

MESABI RANGE COMMUNITY & TECHNICAL COLLEGE – VIRGINIA/EVELETH
COURSE OUTLINE

Course Title: Intro to Digital Electronics
Quarter Course Prefix and Number:
Semester Course Prefix and Number: EIAT 1243

Approval Date:
Revision Date: 2/22/06

Number of Credits: 3 Number of Lecture Credits: 1 Number of Lab Credits: 2
Semester(s) Offered: Number of Studio/Discussion Credits:
Class Size: 24
Negotiated by AASC on
(Date)___

Course Purpose Code:

- ___ 0 – Developmental Courses
- ___ 1 – Non-Transferable General Studies
- X 2 – Technical course related to career programs
- ___ 3 – College course which has the primary goal of applying certain concepts (e.g. vocal ensemble)
- ___ 4 - Other college course not considered a part of general education (MNTC) e.g. computer science, health, physical education
- ___ 5 – Course which is intended to fulfill Minnesota Transfer Curriculum (MNTC) requirements.
- ___ 9 – Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

Catalog Description:

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: Minimum score on basic skills test
Composition Prerequisite:
Mathematics Prerequisite: Minimum score on basic skills test

Career Programs and Transfer Majors Accessing this Course:

Electrical and Industrial Automation Technology

Minnesota Transfer Curriculum Goal(s) partially met by this course if applicable:

- | | |
|---|---|
| 0. <u>X</u> None | 6. ___ The Humanities and Fine Arts |
| 1. ___ Communications | 7. ___ Human Diversity |
| 2. ___ Critical Thinking | 8. ___ Global Perspectives |
| 3. ___ Natural Sciences | 9. ___ Ethical and Civic Responsibility |
| 4. ___ Mathematical/Logical Reasoning | 10. ___ People and the Environment |
| 5. ___ History and the Social and Behavioral Sciences | |

Learning outcomes, including any relevant competencies listed in the Minnesota Transfer Curriculum:

Following the completion of this course the student will be able to demonstrate the ability to:

- 1.) Differentiate between digital and analog circuits.
- 2.) Understand 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.) Understand memory circuits.
- 7.) Understand 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.

Possible 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.

A one-paragraph summary or outline of the major course content:

See "Learning Outcomes" above.

Additional special information (special fees, directives on hazardous materials, etc.)

Laptop Computer Lease

Approvals:

Body	Representative Signatures	Date
Curriculum Committee		
Faculty Association		
Academic Affairs Standards Committee		
Chief Academic Officer		

Distribution: Original – Administrative Office

Copies: Curriculum Committee Chair, Learning Center, Library, Originating Faculty Member, Records, Student Services, Scheduler, Transfer Specialist

Revised February 10, 2004