Eastfield College
Career Technologies Division

Spring 2013
Solid State Devices
CETT 1429 Section 43001
4 Credit Hours

<table>
<thead>
<tr>
<th>Type</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>Monday</td>
<td>10:45 AM – 1:25 PM</td>
<td>L100</td>
</tr>
<tr>
<td>Lab</td>
<td>Wednesday</td>
<td>10:45 AM – 1:25 PM</td>
<td>L106</td>
</tr>
</tbody>
</table>

Instructor: Clay Rawlins

Contact Information:
Office: L101
Phone: 972-860-7683
Email address: crawlins@dcccd.edu
Hours Available: Posted Office Hours & by Appointment

Course Description
CETT 1429 Solid State Devices (4)
This is a WECM Course Number.
Recommended Prerequisite: CETT 1403 & credit or concurrent enrollment in CETT 1405.
A study of diodes, transistor characteristics and other semiconductor devices, including analysis of static and dynamic characteristics, biasing techniques, and thermal considerations. (3 Lec., 3 Lab.)

Textbooks and Other Course Materials:
CALCULATOR: TI-36X or equivalent scientific calculator
THREE RING BINDER: Suggest obtaining a 3-Ring Binder (1 1/2” or larger) to hold Course Guide and handout materials.
Developmental Courses

The Texas Success Initiative (TSI) is a statewide program designed to ensure that students enrolled in Texas public colleges and universities have the basic academic skills needed to be successful in college-level course work. The TSI requires assessment, remediation (if necessary), and advising of students who attend a public college or university in the state of Texas. The program assesses a student's basic academic skills in reading, writing, and math. Passing the assessment is a prerequisite for enrollment in many college-level classes such as English 1301/1302, History 1301/1302, Math 1414, etc. Students who do not meet assessment standards may complete prerequisite requirements by taking developmental courses in the deficient area and passing them with a grade of C or higher. In some cases retesting will also be required. It is up to each student to be aware and informed about requirements that are subject to change. Additional information is available from the TSI Office. https://www1.dcccd.edu/cat0910/admiss/tsi.cfm?loc=4

Course Objectives:

The purpose of this course is to provide the student with a thorough knowledge of the theory and application of solid state devices as related to the following areas:

A. Basic Semiconductor Theory
B. PN Junction Theory
C. Semiconductor Diodes and Applications
D. The Junction Transistor
E. Introduction to Transistor Circuits
F. Common-Emitter Configuration Biasing
G. Common-Emitter Configuration Signal Conditions
H. Common-Collector Configuration
I. Common-Base Configuration
J. Transistor Circuit Design
K. Laboratory Competencies

Students will be provided with the facilities, equipment, instruction, and assignments necessary to enable them to analyze, troubleshoot, and, in some cases, design circuits described.

End-of-Course Outcomes: Analyze various solid state devices and circuits; construct circuits to test; and troubleshoot various solid state devices.

LEARNING OUTCOMES: 70% of the students will exhibit accomplishment of outcomes by scoring a minimum score of 70% on the following Solid-State Challenges along with an overall course average of at least 70%.

1. Basic Diode Testing
2. Basic Transistor Testing
3. Common Emitter Amplifier One
Evaluation Procedures:

The relative weight of each of the grading components of the course is outlined below:

- 4 Tests (weighted equally)  70%
- 8 to 14 labs (weighted equally)  30%

The course grade will be calculated as follows:

\[
\text{Test Average} = \frac{\text{Test 1} + \text{Test 2} + \text{Test 3} + \text{Test 4}}{4}
\]

\[
\text{Lab Average} = \frac{\text{Lab 1} + \text{Lab 2} + \ldots + \text{Lab 12}}{12} \quad \text{(example for 12 labs)}
\]

\[
\text{Course Average} = (0.7 \times \text{Test Avg.}) + (0.3 \times \text{Lab Avg.})
\]

Obtaining Final Course Grades Using eConnect

Final Grade Reports are no longer mailed. Convenient access is available online at www.econnect.dcccd.edu. Use your identification number when you log onto eConnect. This online system provides you with timely information regarding your college records.

Eastfield College Email Policy

Faculty and students must have and use a DCCCD account for all correspondence relating to academic coursework. For information on setting up a DCCCD student email account go to: http://www.dcccd.edu/netmail/home.html
# Course Outline:

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<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>TOPIC</th>
<th>REFERENCE</th>
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<tbody>
<tr>
<td>1</td>
<td>1-21</td>
<td>Course Introduction</td>
<td>Ch-1(1-1 to 1-4)</td>
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<td></td>
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<td>Semiconductor Materials</td>
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<td>2</td>
<td>1-28</td>
<td>PN Junctions</td>
<td>Ch-1 (1-5 to 1-9)</td>
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<td>Diode Circuits</td>
<td>Ch-2 (2-4, 2-6)</td>
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<td>3</td>
<td>2-4</td>
<td>Diode Circuits Analysis</td>
<td>Course Guide</td>
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<td>4</td>
<td>2-11</td>
<td>Review and Test 1</td>
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<tr>
<td>5</td>
<td>2-18</td>
<td>Rectifier Circuits</td>
<td>Ch-2 (2-1 to 2-3, 2-7)</td>
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<td>6</td>
<td>2-25</td>
<td>Rectifier Circuits (continued)</td>
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<td>7</td>
<td>3-4</td>
<td>Review and Test 2</td>
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<td>8</td>
<td>3-11</td>
<td>Light Emitting Diodes</td>
<td>Ch-3 (3-4)</td>
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<td>3-18</td>
<td>Spring Break</td>
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<td>9</td>
<td>3-25</td>
<td>Miscellaneous Semiconductor Devices</td>
<td>Ch-3 (3-3, 3-5, 3-6)</td>
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<td>Course Guide</td>
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<td>10</td>
<td>4-1</td>
<td>Review and Test 3</td>
<td>Ch-4</td>
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<td>11</td>
<td>4-8</td>
<td>Bipolar Transistors</td>
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<td>Basic Transistor Circuits</td>
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<td>12</td>
<td>4-15</td>
<td>Transistor Characteristics</td>
<td>Ch-4</td>
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<td>Transistor Parameters</td>
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<td>13</td>
<td>4-22</td>
<td>Transistors as Switches</td>
<td>Ch-5</td>
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<td>Biasing</td>
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<td>14</td>
<td>4-29</td>
<td>Transistors as Amplifiers</td>
<td>Ch-6 (6-1 to 6-5)</td>
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<td>Biasing and Configurations</td>
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<tr>
<td>15</td>
<td>5-6</td>
<td>Final Exam Review</td>
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<tr>
<td>16</td>
<td>5-13</td>
<td>Final Exam</td>
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The instructor reserves the right to alter content or sequence of presentation of course material as shown in the above tentative calendar in order to meet course objectives.
Attendance Policy:

Students are expected to regularly attend all classes in which they are enrolled. Students have the responsibility to consult with the instructor when an absence occurs. Senate Bill 738 authorizes students to be absent for religious holy days. Students planning such absences are required to submit written notification to their instructors during the first 5 days of the term. Students absent for approved religious holy days will be allowed to complete work missed.

Students who are receiving any form of financial aid should check with the Financial Aid Office prior to withdrawing from classes. Withdrawals may affect your eligibility to receive further aid and could cause you to be in a position of repayment for the current semester. Students who fail to attend or participate after the drop date are also subject to this policy.

Financial Aid Statement for Distance Learning Classes

If you are receiving Financial Aid grants or loans and are enrolled in a Distance Learning class, you must show participation in this class prior to the certification date by either e-mailing or contacting the instructor or logging on to eCampus. Do not drop or stop attending any class without consulting the Financial Aid Office. Changes in your enrollment level and failing grades may require that you repay financial aid funds.

Repeating This Course: (Third Attempt to Enroll in a Course)

Effective for Fall Semester 2005, the Dallas County Community Colleges will charge additional tuition to students registering the third or subsequent time for a course. All third and subsequent attempts of the majority of credit and Continuing Education/Workforce Training courses will result in additional tuition to be charged. Developmental Studies and some other courses will not be charged a higher tuition rate. Third attempts include courses taken at any of the Dallas County Community Colleges since the Fall 2002 Semester. See Third Attempt to Enroll in a Course at: http://www.dcccd.edu/thirdcourseattempt/
Academic Honesty Statement

Scholastic dishonesty is a violation of the Code of Student Conduct. Scholastic dishonesty includes, but is not limited to, cheating on a test, plagiarism, and collusion.

As a college student, you are considered a responsible adult. Your enrollment indicates acceptance of the DCCCD Code of Student Conduct published in the DCCCD Catalog at http://www1.dcccd.edu/cat0506/ss/code.cfm.

Academic dishonesty includes, but is not limited to, cheating on tests, plagiarism and collusion. **Cheating** includes copying from another student’s test or homework paper, using materials not authorized, collaborating with or seeking aid from another student during a test, knowingly using, buying, selling, stealing, or soliciting the contents of an unadministered test, and substituting for another person to take a test. **Plagiarism** is the appropriating, buying, receiving as a gift, or obtaining by any means another’s work and the unacknowledged submission or incorporation of it in one’s own written work. **Collusion** is the unauthorized collaboration with another person in preparing written work for fulfillment of course requirements. Academic dishonesty is a serious offense in college. You can be given a failing grade on an assignment or test, can be failed for the class, or you can even be suspended from college.

Food and Drink Policy
Food, drinks, and tobacco products are prohibited in Eastfield College classrooms.

ADA Statement

Students with a physical, mental or learning disability who require accommodations should contact the college Disability Services Office in C237. Call 972.860.8348 or email efcdso@dcccd.edu. For more information: http://www.eastfieldcollege.edu/SSI/DSO/index.html.

Religious Holidays

Absences for observance of a religious holy day are excused. A student whose absence is excused to observe a religious holy day is allowed to contract with the instructor to take a make-up examination or complete an assignment within a reasonable time after the absence.

Withdrawal Policy

If you are unable to complete this course, it is your responsibility to withdraw formally. The withdrawal request must be received in the Registrar’s Office by April 18, 2013. Failure to do so will result in your receiving a performance grade, usually an “F.” If you drop a class or withdraw from the college before the official drop/withdrawal deadline, you will receive a “W” (Withdraw) in each class dropped. For more information about drop deadlines, refer to the current printed Credit Class Schedule, contact the Admissions/Registrar’s Office at 972-860-7167 (Room C119), or contact the division office.
STOP BEFORE YOU DROP

For students who enrolled in college level courses for the first time in the fall of 2007, Texas Education Code 51.907 limits the number of courses a student may drop. You may drop no more than 6 courses during your entire undergraduate career unless the drop qualifies as an exception. Your campus counseling/advising center will give you more information on the allowable exceptions.

Remember that once you have accumulated 6 non-exempt drops, you cannot drop any other courses with a “W”. Therefore, please exercise caution when dropping courses in any Texas public institution of higher learning, including all seven of the Dallas County Community Colleges. For more information, you may access:
https://www1.dcccd.edu/coursedrops

Family Educational Rights and Privacy Act of 1974 (FERPA)
In compliance with the Family Educational Rights and Privacy Act of 1974 (FERPA), the College may release information classified as “directory information” to the general public without the written consent of the student. Directory information includes: (1) student name, (2) student address, (3) telephone numbers, (4) date and place of birth, (5) weight and height of members of athletic teams, (6) participation in officially recognized activities and sports, (7) dates of attendance, (8) educational institution most recently attended, and (9) other similar information, including major field of student and degrees and awards received. Students may protect their directory information at any time during the academic year. If no request is filed, directory information is released upon written inquiry. No telephone inquiries are acknowledged. No transcript or academic record is released without written consent from the student, except as specified by law.

Classroom Etiquette

| Enrollment in this class indicates acceptance of the standards of conduct published in the current edition of the Eastfield College Catalog. Any disruptive behavior in the classroom is not acceptable and will not be tolerated. Laptops or desktop computers should not be used during class time except as needed for instructional purposes. Please silence all cell phones or pagers during class sessions. If you are late to class, please come in quietly and take your seat. Do not make a habit of arriving late since this can be distracting to other students. If you must leave early, please let the instructor know prior to class. Excessive tardiness or leaving early may affect your final grade since class attendance and participation is important. |

The instructor reserves the right to amend this syllabus as necessary.