

# ACT 330: PLUMBING FUNDAMENTALS

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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

330

### Full Course Title

Plumbing Fundamentals

### Short Title

PLUMBING FUND

### Discipline

#### Disciplines List

Construction Technology

### Modality

Face-to-Face  
100% Online

### Catalog Description

This course is an introduction 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.

### Schedule Description

This course is an introduction 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 320, ACT 321 and ACT 321A or concurrent enrollment

**Non-credit Hours**

54

**In-class Hours**

18

**Out-of-class Hours**

36

**Total Semester Hours**

54

**Override Description**

Noncredit override.

**Prerequisite Course(s)**

ACT 320, ACT 321 and ACT 321A 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 #**

9780134130392

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**Class Size Maximum**

40

**Entrance Skills**

Common Safety hazards on construction sites and the purpose of the Occupational Safety and Health Administration

**Requisite Course Objectives**

ACT 320-Discuss common safety hazards on construction sites.

ACT 320-Explain the purpose of Occupational Safety and Health Administration (OSHA) and their regulations for the construction industry.

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**Entrance Skills**

Proper use of ANSI hand signals.

**Requisite Course Objectives**

ACT 320-Demonstrate proper use of American National Standards Institute (ANSI) hand signals.

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**Entrance Skills**

Identify appropriate use of hand tools used in the construction industry.

**Requisite Course Objectives**

ACT 321A-Discuss the use and maintenance of tools and equipment associated with taping.

ACT 321A-Explain the use of a builder's level and differential leveling procedures.

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**Entrance Skills**

Understand construction measurements and conversions.

**Requisite Course Objectives**

ACT 321A-Convert measurements stated in feet and inches to equivalent measurements stated in decimal feet, and vice versa.

ACT 321A-Discuss the use of manual and electronic equipment and procedures to make distance measurements and perform site layout tasks.

ACT 321A-Determine approximate distances by pacing.

ACT 321A-Explain the check procedure of establishing 90-degree angles using the 3-4-5 rule.

ACT 321B-Explain the check procedure of establishing 90-degree angles using the 3-4-5 rule.

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**Course Content**

- a. Overview of the plumbing trade.
- 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	Explain 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	Explain 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	Explain proper procedures for the handling, storage, and protection of plastic pipes.
Objective 12	Explain 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	Describe 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	Outline the safety procedures for hand and power tools used in plumbing application.
Outcome 2	Recognize the various types of drain, waste, and vent fittings and describe their application.

### Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Lecture	Presentation of the topic in context.
Discussion	Discussion question for planning appropriate plumbing installation.
Participation	Evaluation of planning procedures and critical thinking discussion of areas for improvement.
Collaborative/Team	Development of plumbing scenarios involving multiple construction workers on site together.

### Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Written homework	Short essays demonstrating knowledge of plumbing materials, objectives, safety issues and installation techniques.	Out of Class Only
Other	Quizzes, In-class exercises, Participation during office and site visits	In and Out of Class
Student participation/contribution	Discussion and evaluation of plumbing project proposals.	In and Out of Class
Group activity participation/observation	Participation in group projects designing plumbing projects.	In Class Only
Presentations/student demonstration observations	Presentation of plumbing project proposals.	In and Out of Class
Tests/Quizzes/Examinations	Timed quizzes to demonstrate understanding of plumbing principles.	In and Out of Class
Other	Out-of-class hours will be accounted for electronically through the learning management system.	Out of Class Only

### Assignments

**Other In-class Assignments**

1. Individual projects evaluating appropriate solutions to plumbing situations.
2. Small group projects designing plumbing installation projects.
3. Small group projects evaluating installation proposals.
4. Worksheets evaluating appropriate materials and procedures.

**Other Out-of-class Assignments**

1. Readings in textbook.
2. Written Review question worksheets.
3. Worksheets for Plumbing vocabulary terms, materials evaluation and installation technique evaluations.
4. Short response papers evaluating installation proposals.
5. Quizzes as both study guides and demonstration of knowledge.

**Grade Methods**

Pass/No Pass Only

**Distance Education Checklist****Instructional Materials and Resources**

**If you use any other technologies in addition to the college LMS, what other technologies will you use and how are you ensuring student data security?**

Only the college LMS will be used.

**Effective Student/Faculty Contact**

**Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?**

**Within Course Management System:**

Timely feedback and return of student work as specified in the syllabus  
Discussion forums with substantive instructor participation  
Regular virtual office hours  
Online quizzes and examinations  
Video or audio feedback  
Weekly announcements

**External to Course Management System:**

Direct e-mail  
Posted audio/video (including YouTube, 3cm mediasolutions, etc.)

**Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.**

Timely feedback and return of student work as specified in the syllabus.  
Discussion forums with substantive instructor participation.  
Regular virtual office hours.  
Online quizzes and examinations.  
Video or audio feedback.  
Weekly announcements.

**Other Information****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**

CCC000611532

**Programs referencing this course**Construction Technology Plumbing Certificate of Completion (<http://catalog.collegeofthedesert.eduundefined?key=282/>)Construction Technology Career Preparation Certificate of Completion (<http://catalog.collegeofthedesert.eduundefined?key=292/>)