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

Course Title: Intro to Solid State Electronics
Approval Date:
Quarter Course Prefix and Number:
Revision Date: 2/22/06
Semester Course Prefix and Number: EIAT 1233

Number of Credits: 4 **Number of Lecture Credits:** 1 **Number of Lab Credits:** 3
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 solid state theory is studied with a focus on semiconductor materials, PN junction devices, discrete and integrated semiconductor applications, 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 is 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. __X__ 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:

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

1.) Explain semiconductor material construction.
2.) Explain depletion layer principles.
3.) Properly bias a PN junction.
4.) Construct and troubleshoot a filtered, regulated full wave bridge rectifier.
5.) Construct and troubleshoot a basic BJT amplifier.
6.) Apply thyristor principles to AC phase control.
7.) Explain operational amplifier characteristics.
8.) Apply operational amplifiers to basic summing/differentiation circuits.
9.) Properly use test equipment to measure voltage, current and resistance.
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