I. TITLE: Electrical Systems I

II. CATALOG DESCRIPTION:
A study of the utilization of electricity as a source of energy and a method of information transmission. Basic DC and AC circuits, with introduction to the application of electro-magnetic fields. Lecture and laboratory provide learning experiences with basic test instruments, circuits, and components. Three hours lecture and two hours lab. Prerequisites: MAT 130 or MAT 150.

III. PURPOSE:
To provide the student with an introduction to electrical concepts, components, and analysis.

IV. COURSE OBJECTIVES:
To provide the student with enough background to be familiar with electrical device terminology, basic circuit analysis techniques, to be able to perform rudimentary electrical troubleshooting and to define and specify general electrical system needs.

V. CONTENT OUTLINE:
1. Introduction: electrical history & development, units of measurement, notation
2. Voltage, Current, and Resistance
3. Ohm’s Law, Energy, and Power
4. Series, Parallel, and Series-Parallel circuits
5. Magnetism and Electromagnetism
6. Alternating Current, Voltage and Power
7. Capacitors and Inductors
8. RC, RL, and RLC circuits
9. Transformers

VI. INSTRUCTIONAL ACTIVITIES:
Lecture, demonstration, electrical laboratory and computer lab activities.

VII. FIELD, CLINICAL AND/OR LABORATORY EXPERIENCES:
Students will construct and test circuits to verify classroom theory, to gain practical knowledge of actual components, and to learn to use basic electrical/electronic test equipment and troubleshooting tools. Computer analysis techniques will also be introduced during laboratory time. Students are expected to attend lab sessions and to prepare lab reports as directed. In order to receive laboratory credit, lab results must be discussed with and signed off by the lab instructor prior to dismantling.

VIII. RESOURCES:
Electronic components, test equipment, and computers and associated software are provided in the laboratories.

IX. GRADING PROCEDURES:
1. Grading Procedure (weighted average):
   Tests (4 @ 100 points each) 80%
   Lab Grade 20%
2. Grading Scale:
   90-100% A
   80-89% B
   70-79% C
   60-69% D
   Below 60% E
3. Homework problems: Homework problems should be solved as assigned. The student will find that having worked homework problems is excellent preparation for exams.
4. Written Communication Skills: Part of the grade of lab reports will be based on written communication skills. Lab reports need to be neat, grammatically correct, and clearly and logically presented. A separate handout will explain lab report requirements in more detail.
X. **ATTENDANCE POLICY:** This course will adhere to the policy published in the MSU Undergraduate Bulletin. Attendance will not be recorded each day, but students are expected to be regular in attendance. Provisions will be made for making up excused absences from labs. Late lab reports will have a grade reduction. Make-up exams will be given for excused absences only. Notification must be given to the instructor prior to missing an exam or lab in order for it to be considered as an excused absence.

XI. **ACADEMIC HONESTY POLICY:**
This course will adhere to the policy published in the MSU Undergraduate Bulletin

XII. **TEXT AND REFERENCES:**
Laboratory assignments will be distributed as assigned.

XIII. **PREREQUISITE:**
Math 130 or Math 150.

XIV **NON-DISCRIMINATION POLICY STATEMENT**
Murray State University endorses the intent of all federal and state laws created to prohibit discrimination. Murray State University does not discriminate on the basis of race, color, national origin, gender, sexual orientation, religion, age, veteran status, or disability in employment, admissions, or the provision of services and provides, upon request, reasonable accommodation including auxiliary aids and services necessary to afford individuals with disabilities equal access to participate in all programs and activities. For more information, contact the Director of Equal Opportunity, Murray State University, 103 Wells Hall, Murray, KY 42071-3318. Telephone: 270-809-3155 (voice), 270-809-3361 (TDD).