Course Overview

Course Title: Intro to Solid State Electronics
Submitted By: Scott Norcia
Semester Course Prefix and Number: PAS 1233
Old Quarter Course Prefix and Number: 

Number of Credits: 4
Semester(s) Offered: Fall
Class Size: 24
Negotiated by AASC on:

Number of Lecture Credits: 1
Number of Lab Credits: 3
Number of Lab Hours: 6
Number of Studio/Demonstration/Internship Credits:

Course Purpose Code:
0 — Developmental Courses
1 — Non-transferable, General Education
X — 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 (MNTE) (e.g. computer science, health, physical education)
5 — Course which is intended to fulfill the Minnesota Transfer Curriculum (MNTE) requirements or intended for transfer.
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: None
Composition Prerequisite: None
Mathematics Prerequisite: None

Career Programs and Transfer Majors Accessing this Course:
Process Automation Systems Diploma
Process Automation Systems 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. Curriculum Committee 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)

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.
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.

**Outline or Statement of Major Course Content:**

See "Learning Outcomes" above.

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

Laptop Computer Lease

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

None

**Approvals:**

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<tr>
<th>Body</th>
<th>Representative Signatures</th>
<th>Date</th>
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<tbody>
<tr>
<td>Curriculum Committee</td>
<td>Ann R. Kline</td>
<td>11-29-11</td>
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<tr>
<td>Faculty Association</td>
<td>Sue Quincey</td>
<td>12-5-11</td>
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<tr>
<td>Academic Affairs Standards Committee</td>
<td>Ann R. Kline</td>
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<td>Chief Academic Officer</td>
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**Distribution:** Original – Administrative Office

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

**Revised:** October 2006