

# BCI C106: ELECTRICAL CODE

Item	Value
Curriculum Committee Approval Date	12/06/2024
Top Code	095720 - Construction Inspection
Units	3 Total Units
Hours	54 Total Hours (Lecture Hours 54)
Total Outside of Class Hours	0
Course Credit Status	Credit: Degree Applicable (D)
Material Fee	No
Basic Skills	Not Basic Skills (N)
Repeatable	No
Open Entry/Open Exit	No
Grading Policy	Standard Letter (S)

## Course Description

Formerly: BCT C306. Basic safety and the use of electricity. Includes basic wiring methods used in residential and commercial buildings in conjunction with the latest edition of the National Electrical Code. Application of the principles of inspection to the details of electrical construction. Transfer Credit: CSU.

## Course Level Student Learning Outcome(s)

1. Inspect, test, analyze, and report on electrical code requirements (e.g., mathematical, wiring, alternating current theory, and calculations) to ensure compliance with local and federal building code and ordinance regulations.

## Course Objectives

- 1. Apply practical mathematical electrical Ohm's Law calculations.
- 2. Use alternating current theory to evaluate different electrical systems.
- 3. Calculate and size branch circuits and feeders.
- 4. Formulate an electrical drawing layout.
- 5. Plan and check an electrical drawing to ensure compliance with the N.E.C.
- 6. Explain the various methods of determining the formulas for calculating various load requirements for residential and commercial building.
- 7. Differentiate the methods for electrical wiring applicable to residential, commercial and industrial construction.
- 8. Formulate the method for calculating and utilizing alternating current theory to evaluate different electrical systems.

## Lecture Content

GENERAL INTRODUCTION Code history Forms and reports Definitions Requirements WIRING DESIGN AND PROTECTION Use of identification of grounded conductors Branch circuits Feeders Branch circuit and feeder calculations Services Over current protection Grounding WIRING METHODS AND MATERIALS Wiring methods Temporary wiring Conductors for general wiring Flat conductor cable Electrical nonmetallic tubing Armored cable Metal clad cable Nonmetallic sheathed cable Service entrance cable INTERMEDIATE METAL CONDUIT Rigid metal conduit Rigid nonmetallic conduit Electrical metallic tubing Flexible metal

tubing Flexible metal conduit Liquid tight flexible metal/nonmetallic conduit Surface metal/nonmetallic raceways Underfloor raceways Wireways Busways Outlet, device, pull and junction boxes Conduit bodies and fittings Auxiliary gutters Switches Switchboard and panel boards EQUIPMENT FOR GENERAL USE Flexible cords and cables Fixture wires Lighting fixtures Motors, motor circuits and controllers Air conditioning Transformers SPECIAL OCCUPANCIES Hazardous locations Class I locations Class II locations Class III locations Commercial garages Gasoline dispensing Spray applications SPECIAL EQUIPMENT Electric signs Manufactured wiring systems Office furnishings Swimming pools, fountains and spas SPECIAL CONDITIONS Emergency systems Legally required standby systems Fire protective signaling systems

## Method(s) of Instruction

- Lecture (02)
- DE Online Lecture (02X)

## Instructional Techniques

A variety of instructional techniques will be employed to encompass different student learning styles. These may include, but are not limited to, lecture, discussion, projects and small group activities. Instruction will be supplemented, where appropriate, by digital media presentations resources, guest speakers and field trips.

## Reading Assignments

Complete reading assignments assigned from the textbook, supplemental readings, handouts, internet resources, and any assignments from Coastline's Library.

## Writing Assignments

Weekly projects, plans, revisions, discussion topic responses that will demonstrate skills application through authentic electrical code exercises.

## Out-of-class Assignments

Read/View the required materials, conduct the appropriate research, prepare documents/plans, complete and revise projects, and prepare for quizzes/exams.

## Demonstration of Critical Thinking

Projects will be completed to demonstrate competencies in the workplace in relation to electrical building code standards.

## Required Writing, Problem Solving, Skills Demonstration

Weekly assignments, plans, revisions, reports, written reviews/critiques and discussion topic responses that will demonstrate skills application through authentic projects.

## Eligible Disciplines

Building codes and regulations (inspecting of construction, building codes,...): Any bachelor's degree and two years of professional experience, or any associate degree and six years of professional experience.

## Other Resources

1. Current Edition National Electrical Code
2. Current Edition Designing Electrical Systems, James G. Stallcup
3. Coastline Library
4. Current Edition National Electric Code Handbook, NFP9