LANEY COLLEGE COURSE OUTLINE

COLLEGE:		**STATE APPROVAL DATE:**	10/12/2017
ORIGINATOR:	Forough Hashemi	**STATE CONTROL NUMBER:**	CCC00036 0353
		BOARD OF TRUSTEES APPROVAL DATE:	10/10/2017
		CURRICULUM COMMITTEE APPROVAL DATE:	05/12/2017
		CURRENT EFFECTIVE DATE:	06/18/2018

DIVISION/DEPARTMENT:

1. REQUESTED CREDIT CLASSIFICATION:

Credit - Degree Applicable
Course is not a basic skills course.
Program Applicable

2. DEPT/COURSE NO:

E/ET 218

3. COURSE TITLE:

Commercial Wiring

4. COURSE: Laney Course Updating

TOP NO. 0934.40

5. UNITS: 3.000

HRS/WK LEC: 2.00 Total: 35.00
HRS/WK LAB: 3.00 Total: 52.50
HRS/WK TBA:

6. NO. OF TIMES OFFERED AS SELETED TOPIC: **AVERAGE ENROLLMENT:**

7. JUSTIFICATION FOR COURSE:

Will be required for the Certificate and A/S Degree program in Electrical/Electronics Technology when approved

8. COURSE/CATALOG DESCRIPTION

Commercial electrical wiring: Emphasis on safety and branch circuit requirements and installation for both power and lighting; main electrical services and calculations, grounding, fault current, transformers and motors(both single and three-phase), and motor controls.

9. OTHER CATALOG INFORMATION

a. Modular: No If yes, how many modules:
b. Open entry/open exit: No
c. Grading Policy: Letter Grade Only
d. Eligible for credit by Exam: No
e. Repeatable according to state guidelines: No
f. Required for degree/certificate (specify):
Electrical Technology
g. Meets GE/Transfer requirements (specify):
h. C-ID Number: Expiration Date:

i. Are there prerequisites/corequisites/recommended preparation for this course? Yes
Date of last prereq/coreq validation: 05/12/2017

10. LIST STUDENT PERFORMANCE OBJECTIVES (EXIT SKILLS): (Objectives must define the exit skills required of students and include criteria identified in Items 12, 14, and 15 - critical thinking, essay writing, problem solving, written/verbal communications, computational skills, working with others, workplace needs, SCANS competencies, all aspects of the industry, etc.)(See SCANS/All Aspects of Industry Worksheet.)

Students will be able to:

1. Safely perform installation of typical commercial wiring branch circuits.
2. Calculate electrical loads and size wires accordingly.
3. Safely perform 3-phase motor control work using magnetic starters, push-button controls, and motors.
4. Demonstrate knowledge of the National Electrical Code.
5. Demonstrate knowledge Ohm's Law in determining circuit voltage, amperage, and resistance.
6. Perform electrical installation costs using standard electrical estimating skills.

11A. COURSE CONTENT: List major topics to be covered. This section must be more than listing chapter headings from a textbook. Outline the course content, including essential topics, major subdivisions, and supporting details. It should include enough information so that a faculty member from any institution will have a clear understanding of the material taught in the course and the approximate length of time devoted to each. There should be congruence among the catalog description, lecture and/or lab content, student performance objectives, and the student learning outcomes. List percent of time spent on each topic; ensure percentages total 100%.

LECTURE CONTENT:

1. Electrical safety, first aid, and the National Electrical Code. 5%
2. Ohm's Law, power generation and distribution both single and three-phase. 5%
3. Commercial branch circuits including 3-way switches, lights, and wall outlets. 25%
4. Conductor sizes and types, voltage drops, and loads. 10%
5. Electrical service entrance equipment, sizes, types, and grounding. 15%
6. Special electrical outlets and circuits including motors and control circuits. 15%
7. Over-current protection, fuses, and circuit breakers. 10%
8. Electrical trouble-shooting and meters. 10%
9. Material and labor estimating, costs, mark-up, and sales proposals. 5%

11B. LAB CONTENT:

1. Branch-circuit wiring in wood frame walls including switches, wall receptacles and light fixtures using metal cable and conduit. 45%
2. Electrical service entrance equipment. 20%
3. Single and three-phase motor control. 15%
4. Grounding system. 5%
5. Conduit bending, metal boxes, and fitting installation. 5%
6. Electrical trouble-shooting. 10%

12. METHODS OF INSTRUCTION (List methods used to present course content.)

1. Lecture
2. Other (Specify)
3. Lab
4. Activity
5. Discussion
6. Critique
7. Projects

Other Methods:
Videos PowerPoint

13. ASSIGNMENTS: 4.00 hours/week (List all assignments, including library assignments. Requires two (2) hours of independent work outside of class for each unit/weekly lecture hour. Outside assignments are not required for lab-only courses, although they can be given.)
Out-of-class Assignments:
Textbook, laboratory manual, examinations

ASSIGNMENTS ARE: (See definition of college level):
Primarily College Level

14. STUDENT ASSESSMENT: (Grades are based on):
ESSAY (Includes "blue book" exams and any written assignment of sufficient length and complexity to require students to select and organize ideas, to explain and support the ideas, and to demonstrate critical thinking skills.)
COMPUTATION SKILLS
NON-COMPUTATIONAL PROBLEM SOLVING (Critical thinking should be demonstrated by solving unfamiliar problems via various strategies.)
SKILL DEMONSTRATION
MULTIPLE CHOICE

15. TEXTS, READINGS, AND MATERIALS

A. Textbooks:

Ray C. Mullin, Robert L. Smith. 2011. *Electrical Wiring Commercial* 14th . Delmar CENGAGE Learning
Rationale: -This is the most current edition.

RSES, Internet

*Date is required: Transfer institutions require current publication date(s) within 5 years of outline addition/update.

B. Additional Resources:

Library/LRC Materials and Services:

The instructor, in consultation with a librarian, has reviewed the materials and services of the College Library/LRC in the subject areas related to the proposed new course

Are print materials adequate? Yes

Are nonprint materials adequate? Yes

Are electronic/online resources available? Yes

Are services adequate? Yes

Specific materials and/or services needed have been identified and discussed. Librarian comments: Please provide a list of recent, recommended supplementary (non-textbook) titles to the acquisitions librarian.

C. Readings listed in A and B above are: (See definition of college level):

Primarily college level

16. DESIGNATE OCCUPATIONAL CODE:
C - Occupational

17. LEVEL BELOW TRANSFER:
Y = Not Applicable

SUPPLEMENTAL PAGE

Use only if additional space is needed. (Type the item number which is to be continued, followed by "continued." Show the page number in the blank at the bottom of the page. If the item being continued is on page 2 of the outline, the first supplemental page will be "2a." If additional supplemental pages are required for page 2, they are to be numbered as 2b, 2c, etc.)

1a. Prerequisites/Corequisites/Recommended Preparation:
PREREQUISITE(S):

E/ET 203: Basic Electricity

RECOMMENDED PREPARATION:

E/ET 217: Residential House Wiring

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STUDENT LEARNING OUTCOMES

1. **Outcome:** Analyze the proper installation of typical commercial wiring branch circuits.
   Assessment: Written test

2. **Outcome:** Perform and test electrical procedures; analyze size wires.
   Assessment: Lab experiences, class discussion, written exams.

3. **Outcome:** Install 3-phase motor control work using magnetic starters, push-button controls, and motors.
   Assessment: Lab experiences, class discussion, written exams; analyzing and reading schematics

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