Course Outline

Course Title: Intro to Digital Electronics
Submitted By: Scott Norcia
Semester Course Prefix and Number: ECM 124
Old Quarter Course Prefix and Number: ECM 1243
Approval Date: 8/25/16
Revision Date: 8/31/16

Number of Credits: 3
Number of Lecture Credits: 1
Number of Lab Credits: 2
Number of Lab Hours: 4
Number of Studio/Demonstration/Internship Credits: 4

Semester(s) Offered: Fall
Class Size: 24

Catalog Description:
The course is a "Hybrid" or "Blended" course with the majority of the learning environment traditional in-class lectures and hands-on lab work which also includes Web-based learning activities to complement face-to-face work. This offering is designed as a foundational course for those entering electrical maintenance/engineering related fields. Basic digital concepts are studied with a focus on basic logic gates, numbering systems, combinational logic circuits, circuit simplification, integrated logic circuits, schematic symbols, device testing, and the mathematical and practical analysis of circuits from a troubleshooting perspective. Lab safety and the safe and proper use of tools and test equipment are emphasized.

Prerequisites and/or recommended entry skills/knowledge:
Course Prerequisite(s): None
Reading Prerequisite: None
Composition Prerequisite: None
Mathematics Prerequisite: None

Career Programs and Transfer Majors Accessing this Course:
Electrical Controls and Maintenance Diploma
Electrical Controls and Maintenance AAS

Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable:
(Notes: No more than two goals may be met by any one course. AASC review and the Chief Academic Officer's approval are required.)

0. None
1. Communications
2. Critical Thinking
3. Natural Sciences
4. Mathematical/Logical Reasoning
5. History and the Social and Behavioral Sciences
6. The Humanities and Fine Arts
7. Human Diversity
8. Global Perspectives
9. Ethical and Civic Responsibility
10. People and the Environment
**Learning Outcomes:** (including any relevant competencies listed in the Minnesota Transfer Curriculum)

Upon completion of this course, the student will be able to:

1.) Differentiate between digital and analog circuits.
2.) Comprehend the numbering systems unique to digital electronics.
3.) Describe the functions of the seven basic logic gates.
4.) Utilize the seven basic logic gates in combinational logic circuits.
5.) Simplify combinational logic circuits using Karnaugh mapping and NAND logic.
6.) Comprehend memory circuits.
7.) Comprehend logic timing diagrams.
8.) Apply basic integrated digital circuits (encoders, decoders, data selectors).
9.) Properly use test equipment to measure digital logic levels.
10.) Read a schematic.
11.) Identify basic electronic and electrical components and their schematic symbols.
12.) Observe proper safety procedures.
13.) Work cooperatively.
14.) Apply critical thinking skills.

**Student Assessment Methods:**

Lab assignments, worksheets, papers, and tests.

**Use of Instructional Technology:** (includes software, interactive video and other instructional technologies):

Power Point Software, videos, software based lab simulators.

**Additional Special Information:** (special fees, directives on hazardous materials, etc.)

Laptop Computer Lease and Required Tool List

**Transfer Information:** (Please list colleges/majors that accept this course in transfer.)

None

**Affiliated Mesabi Range College Courses and Programs:**  

**Approvals:**

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**Copies:** Transfer Specialist, Originating Faculty Member, Records

**Revised:** December 2012