

Course Outline of Record

1. Course Code: ACT-030
2.
 - a. Long Course Title: Plumbing Fundamentals
 - b. Short Course Title: PLUMBING FUND
3.
 - a. Catalog Course 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 as students have the opportunity to apply Service Learning by way of a practical lab or an actual project site with close supervision of trade professionals.
 - b. Class Schedule Course 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.
 - c. Semester Cycle (*if applicable*): Fall
 - d. Name of Approved Program(s):
 - CONSTRUCTION MANAGEMENT Certificate of Achievement
4. Total Units: 3.00 Total Semester Hrs: 126.00
 Lecture Units: 1 Semester Lecture Hrs: 18.00
 Lab Units: 2 Semester Lab Hrs: 108.00
 Class Size Maximum: 20 Allow Audit: No
 Repeatability No Repeats Allowed
 Justification 0
5. Prerequisite or Corequisite Courses or Advisories:

Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)

 Prerequisite: CM 020 or
 Prerequisite: ACT 020
6. Textbooks, Required Reading or Software: (*List in APA or MLA format.*)
 - a. National Center for Construction Education and Research (2016). *Construction Technology-Trainee Guide* (4th/e). Gainesville, FL Pearson . ISBN: 0134130391
 - College Level: Yes
 - Flesch-Kincaid reading level: 12
7. Entrance Skills: *Before entering the course students must be able:*
 - a. Discuss common safety hazards on construction sites.
 - CM 020 - Discuss common safety hazards on construction sites
 - b. Explain the purpose of Occupational Safety and Health Administration (OSHA) and their regulations for the construction industry.
 - ACT 020 - Explain the purpose of Occupational Safety and Health Administration (OSHA) and their regulations for the construction industry.
 - c. Identify various hand tools used in the construction industry.
 - ACT 020 - Identify various hand tools used in the construction industry.
 - d. Identify various power tools used in the construction industry.
 - CM 020 - Identify various power tools used in the construction industry

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e. Understand the impact of construction to the environment.

- ACT 020 - Understand the impact of construction to the environment.

f. Demonstrate fluency reading a tape measure.

- CM 020 - Demonstrate fluency reading a tape measure.

g. Demonstrate the ability to interpret information and instructions presented in both written and verbal form.

- ACT 020 - Demonstrate the ability to interpret information and instructions presented in both written and verbal form.

h. Demonstrate critical thinking skills and the ability to solve problems using those skills.

- CM 020 - Demonstrate critical thinking skills and the ability to solve problems using those skills

i. Demonstrate effective relationship skills with teammates and supervisors, the ability to work on a team, and appropriate leadership skills.

- ACT 020 - Demonstrate effective relationship skills with teammates and supervisors, the ability to work on a team, and appropriate leadership skills.

j. Understand workplace issues such as sexual harassment, stress, and substance abuse.

- ACT 020 - Understand workplace issues such as sexual harassment, stress, and substance abuse.

8. Course Content and Scope:

Lecture:

- Overview of the plumbing trade
- DWV systems
- Fixture drains
- Traps and vents
- Sizing drains and vents
- Fittings and their applications
- Pipe grade
- Building drain and sewer
- Sewer main
- Waste treatment
- Code and health issues
- Plastic pipe
- Plastic pipe fittings
- Measuring, cutting, and joining plastic pipe and fittings
- Pipe supports
- Pressure testing
- Copper pipe
- Copper fittings and valves
- Measuring, cutting, bending, joining, and grooving copper pipe.
- Installing pipe hangers and supports.
- Insulating copper pipes.

Lab: (if the "Lab Hours" is greater than zero this is required)

- Measure and cut plastic piping
- Join plastic piping
- Connect a proper DWV system
- Perform a pressure test on plastic and copper piping
- Measure, ream, and cut copper piping
- Join copper piping

9. Course Student Learning Outcomes:

1.

Outline the safety procedures for hand and power tools used in plumbing application. (Cognitive)

2.

Recognize the various types of drain, waste, and vent fittings and describe their application. (Psychomotor)

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3.

Demonstrate the procedure for installing rough plumbing and finish fixtures. (Psychomotor)

10. Course Objectives: *Upon completion of this course, students will be able to:*

- a. Explain how waste moves from a fixture through the drain system to the environment.
- b. Identify the major components of a drainage system and describe their functions.
- c. Identify the different types of traps and their components.
- d. Explain the importance of traps, and identify the ways traps can lose their seals.
- e. Identify the various types of drain, waste, and vent (DWV) fittings and describe their applications.
- f. Identify significant code and health issues, violations, and consequences related to DWV systems.
- g. Identify types of materials and schedules of plastic piping.
- h. Identify proper applications of plastic piping.
- i. Identify types of fittings and valves used with plastic piping.
- j. Identify the types of hangers and supports needed for plastic piping.
- k. Explain proper procedures for the handling, storage, and protection of plastic pipes.
- l. Explain the proper procedure for pressure testing plastic pipes.
- m. Identify the types of materials and schedules used with copper piping.
- n. Identify the material properties, storage, and handling requirements of copper piping.
- o. Identify the types of fittings and valves used with copper piping.
- p. Identify the techniques used in hanging and supporting copper piping.
- q. Describe the proper procedure for measuring, reaming, cutting, and joining copper piping.
- r. Identify the hazards and safety precautions associated with copper piping.

11. Methods of Instruction: (*Integration: Elements should validate parallel course outline elements*)

- a. Demonstration, Repetition/Practice
- b. Discussion
- c. Lecture

Other Methods:

Office and site visits

12. Assignments: (*List samples of specific activities/assignments students are expected to complete both in and outside of class.*)

In Class Hours: 126.00

Outside Class Hours: 36.00

a. In-class Assignments

1. Individual projects
2. Small group projects

b. Out-of-class Assignments

1. Review questions
2. Vocabulary terms
3. Short response papers

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- Written homework
- Presentations/student demonstration observations
- Group activity participation/observation
- Student participation/contribution
- Other

Quizzes In-class exercises Participation during office and site visits

14. Methods of Evaluating: Additional Assessment Information:

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15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

PO - Career and Technical Education

Fulfill the requirements for an entry-level position in their field.

Apply critical thinking skills to execute daily duties in their area of employment.

IO - Personal and Professional Development

Develop realistic goals.

Demonstrate an understanding of ethical issues to make sound judgments and decisions.

16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year
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17. Special Materials and/or Equipment Required of Students:

18. Materials Fees: Required Material?

Material or Item	Cost Per Unit	Total Cost
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19. Provide Reasons for the Substantial Modifications or New Course:

Periodic Course Review

20. a. Cross-Listed Course (*Enter Course Code*): *N/A*

b. Replacement Course (*Enter original Course Code*): *N/A*

21. Grading Method (*choose one*): Letter Grade Only

22. MIS Course Data Elements

a. Course Control Number [CB00]: CCC000513183

b. T.O.P. Code [CB03]: 95700.00 - Civil and Construction Ma

c. Credit Status [CB04]: D - Credit - Degree Applicable

d. Course Transfer Status [CB05]: C = Non-Transferable

e. Basic Skills Status [CB08]: 2N = Not basic skills course

f. Vocational Status [CB09]: Clearly Occupational

g. Course Classification [CB11]: Y - Credit Course

h. Special Class Status [CB13]: N - Not Special

i. Course CAN Code [CB14]: *N/A*

j. Course Prior to College Level [CB21]: Y = Not Applicable

k. Course Noncredit Category [CB22]: Y - Not Applicable

l. Funding Agency Category [CB23]: Y = Not Applicable

m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program (*if program-applicable*): CONSTRUCTION MANAGEMENT

Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)

23. Enrollment - Estimate Enrollment

First Year: 20

Third Year: 32

24. Resources - Faculty - Discipline and Other Qualifications:

a. Sufficient Faculty Resources: Yes

b. If No, list number of FTE needed to offer this course: *N/A*

25. Additional Equipment and/or Supplies Needed and Source of Funding.

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N/A

26. Additional Construction or Modification of Existing Classroom Space Needed. (*Explain:*)

N/A

27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES

Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

28. Originator Donbert M. Bitanga Origination Date 04/22/18