# 11/6/2020

# brcc keystone logo

Baton Rouge Community College

*Academic Affairs Master Syllabus*

Date Approved: 3 September 2020

Term and Year of Implementation: Spring 2021

**Course Title:** Electrical Level 3 Part 1

**BRCC Course Rubric:** ELEC 1316

**Previous Course Rubric**: ELEC 2316

**Lecture Hours per week-Lab Hours per week-Credit Hours**: 2-8-6

**Per semester: Lecture Hours-Lab Hours-Instructional Contact Hours**: 30-120-150

**Louisiana Common Course Number:**

**CIP Code:** 46.0302

**Course Description:** Covers the National Center for Construction Education and Research (NCCER) Electrical Level 3 Modules 1 - 5: Load Calculations - Branch and Feeder Circuits, Conductor Selection and Calculations, Practical Applications of Lighting, Hazardous Locations, and Overcurrent Protection. Successful completion of this course requires passing the NCCER Level 3 Electrical Modules 1 – 5 Exams with a 70% or higher. This course requires a lab fee.

**Prerequisites:**  ELEC 1226

**Co-requisites:** None

**Suggested Enrollment Cap:** 15

**Learning Outcomes.** *Upon successful completion of this course, the students will be able to:*

1. Calculate loads for single-phase and three-phase branch circuits, ampacity for single-phase and three-phase loads, voltage drop in single-phase and three-phase applications, and let-through current values when current-limiting overcurrent devices are used.

2. Select conductors and overcurrent protection devices for specific applications, seals and drains for specific hazardous locations, and wiring methods for Class I, II, and III hazardous locations.

3. Explain how the lighting terms lumen, candlepower and footcandle relate to one another.

4. Identify lighting fixtures by type and application, the general lighting pattern produced by each type of fixture, the requirements associated with different lighting systems, and various dimming systems and their components.

5. Install explosion-proof fittings in specific hazardous locations.

**Assessment Measures.** Assessment of all learning outcomes will be measured using the following methods:

1. Practical demonstrations and skills performances.

2. Homework assignments, quizzes, and tests.

3. NCCER Electrical Level 3 Modules 1 - 5 Exams.

**Information to be included on the Instructor’s Course Syllabi:**

* ***Disability Statement*:** Baton Rouge Community College seeks to meet the needs of its students in many ways. See the Office of Disability Services to receive suggestions for disability statements that should be included in each syllabus.
* ***Grading:*** The College grading policy should be included in the course syllabus. Any special practices should also go here. This should include the instructor’s and/or the department’s policy for make-up work. For example in a speech course, “Speeches not given on due date will receive no grade higher than a sixty” or “Make-up work will not be accepted after the last day of class”.
* ***Attendance Policy*:** Include the overall attendance policy of the college. Instructors may want to add additional information in individual syllabi to meet the needs of their courses.
* ***General Policies*:** Instructors’ policy on the use of things such as beepers and cell phones and/or hand held programmable calculators should be covered in this section.
* ***Cheating and Plagiarism*:** This must be included in all syllabi and should include the penalties for incidents in a given class. Students should have a clear idea of what constitutes cheating in a given course.
* ***Safety Concerns:*** In some courses, this may be a major issue. For example, “No student will be allowed in the lab without safety glasses”. General statements such as, “Items that may be harmful to one’s self or others should not be brought to class”.
* ***Library/ Learning Resources:*** Since the development of the total person is part of our mission, assignments in the library and/or the Learning Resources Center should be included to assist students in enhancing skills and in using resources. Students should be encouraged to use the library for reading enjoyment as part of lifelong learning.

**Expanded Course Outline:**

I. Load Calculations - Branch and Feeder Circuits

A. Branch Circuit Ratings

B. Derating

C. Calculating Branch Circuit Ampacity

D. Lighting Loads

E. Receptacle Loads and Multi-Outlet Assemblies

F. Show Window Loads and Sign Load

G. Residential Branch Circuits

H. Commercial Kitchen Equipment

I. Water Heaters and Electric Heating Loads

J. Air Conditioning Loads

K. Motor Loads and Welders

II. Conductor Selection and Calculations

A. Compact Conductors

B. Conductor Applications

C. Properties of Conductors

D. Voltage Drop

E. Voltage Drop Equations

III. Practical Applications of Lighting

A. Lumens, Candlepower, and Footcandles

B. Classification of Lighting Fixtures

C. Practical Applications of Lighting Fixtures

IV. Hazardous Locations

A. Class I, Class II, and Class III Locations

B. Prevention of External Ignition/Explosion

C. Explosion-proof Equipment

D. Garages and Similar Locations

E. Airport Hangers, Hospitals, and Petrochemical Hazardous Locations

F. Manufacturer's Data

V. Overcurrent Protection

A. Fuses

B. Operating Principles of Fuses

C. Underwriters Laboratories (UL) Fuse Classes

D. Motor Overload and Short Circuit Protection

E. Circuit Breakers

F. Circuit Protection