

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: BCT 1636
 COURSE TITLE: Commercial Wiring I

PREREQUISITE(S): BCT 1609

COREQUISITE(S): None

CREDIT HOURS: 3

CONTACT HOURS/WEEK: 5

CONTACT HOUR BREAKDOWN:

Lecture/Discussion: 2
 Laboratory: 3

FACULTY WORKLOAD POINTS: 3.5

STANDARDIZED CLASS SIZE
 ALLOCATION: 24

COURSE DESCRIPTION:

This course is designed to give students the necessary skills to function in the commercial electrical installation environment. Topics include, but are not limited to the following: 1) commercial circuit requirements, 2) NEC requirements, 3) conduit bending experience, 4) conduit installations, 5) commercial lighting systems, and 6) site plans and interpretation.

SUGGESTED TEXT(S): NCCER Electrical Curriculum, (Books I, II, III, IV),
 Meade, Russell L., Foundation of Electronics,
 Latest Edition, Delmar Publishers

IMPLEMENTATION DATE: Fall Term, 2004 (20051)

REVIEW OR MODIFICATION DATE: Fall Term, 2008 (20091) - Outline Review 2007

COURSE TOPICS	<u>CONTACT HOURS PER TOPIC</u>
I. Commercial Building Plans and Specifications	10
A. Overview	
B. General Conditions	
C. Codes and Organizations	
II. Blueprint/plan Interpretation	10
A. Electrical Drawings	
B. Symbols	
III. Branch Circuits and Feeders	20
A. Calculations	
(1) General Lighting Loads	
(2) Motor Loads	
(3) Conductor Size and Type	
(4) Ambient Temperature	
(5) Derating Factors	
(6) Overcurrent Protection	
(7) Voltage Drop	
IV. Switch and Receptacles Installations	10
A. Switches	
(1) Snap	
(2) Covers	
(3) Boxes	
B. Receptacles	
(1) Hospital Grade	
(2) Electronic Equipment	
(3) Ground Fault (GFI)	
V. Appliance Circuits	10
A. Appliances (NEC art. 422)	
B. Basic Motor Circuits	
C. Disconnect Means	
D. Grounding	
E. Overcurrent Protection	
VI. Special Systems	10
A. Surface Metal Raceways	
B. Multi-outlet Assemblies	
C. Communications Systems	
D. Floor Outlets	
E. Computer Circuits	

COURSE TOPICS (Continued)	CONTACT HOURS <u>PER TOPIC</u>
VII. Commercial Lighting A. NEC Requirements B. Definitions C. Installations	5

PROGRAM TITLE: Construction Electricity Management

COURSE TITLE: Commercial Wiring I

CIP NUMBER: 0646030205

LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLES(S):

01.0 IDENTIFY SAFE WORKING CONDITIONS AT THE LABORATORY AND WORKPLACE, AND OBSERVE SAFETY PRECAUTIONS - The student will be able to:

- 01.01 Clean work area and maintain it in a safe condition.
- 01.02 Apply lab policies and procedures for safety including fire safety.
- 01.03 Identify and operate workplace-safety electrical devices.
- 01.04 Identify health-related problems that may result from exposure to work related chemicals and hazardous materials, and know the proper precautions required for handling such materials.
- 01.05 Demonstrate procedures for disaster situations.
- 01.06 Demonstrate the proper use and care of hand and power tools and equipment.
- 01.07 Demonstrate knowledge of CPR (cardiopulmonary resuscitation) and first aid.
- 01.08 Troubleshoot residential electric circuits.
- 01.09 Drill holes in metal, wood, and concrete for electrical wiring.
- 01.10 Identify and select tools, equipment, materials, and wires to complete a job.
- 01.11 Lay out electrical devices, complying with the appropriate local, state, or national electric codes:
 - a. Conductors and cables
 - b. Standard outlets and switch boxes
 - c. Explain cord connections on major appliances
 - d. Cords, switches, receptacles, and dimmers, including a single-pole switched lighting circuit, a three-way switched lighting circuit, and a four-way combination circuit

04.0 APPLY ELECTRICITY-RELATED BASIC MATH -- The student will be able to:

- 04.01 Solve basic math problems related to electrical work.
- 04.02 Convert units of measurements between the English system and the metric system.
- 04.03 Use scientific notation.
- 04.04 Demonstrate proficiency with a calculator.
- 04.05 Solve basic algebraic formulas related to electricity.
- 04.06 Solve basic trigonometric functions related to electrical theory.
- 04.07 Explain basic AC theory and solve related mathematical problems using appropriate test equipment.
- 04.08 Solve math-related problems from measurements on training aids.

05.0 DEMONSTRATE AN UNDERSTANDING OF BASIC ELECTRICITY -- The student will be able to:

- 05.07 Explain how voltage is produced by chemical, mechanical, thermal, photoelectric, and piezo electric means.
- 05.08 Identify blueprint symbols.

LIST PERFORMANCE STANDARD ADDRESSED: (Continued)

NUMBER(S): TITLES(S):

06.0 DEMONSTRATE EMPLOYABILITY SKILLS -- The student will be able to:

- 06.01 Conduct a job search and identify career-growth and advanced-training opportunities, including apprenticeship programs.
- 06.02 Secure information about a job.
- 06.03 Identify documents that may be required for a job application.
- 06.04 Complete a job-application form.
- 06.05 Demonstrate competence in job-interview techniques.
- 06.06 Demonstrate productive work habits and positive attitudes.
- 06.07 Demonstrate knowledge of how to make job changes appropriately.
- 06.08 Identify ethical practices and responsibilities.
- 06.09 Demonstrate acceptable personal and professional hygiene.
- 06.10 Apply the principles of time management, work simplification, and teamwork when performing assigned tasks.
- 06.11 Explain the importance of taking pride in the quality of work performed.
- 06.12 Describe the importance of a drug-free workplace and the industry's policies toward drug use.
- 06.13 Describe the ramifications of a poor driving record on employability opportunities and maintaining a good driver's record.
- 06.14 Describe "Right-to-Know" Law as recorded in (29 CFR.1910.1200).

07.0 READ AND INTERPRET BASIC ELECTRIC CODES -- The student will be able to:

- 07.01 Describe the importance of following the local, state and national electric codes.
- 07.02 Read and interpret basic electric codes, wiring plans and specifications.
- 07.03 Identify licensure requirements for electrical occupations.

08.0 DEMONSTRATE AN UNDERSTANDING OF ENTREPRENEURSHIP -- The student will be able to:

- 08.01 Define "entrepreneurship".
- 08.02 Describe the importance of entrepreneurship to the American economy and the role of small business in the free-enterprise system.
- 08.03 List the advantages and disadvantages of business ownership.
- 08.04 Identify the risks involved in the ownership of a business.
- 08.05 Identify the personal characteristics of a successful entrepreneur.
- 08.06 Identify the business skills (including computer skills) needed to operate a small business efficiently and effectively.

09.0 DEMONSTRATE POSITIVE CUSTOMER-RELATIONS SKILLS -- The student will be able to:

- 09.01 Exercise self-control.
- 09.02 Identify and demonstrate appropriate responses to criticism.
- 09.03 Recognize basic human-relations skills as they relate to success in the electrical industry.
- 09.04 Resolve customer complaints in a positive, professional manner.
- 09.05 Demonstrate respect for customer property by cleaning the work area after duties are completed.

LIST PERFORMANCE STANDARD ADDRESSED: (Continued)

NUMBER(S): TITLES(S):

10.0 DEMONSTRATE PROFICIENCY IN ELECTRICAL MATH SKILLS -- The student will be able to:

- 10.01 Calculate wiring costs.
- 10.02 Draw an industrial electrical-wiring plan.
- 10.03 Describe the use of high-voltage test equipment.
- 10.04 Describe how to test insulation.
- 10.05 Describe how to balance a load.
- 10.06 Use electrical related math skills.

13.0 DEMONSTRATE PROFICIENCY IN COMMERCIAL WIRING -- The student will be able to:

- 13.01 Read and interpret a commercial wiring plan and specifications.
- 13.02 Draw a commercial electrical-wiring plan.
- 13.03 Select tools, equipment, materials, and wires to complete a job.
- 13.04 Install the following according to the plan and specifications, complying with appropriate electric codes:
 - a. Wire mold
 - b. Conduit, duct, and raceway systems
 - c. Conductors in a conduit
- 13.05 Describe the difference between a residential and a commercial lighting circuit.
- 13.06 Construct control circuits from schematics.
- 13.07 Describe high-voltage (over 600V) wiring requirements.
- 13.08 Demonstrate knowledge of installing wiring in hazardous areas.
- 13.09 Explain a commercial three-phase receptacle circuit, and an emergency-lighting system.
- 13.10 Explain commercial-service-entrance requirements.



**Florida State College
At Jacksonville**

**Course Learning Outcomes & Assessment
For All College Credit Courses**

NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

Section 1

COURSE PREFIX AND NUMBER: **BCT 1636**

SEMESTER CREDIT HOURS: **3**

COURSE TITLE: **Commercial Wiring I**

Section 2

TYPE OF COURSE: (Click on the box to check all that apply)

- | | | |
|---|--|---|
| <input type="checkbox"/> AA Elective | <input type="checkbox"/> AS Required Professional Course | <input type="checkbox"/> College Prep |
| <input type="checkbox"/> AS Professional Elective | <input checked="" type="checkbox"/> AAS Required Professional Course | <input checked="" type="checkbox"/> Technical Certificate |
| <input type="checkbox"/> Other _____ | | |
| <input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7) | | |

Section 3 (If applicable)

INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:

- | | | |
|---|---|--------------------------------------|
| <input type="checkbox"/> Communication | <input type="checkbox"/> Social & Behavioral Sciences | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Natural Sciences | <input type="checkbox"/> Humanities | |

Section 4

INTELLECTUAL COMPETENCIES:

- | | | | | |
|---|---|---|--|---|
| <input checked="" type="checkbox"/> Reading | <input type="checkbox"/> Speaking | <input type="checkbox"/> Critical Analysis | <input type="checkbox"/> Quantitative Skills | <input type="checkbox"/> Scientific Method of Inquiry |
| <input checked="" type="checkbox"/> Writing | <input checked="" type="checkbox"/> Listening | <input type="checkbox"/> Information Literacy | <input type="checkbox"/> Ethical Judgment | <input checked="" type="checkbox"/> Working Collaboratively |

Section 5

LEARNING OUTCOMES		METHOD OF ASSESSMENT
•	Demonstrate proficiency in commercial wiring.	NCCER Module Certification Score 70% or better
•	Communicate effectively.	NCCER Module Certification Score 70% or better
•	Apply electricity-related basic math.	NCCER Module Certification Score 70% or better
•	Demonstrate an understanding of basic electricity.	NCCER Module Certification Score 70% or better
•	Read and interpret basic electric codes.	NCCER Module Certification Score 70% or better
•	Demonstrate proficiency in electrical math problems.	NCCER Module Certification Score 70% or better
•	Demonstrate specialized electrical skills.	NCCER Module Certification Score 70% or better
•	Demonstrate an understanding of entrepreneurship.	NCCER Module Certification Score 70% or better
•	Demonstrate employability skills.	NCCER Module Certification Score 70% or better
•	Identify safe working conditions and observe safety precautions.	NCCER Module Certification Score 70% or better

Section 6 Name of Person Completing This Form: **Jim Yurko**