MESABI RANGE COLLEGE

Course Outline

Course Title:	**Intro to Solid State Electronics**	**Submitted By:**	**Scott Norcia**
Semester Course Prefix and Number:	**ECM 1233**	**Approval Date:**	
Old Quarter Course Prefix and Number:		**Revision Date:**	**8/31/16**

Number of Credits:	**4**	**Number of Lecture Credits:**	**1**		
Semester(s) Offered:	**Fall**	**Number of Lab Credits:**	**3**	**Number of Lab Hours:**	**6**
Class Size:	**24**	**Number of Studio/Demonstration/Internship Credits:**			
Negotiated by AASC on: (date)					

Course Purpose Code:

_____ **0 –** Developmental Courses
_____ **1 –** Non-transferable
__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 MNTC (e.g. computer science, health, physical education)
_____ **5 –** Course which is intended to fulfill the Minnesota Transfer Curriculum (MNTC) requirements or intended for transfer.
_____ **9 –** Continuing Education/Customized Training specialized credit course (not occurring in 0-5)

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 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 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. __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)

Upon completion of this course, the student will be able 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.) Properly use test equipment to measure voltage, current and resistance.
8.) Read a schematic.
9.) Identify basic electronic and electrical components and their schematic symbols.
10.) Observe proper safety procedures.
11.) Work cooperatively.
12.) 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:

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

Distribution: Original – Instructional Services
Copies: Transfer Specialist, Originating Faculty Member, Records
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