**SOUTH SUBURBAN COLLEGE**

**SOUTH HOLLAND, IL 60473**

**COURSE OUTLINE GUIDE**

**ICCB Course Name and Number** MFG 124 **Semester Hours:** 4

**IAI Number:**

**Curriculum:** MFG.BASIC.MAINT

**Required:** Yes **Elective:** **Replacement for:**

**Contact:** Becky Admave 708-210-5763 badmave@ssc.edu

**Course Title: SSC Catalog/ICCB: (36 characters)** Electricity and Motors

**Contact Hrs: Lecture -**  2 **Lab -**  4 **Intern -**

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**Description of course to appear in catalog: (Include prerequisites, lab fee, etc.)**

This course is a study of basic electricity for industrial electricians. It includes a study of electric machines commonly found in industrial, commercial, and residential applications: single phase AC motors, three-phase AC electric motors, and DC electric motors. Students practice industry-relevant skills including operation, installation, analyzing performance, and selecting electric machines for various applications. Troubleshooting techniques will be emphasized throughout this course.

**Description for Schedule: (two sentence maximum)**

* **Pre-requisites:** MFG 102, MFG 121
* **Lab Fee:** $25
* **Textbook(s) and other required materials:** (include author, title, publisher, etc.)

*Introduction to Electricity*, Robert J. Paynter and B.J. Toby Boydell, Prentice Hall ISBN # 978-0135040874

**General objectives of the course:** (8-10 measurable objectives preferred)

At the conclusion of the course, the student will be able to:

1. Describe the principles of electricity.
2. Differentiate single- and three-phase power distribution.
3. Define and explain watts, ohms, volts, and amps.
4. Identify and demonstrate electrical measuring tools and devices.
5. Apply the standards for the ways to measure watts, resistance, voltage, and amperage, using the appropriate instruments or devices.
6. Identify and define appropriate electrical wiring symbols.
7. Draw and explain a wiring schematic diagram for a control system.
8. Explain codes and standards and safety requirements for working with electricity.
9. Troubleshoot protection devices, such as fuses and breakers.
10. Interpret tables and charts from the National Electrical Code (NEC).
11. Demonstrate the operating principles and identify parts of electric motors.
12. Define and explain speed, torque, and horsepower.
13. Classify the main types of DC motors.
14. Classify the main types of AC motors.
15. Illustrate ways to evaluate speed regulation.
16. Depict ways to control motor speed.
17. Demonstrate common safety practices for working with electricity and motors.

**Other Aims of this Course**:

**Topical Outline: (may be on a weekly basis)**

1. Introduction to Electricity and Electric Motors
2. Electric Motor Safety
3. DC Series Motor Operation
4. DC Shunt and Compound Motors
5. Motor Speed and Torque
6. Motor Power and Efficiency
7. Motor Performance Testing and Analysis
8. Split Phase AC Motors
9. Capacitor-Start AC Motors
10. Permanent-Capacitor and Two-Capacitor Motors
11. Three-Phase AC Induction Motors

**Methods of presentation:** (Include out-of-class requirements such as field trips, etc.)

Lecture, Demonstration, Problem solving, small groups and discussion

**Methods of evaluation:**

Examinations, quizzes, and homework

**Course Requirements**:

**1.** **Materials**:

**2.** **Space Needs**: Classroom

**3.** **Library Holding Needs**: Textbook

**4.** **Instructors:** Does certification criteria require that a full-time faculty member be employed for the program to be accredited? NO.

 If yes, would the College need to hire a full-time faculty member for this purpose or is there one already in place.

**5. Impact on Enrollment:** Estimate the impact this course will have on enrollment in other courses in the same division or group requirement. Enrollments should complement each other.

**6. Statement of Possible Conflict or Overlap:** Indicate statements of agreement or disagreement of other faculty members or division directors concerning subject matter content of course and its relationship with existing course.

**7. Are you considering this course for the General Education Requirements?**

**Yes []** **No [X]**

 **If yes, give rationale why and in what grouping.**

**8. Class Capacity:**What is the expected class capacity for this course? **12**  ***(The amount of equipment and the size of the manufacturing lab inhibits more than 12 students from using the facility at one time.)***

If the capacity is different than standard contractual capacities of 38 lectures and 24 lab size classes, please submit supporting documentation and a rationale for the proposed variation in class size.

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**9.** **Outcomes Assessment Component:** Provide details of the assessment measures that will be used in this course.

80% of students will successfully complete the course.

**10.** **General Education Objectives: G1, G3, G4, G5, C1, C2, C4, M1**

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