College of San Mateo
Official Course Outline

1. **COURSE ID:** BLDG 725 **TITLE:** Electrical Inspection II
   Units: 3.0 units **Hours/Semester:** 48.0-54.0 Lecture hours; and 96.0-108.0 Homework hours
   Method of Grading: Grade Option (Letter Grade or Pass/No Pass)
   Prerequisite: BLDG 720

2. **COURSE DESIGNATION:**
   Degree Credit
   Transfer credit: none

3. **COURSE DESCRIPTIONS:**
   Catalog Description:
   In-depth advanced study of the sections of the National Electrical Code dealing with calculations.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
   Upon successful completion of this course, a student will meet the following outcomes:
   1. Identify the basic fundamental mathematical components and formulas necessary to perform building load calculations, feeder sizing, derating of conductors, motor loads, and conduit fill.
   2. Develop mathematical skills and techniques needed to analyze existing electrical calculations.
   3. Prepare written reports explaining electrical calculation deficiencies using common descriptions/abbreviations.
   4. Evaluate the rationale for code sections and calculations.
   5. Interpret basic code sections and calculations.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
   Upon successful completion of this course, a student will be able to:
   1. Identify the basic fundamental mathematical components and formulas necessary to perform building load calculations, feeder sizing, derating of conductors, motor loads, and conduit fill.
   2. Develop mathematical skills and techniques needed to analyze existing electrical calculations.
   3. Prepare written reports explaining electrical calculation deficiencies using common descriptions/abbreviations.
   4. Evaluate the rationale for code sections and calculations.
   5. Interpret basic code sections and calculations.

6. **COURSE CONTENT:**
   Lecture Content:
   1. Basic Calculations
      A. Ohm's Law
      B. Watt's Law
   2. Wiring Methods
      A. Equipment and Conductor Temperature Limitations
      B. Appliances and Utilization Equipment
      C. Distribution and Control Equipment
      D. Conductors
      E. Calculating Conductor Ampacity and Overcurrent Protection
      F. Voltage Drop
      G. Conductors in Parallel
      H. Sizing Equipment Grounding Conductors and Equipment Bonding Jumpers
      I. Ampacity Derating
      J. Conductor Temperature Ratings
      K. Calculating Maximum Conductor Fill for Boxes and Conduit Bodies
      L. Calculating Bending Space in Cabinets and Cutout Boxes
      M. Conductor Fill in Metallic Wireways
   3. Lighting and Appliance Branch Circuits
      A. Continuous Loads on Branch Circuits
      B. Calculating Current in Branch Circuits
      C. Calculating Branch Circuits for Residential Cooking Appliances

D. Rating of Branch Circuit Overcurrent Device
E. Maximum Loading for Multi-outlet Branch Circuit
F. Calculating Branch Circuit Load
G. Calculating Number of Branch Circuits

4. Feeders for Power and Light
   A. Calculating Feeder Load
   B. Feeders supplying General Lighting
   C. Receptacle Loads - Non-dwelling Units
   D. Motors
   E. Small Appliance and Laundry Loads - Dwelling Unit
   F. Appliance Load - Dwelling Unit
   G. Electric Sloths Dryers - Dwelling Unit
   H. Electric Ranges and other Cooking Appliances - Dwelling Unit

7. **REPRESENTATIVE METHODS OF INSTRUCTION:**
   Typical methods of instruction may include:
   A. Lecture
   B. Activity
   C. Discussion
   D. Other (Specify): Hands on demonstrations, augmented by audio and visual aids.

8. **REPRESENTATIVE ASSIGNMENTS**
   Representative assignments in this course may include, but are not limited to the following:
   Writing Assignments:
   Homework problems for application of information from critical sections of the electrical code; problems to solve related to calculations for loads, box fills, conduit fills, etc.
   Reading Assignments:
   Reading assignments from critical sections of electrical code.

9. **REPRESENTATIVE METHODS OF EVALUATION**
   Representative methods of evaluation may include:
   A. Class Participation
   B. Exams/Tests
   C. Quizzes

10. **REPRESENTATIVE TEXT(S):**
    Possible textbooks include:
    A. National Fire Protection Association. *National Electrical Code*, ed. Quincy: National Fire Protection Association, 2017

Origination Date: September 2020
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Effective Term: Fall 2021
Course Originator: Peter von Bleichert