

FLORIDA STATE COLLEGE AT JACKSONVILLE

COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: BCT 1631

COURSE TITLE: Residential 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, in conjunction with Electricity I and II is designed to give students the necessary skills in residential wiring to establish the foundation for becoming an electrical helper. Topics include, but are not limited to the following: 1) proper use of both hand and power tools, 2) blueprint reading, 3) materials identification, 4) basic residential circuits, 5) terminology, 6) wiring techniques, and 7) the National Electric Code (NEC) requirements.

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. Electrical Safety	10
A. Shock Hazards	
B. Shop	
C. On-The-Job	
II. Measuring and Test Equipment	10
A. Wiggins (voltage testers)	
B. Multi-meters	
III. Electrical Power and Hand Tools	10
A. Safety Precautions	
B. Drills	
C. Saws-all	
D. Circular Saws	
E. Basic Electricians Hand Tools	
(1) Klines (linesman pliers)	
(2) Claw hammers	
(3) Wire strippers	
(4) Screw drivers	
(5) Adjustable wrenches	
(6) Miscellaneous	
F. Lab Projects	
IV. Electrical Materials	10
A. Wiring Devices	
(1) Switches	
(2) Fixtures	
(3) Panels	
(4) Receptacles	
B. Boxes	
(1) Fittings	
(2) Hardware	
(3) Materials	
(4) Sizing	
C. Wire	
(1) Definitions	
(2) Types	
(3) Sizes (AWG)	
(4) Materials	
(5) Terminology	
(6) Insulation Material	
D. NEC Requirements and Calculations	

COURSE TOPICS (Continued)	CONTACT HOURS <u>PER TOPIC</u>
V. Electrical Wiring Techniques A. Branch Circuits B. Special Purpose Outlets C. Service Entrance Drop D. Service Entrance Panel E. Ground Fault Circuit Interrupters (GFCI) F. Three-Way Switches G. Four-Way Switches H. Duplex Receptacle I. Split Receptacle J. NEC Requirements and Calculations	20
VI. Blueprint Reading and Interpretation A. Symbols B. Floor Plans C. Cable Diagrams D. Specifications	15

PROGRAM TITLE: Construction Electricity Management

COURSE TITLE: Residential 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

02.0 DEMONSTRATE AN UNDERSTANDING OF BASIC DIRECT-CURRENT (DC) ELECTRICAL-CIRCUIT SKILLS -- The student will be able to:

- 02.01 Define the terms "voltage," "current," "resistance," "power," and "energy."
- 02.02 Measure voltage, amperage, and resistance, using a volt-ohm meter (VOM) and a digital volt-ohm meter (DVM).
- 02.03 Analyze and explain a series, series-parallel, and parallel circuit.
- 02.04 Draw each type of circuit and calculate the circuit values.
- 02.05 Explain and apply Ohm's Law.
- 02.06 Compute conductance and resistance of conductors and insulators.
- 02.07 Read and interpret color codes to identify resistors.
- 02.08 Explain voltage dividers (loaded and unloaded).

03.0 DEMONSTRATE APPROPRIATE COMMUNICATION SKILLS -- The student will be able to:

- 03.01 Ask and answer questions coherently and concisely.
- 03.02 Read and follow written instructions and listen to and follow oral instructions.

LIST PERFORMANCE STANDARD ADDRESSED: (Continued)

NUMBER(S): TITLES(S):

- 03.03 Give reports orally and in writing.
- 03.04 Read critically in order to recognize assumptions and implications and to evaluate ideas.
- 03.05 Find job-related information in technical literature such as a manufacturer's manual.
- 03.06 Read and interpret the graphs, charts, diagrams and tables.
- 03.07 Communicate job-related information with other trades.
- 03.08 Demonstrate appropriate telephone communication skills

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.

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 maintain 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.

LIST PERFORMANCE STANDARD ADDRESSED: (Continued)

NUMBER(S): TITLES(S):

07.03 Identify licensure requirements for electrical occupations.

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.



**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.

<i>Section 1</i>	
COURSE PREFIX AND NUMBER: BCT 1631	SEMESTER CREDIT HOURS: 3
COURSE TITLE: Residential 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

<i>Section 5</i>	
LEARNING OUTCOMES	METHOD OF ASSESSMENT
• Install residential 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**