Electronic Devices and Circuits I

Course Description
An introduction to semiconductor theory; solid state devices, including diodes, Bipolar Junction transistors, JFETs, and MOSFETs; principles of operational amplifiers; transducers and sensors.

STUDENT LEARNING OUTCOMES
Successful students will be able to:

1. Understand the basics of selected solid state devices (Bipolar transistors, FETs, etc.).
2. Analyze diode, and amplifier circuits.
3. Determine load lines for solid state circuit analysis
4. Understand and use various models for amplifier analysis.
5. Determine current through and voltage across semiconductor circuits.
6. Understand and implement the amplification process with solid-state devices.
7. Understand and use the characteristics of an ideal and actual operational amplifier (op amp).

Major Course Requirements
Prerequisites for this course are:
ENTC 3415 Circuit Analysis II or ENTC 2418 Introduction to Electronics.

TEXTS
(Required)


INSTRUCTIONAL METHODS AND ACTIVITIES
Methods and activities for instruction include the following: lectures, group discussions, homework assignments/solutions, lab experiments/exercises, software simulations.

ENGINEERING LIBRARY RESOURCES
The Mary and Jeff Bell Library houses substantial engineering reference materials available for research and coursework support. Designated coursework will require access and use of these resources as a portion of the grade for assigned work.

EVALUATION AND GRADE ASSIGNMENT
Evaluation of student performance is based on homework assignments, two midterms, lab experiments/exercises, a project, and a final exam. Tests, except the final, are graded and returned within a week from the date they are taken if at all possible. No makeup exams are given in this course. You may examine the final exam within four weeks after the final grades are mailed to you.
The final grade is assigned as follows:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>If</th>
<th>Tentative Grade</th>
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</thead>
<tbody>
<tr>
<td>Midterm 1</td>
<td>20</td>
<td>90 ≥ Total</td>
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<tr>
<td>Midterm 2</td>
<td>20</td>
<td>80 ≤ Total &lt; 90</td>
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<tr>
<td>Homework + Quizzes</td>
<td>15</td>
<td>70 ≤ Total &lt; 80</td>
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<tr>
<td>Labs</td>
<td>20</td>
<td>60 ≤ Total &lt; 70</td>
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<tr>
<td>Final exam</td>
<td>25</td>
<td>Total &lt; 60</td>
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</tbody>
</table>

**Note:** You must have a grade of 70 or above for your Labs to pass the course.

**SAFETY**
The safety of students, faculty, staff and visitors to the ET laboratories is of paramount importance to the ET programs. You must follow safety procedures and use personal protective equipment as required in each laboratory. Any student that attempts to use equipment without authorization or that violates any safety policy or regulation will be immediately removed from the laboratory.

**FOOD AND DRINKS**
Eating/drinking is not permitted in the LAB.

**ATTENDANCE POLICY**
You must attend all classes. You are responsible for any materials covered or handed out or announcements made in your absence either excused or unexcused. Records of your attendance will be maintained. Students missing classes (6 or more) without the instructor's permission may be withdrawn from the course or given an F for the course.

**ASSIGNMENTS**
Late assignments are not normally accepted. The student will receive a zero on assignments that are turned in after the due date unless a written permission (by email) is secured (from the instructor) prior to the due date. Assignments may be turned in before the due date (they may be left in my mailbox, sent with a classmate, mailed, etc.). Note that hardware or software failure or machine unavailability does not merit an extension on the assignment if no arrangement has been made with instructor.

**LAB EXPERIMENTS**
The goal of the laboratory sessions is to analyze and verify the theoretical ideas learned in the classroom. Most experiments require written reports. The report is typically due one week after the experiment is performed if no due date given. Late reports are not normally accepted. Reports, however, may be turned in before the due date (they may be left in my mailbox, sent with a classmate, mailed, faxed, etc.). Students are expected to work more hours than scheduled to finish the experiments.

**EMAIL ADDRESS**
When necessary I will be sending information to your e-mail address as written in your Islander Blackboard. If you prefer you may change this to a personal address. It is your duty to update this and to check your e-mail often; I suggest at least once a day.
Also, I have been using Blackboard often and will post item in it.
Course Policies

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Academic Integrity/Plagiarism.
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in Grade F.

Preferred methods of scholarly citations
Classroom/professional behavior
Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

ACADEMIC HONESTY
University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) The instructor reserves the right not to grade, or grade only partially any of the submitted assignment. During an assignment you are allowed to have only what is permitted by instructor, anything else (cell, notebook, book etc) encounter in your possession will be considered cheating and a proceeding to penalized and document such an act will take place.

Grade Appeals
As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage (http://sci.tamucc.edu/students/GradeAppeal.html). For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.
Disabilities Accommodations
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call or visit Disability Services at (361) 825-5816 in Corpus Christi Hall 116.
If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

Statement of Academic Continuity
In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.

TENTATIVE WEEKLY SCHEDULE

<table>
<thead>
<tr>
<th>WK</th>
<th>Week of</th>
<th>Readings</th>
<th>Topics</th>
<th>Exams</th>
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<tbody>
<tr>
<td>1</td>
<td>8/25</td>
<td>Ch. 1</td>
<td>Introduction to Electronics/ Course Requirements</td>
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<tr>
<td>2</td>
<td>9/1</td>
<td>Ch. 2</td>
<td>Diodes and Applications</td>
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<tr>
<td>3</td>
<td>9/8</td>
<td>Ch. 2</td>
<td>Diodes and Applications</td>
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<tr>
<td>4</td>
<td>9/15</td>
<td>Ch. 3</td>
<td>Special Purpose Diodes – Zener Diode &amp; Applica</td>
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<tr>
<td>5</td>
<td>9/22</td>
<td>Ch. 4</td>
<td>BJT – Bipolar Junction Transistor</td>
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<tr>
<td>6</td>
<td>9/29</td>
<td>Ch. 5</td>
<td>Transistor Bias Circuits (1 ½ weeks)</td>
<td>MID 1</td>
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<tr>
<td>7</td>
<td>10/6</td>
<td>Ch. 6</td>
<td>BJT Amplifiers</td>
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<tr>
<td>8</td>
<td>10/13</td>
<td>Ch. 6</td>
<td>BJT Amplifiers</td>
<td></td>
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<tr>
<td>9</td>
<td>10/20</td>
<td>Ch. 8</td>
<td>FETs -Field Effect Transistors (Characteristics)</td>
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<tr>
<td>10</td>
<td>10/27</td>
<td>Ch. 8</td>
<td>FETs -Field Effect Transistors (MOSFET)</td>
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<tr>
<td>11</td>
<td>11/3</td>
<td>Ch. 11</td>
<td>THYRISTORS (Shockley Diode, SCR, Triac)</td>
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<tr>
<td>12</td>
<td>11/10</td>
<td>Ch. 12</td>
<td>Operational Amplifier (Op-Amp)</td>
<td>MID 2</td>
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<tr>
<td>13</td>
<td>11/17</td>
<td>Ch. 12</td>
<td>Operational Amplifier (Op-Amp)</td>
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<tr>
<td>14</td>
<td>11/24</td>
<td>Ch. 13</td>
<td>Basic Op-Amp Circuits</td>
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<tr>
<td>15</td>
<td>12/3</td>
<td>Review selected topics as needed (1 class session)</td>
<td>FINAL</td>
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* Any Changes will be announced in class.

* Exam 1, & 2 Dates are tentatively given within that week, not necessarily on Monday.

NOTE1: Labor Day Holiday 9/1 – No classes
NOTE2: Last day to drop a class 11/7
NOTE3: Campus is closed for Thanksgiving, 11/27-11/28
NOTE4: Last day of classes 12/2

Dropping a Class

I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with me before you decide to drop to be sure it is the best thing to do. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class.