.
- Outcome 2 Demonstrate appropriate application of the various types of drain, waste, and vent fittings.
- Outcome 3 Demonstrate the procedure for installing rough plumbing and finish fixtures.

### Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Demonstration, Repetition/Practice	Instructor will demonstrate appropriate use of materials and objectives of project appropriate to content of the course.
Discussion	Discussion before beginning project and evaluation after completing project.
Activity	Installation of residential plumbing using both copper and plastic.
Collaborative/Team	Work in teams to complete installation appropriate to content of the course.
Participation	Installation of residential plumbing using both copper and plastic.

### Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Other	Quizzes, In-class exercises to prepare for plumbing projects, evaluation of project at completion.	In Class Only
Student participation/contribution	Participation in planning, execution and evaluation of plumbing project appropriate to content of the course.	In Class Only
Group activity participation/observation	Ability to contribute safely to a plumbing project involving a team.	In Class Only
Presentations/student demonstration observations	Demonstration of appropriate plumbing techniques.	In Class Only

### Assignments

#### Other In-class Assignments

1. Individual projects designing appropriate approaches to plumbing site objectives.
2. Small group projects installing plumbing site projects.
3. Evaluation of plumbing project and critical thinking evaluation of success of areas for improvement.
4. Short quizzes to measure knowledge of plumbing concepts, materials, and installation techniques.
5. Short quizzes to measure understanding of construction measurement and conversion.

#### Grade Methods

Pass/No Pass Only

### MIS Course Data

#### CIP Code

46.0412 - Building/Construction Site Management/Manager.

**TOP Code**

095700 - Civil and Construction Management Technology

**SAM Code**

C - Clearly Occupational

**Basic Skills Status**

Not Basic Skills

**Prior College Level**

Not applicable

**Cooperative Work Experience**

Not a Coop Course

**Course Classification Status**

Other Non-credit Enhanced Funding

**Approved Special Class**

Not special class

**Noncredit Category**

Short-Term Vocational

**Funding Agency Category**

Not Applicable

**Program Status**

Program Applicable

**Transfer Status**

Not transferable

**Allow Audit**

No

**Repeatability**

Yes

**Repeatability Limit**

NC

**Repeat Type**

Noncredit

**Justification**

Noncredit courses are repeatable until students achieve the skills and knowledge required to meet the outcomes and objectives of the course.

**Materials Fee**

No

**Additional Fees?**

No

**Approvals****Curriculum Committee Approval Date**

11/05/2019

**Academic Senate Approval Date**

11/14/2019

**Board of Trustees Approval Date**

12/19/2019

**Chancellor's Office Approval Date**

01/10/2020

**Course Control Number**

CCC000611533

**Programs referencing this course**Construction Technology Plumbing Certificate of Completion (<http://catalog.collegeofthedesert.eduundefined?key=282/>)