ACT 331A: ELECTRICAL FUNDAMENTALS LAB

New Course Proposal

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Originator

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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 is one of two modules that mirror the credit course ACT 031. Module 1 is an introduction to residential wiring and grounding, and covers the installation of panels, switches, receptacles, lighting, and other outlets. In addition, load calculations are used to size the electrical service for dwellings. Safety procedures are emphasized. Module 2 is a practical lab demonstrating the procedures learned in ACT 331.
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

331A

Full Course Title

Electrical Fundamentals Lab

Short Title

ELECTRICAL FUND LAB

Discipline

Disciplines List
Construction Technology

Modality

Face-to-Face

Catalog Description

Practical lab demonstrate understanding of the residential wiring and grounding, and covers the installation of panels, switches, receptacles, lighting, and other outlets. In addition, load calculations are used to size the electrical service for dwellings. Safety procedures are emphasized as students participate in lab and job site electrical installations.

Schedule Description

Practical lab demonstrate understanding of the residential wiring and grounding, and covers the installation of panels, switches, receptacles, lighting, and other outlets. Prerequisite: ACT 331 or concurrent enrollment

Non-credit Hours

48

Lecture Units

0

Lecture Semester Hours
0

Lab Units
0

In-class Hours
48

Out-of-class Hours
0

Total Course Units
0

Total Semester Hours
48

Override Description
Noncredit courses do not have lecture and lab. The out of class hours were adjusted to provide the same total as the equivalent credit course.

Prerequisite Course(s)
ACT 331 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
8th

City
Gainesville, FL

Publisher
Pearson Prentice Hall

Year
2016

College Level
Yes

Flesch-Kincaid Level
12

ISBN #
978-0-13-382959-4

Class Size Maximum
20

Entrance Skills
Explain safe working practices in the construction environment.

Requisite Course Objectives
ACT 331-Explain the safe working practices in the construction environment.

Entrance Skills
Explain the purpose of OSHA

Requisite Course Objectives
ACT 331-Explain the purpose of OSHA and how it promotes safety on the job site.

Entrance Skills
Identify electrical hazards and how to avoid them in the workplace.

Requisite Course Objectives
ACT 331-Identify electrical hazards and how to avoid or minimize them in the workplace.

Entrance Skills
Explain the role of the National Electrical Code in residential wiring.

Requisite Course Objectives
ACT 331-Explain the role of the National Electrical Code in residential wiring.

Entrance Skills
Explain the grounding requirements of a residential electric service.

Requisite Course Objectives
ACT 331-Explain the grounding requirements of a residential electric service.

Entrance Skills
Describe the proper wiring methods for various types of residences.

Requisite Course Objectives
ACT 331-Describe the proper wiring methods for various types of residences.

Course Content
1. Overview of the electrical trade.
2. Electrical shock.
3. Reducing the risk of hazardous situations.
4. OSHA.
5. NFPA 70E.
6. Ladders and scaffolds.
7. Basic tools safety.
8. Confined space entry procedures.
9. Basic first aid.
10. Solvents and toxic vapors.
11. Asbestos.
12. Batteries.
13. PCBs and vapor lamps.
14. Fall protection.
15. Sizing the electrical service.
16. Sizing residential neutral conductors.

17. Sizing the load center.
18. Grounding.
19. Installing the service entrance.
20. Electrical panel location.
21. Wiring methods.
22. Equipment grounding system.
23. Branch circuit layout for power.
24. Branch circuit layout for lighting.
25. Outlet boxes.
26. Wiring devices.
27. Lighting control.
28. Electrical wiring.
29. Residential swimming pools, spas, and hot tubs.

Course Objectives

	Objectives
Objective 1	Explain the safe working practices in the construction environment.
Objective 2	Explain the purpose of OSHA and how it promotes safety on the job site.
Objective 3	Identify electrical hazards and how to avoid or minimize them in the workplace.
Objective 4	Explain safety issues concerning lockout / tagout procedures, confined space entry, respiratory protection, and fall protection systems.
Objective 5	Develop a task plan and a hazard assessment for a given task and select the appropriate PPE and work methods to safely perform the task.
Objective 6	Demonstrate the grounding requirements of a residential electric service.
Objective 7	Demonstrate how to calculate and select service-entrance equipment.
Objective 8	Describe the proper wiring methods for various types of residences.
Objective 9	Demonstrate the proper computation for branch circuit loads and explain their installation requirements.
Objective 10	Demonstrate installation of equipment grounding conductors.
Objective 11	Explain the purpose of ground fault circuit interrupters.
Objective 12	Discuss outlet boxes and select the proper type for different wiring methods.
Objective 13	Describe the installation rules for electrical systems around swimming pools pas, and hot tubs.
Objective 14	Install and control lighting fixtures.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Outline the purpose of OSHA and the safety procedures in the workplace.
Outcome 2	Design and install the electric service requirements in a dwelling.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Demonstration, Repetition/Practice	Participate in sample wiring assignments in a lab environment.
Participation	Install the wiring for a sample residential dwelling.
Discussion	Discuss safety procedures.
Other (Specify)	Install electrical lighting fixtures and controls.

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	Field notes.	In Class Only
Student participation/contribution	Correct selection and installation of wiring appropriate for a given residential situation.	In Class Only

Group activity participation/observation	Effective participation as a member of a team installing electrical service to a sample residential dwelling.	In Class Only

Assignments

Other In-class Assignments

1. Individual projects installing a variety of electrical services on sample residential walls and ceilings.
2. Small group projects installing a variety of electrical services in a sample residential dwelling.

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

No

Materials Fee

No

Additional Fees?

No

Approvals

Curriculum Committee Approval Date
10/17/2019

Academic Senate Approval Date
10/24/2019

Board of Trustees Approval Date
11/13/2019

Chancellor's Office Approval Date
12/22/2019

Course Control Number
CCC000610835

Programs referencing this course
Construction Technology Electrical Certificate of Completion (http://catalog.collegeofthedesert.eduundefined?key=286/)