



ELCR-1030 Solid State Devices
COURSE SYLLABUS
Traditional
Fall Semester 2017

COURSE INFORMATION

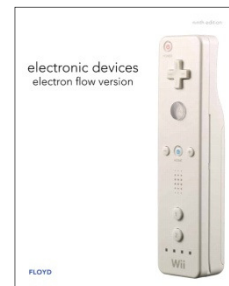
Credit Hours/Minutes: 5 Hours / 4500 Minutes
Class Location: RMTC, Room 827, Vidalia Campus
Class Meets: Monday and Wednesday (MW), 5:15 PM to 7:55 PM
CRN: 20029
Preferred Method of Contact: Text or Email to Instructor

INSTRUCTOR CONTACT INFORMATION

Instructor Name: William (Chip) Greene
Office Location: RMTC Room 822, Vidalia Campus
Office Hours: Monday through Thursday, 10:30 AM to Noon, 1:00 PM to 3:00 PM
Email Address: wgreene@southeasterntech.edu
Phone: (912) 538-3102
Fax Number: (912) 538-3106

REQUIRED TEXT

Electronic Devices, Electron Flow Version, 9th ed.
by Thomas L. Floyd,
published by Prentice Hall,
ISBN# 0-13-254985-9



REQUIRED SUPPLIES & SOFTWARE

Engineering / Scientific Calculator

Note: Although students can use their smart phones and tablets to access their online course(s), exams, discussions, assignments, and other graded activities should be performed on a personal computer. Neither Blackboard nor GVTC provide technical support for issues relating to the use of a smart phone or tablet so students are advised to not rely on these devices to take an online course.

COURSE DESCRIPTION

Introduces the physical characteristics and applications of solid-state devices.

PREREQUISITE(S)

ELCR 1020

MAJOR COURSE COMPETENCIES / COURSE OUTLINE

1. PN Diodes
2. Power Supplies
3. Voltage Regulation
4. Bipolar Junction Theory and Application
5. Field Effect Transistors
6. Special Applications

GENERAL EDUCATION CORE COMPETENCIES

STC has identified the following general education core competencies that graduates will attain:

1. The ability to utilize standard written English.
2. The ability to solve practical mathematical problems.
3. The ability to read, analyze, and interpret information.

STUDENT REQUIREMENTS (TRADITIONAL)

Students are expected to complete all tests and comprehensive problems by the due dates. A ten point penalty will be assessed for each day a comprehensive problem is late. There are no makeup tests. Tests are made available for several days; therefore, there are no makeup tests. Students who miss a test will be assigned a grade of zero. Students are responsible for policies and procedures included in the STC E-Catalog. All online students must pledge that they have read and understand the STC Online Orientation within the first five days of class. Online students are responsible for checking e-mails and Blackboard announcements DAILY.

ATTENDANCE GUIDELINES

Class attendance is a very important aspect of a student's success. Being absent from class prevents students from receiving the full benefit of a course and also interrupts the learning process. Southeastern Technical College considers both tardiness and leaving early as types of absenteeism. Responsibility for class attendance rests with the student. Regular and punctual attendance at all scheduled classes is required for student success. Students will be expected to complete all work required by the instructor as described in the individual course syllabus.

Instructors have the right to give unannounced quizzes/assignments. Students who miss an unannounced quiz or assignment will receive a grade of 0. Students who stop attending class, but do not formally withdraw, may receive a grade of F and face financial aid repercussions in upcoming semesters.

Instructors are responsible for determining whether missed work may be made up and the content and dates for makeup work is at the discretion of the instructor.

Students will not be withdrawn by an instructor for attendance; however, all instructors will keep records of graded assignments and student participation in course activities. The completion dates of these activities will be used to determine a student's last date of attendance in the event a student withdraws, stops attending, or receives an F in a course.

SPECIAL NEEDS

Students with disabilities who believe that they may need accommodations in this class based on the impact of a disability are encouraged to contact Helen Thomas, 912-538-3126, hthomas@southeasterntech.edu, to coordinate reasonable accommodations.

SPECIFIC ABSENCES

Provisions for Instructional Time missed because of documented absences due to jury duty, military duty, court duty, or required job training will be made at the discretion of the instructor.

PREGNANCY

Southeastern Technical College does not discriminate on the basis of pregnancy. However, we can offer accommodations to students who are pregnant that need special consideration to successfully complete the course. If you think you will need accommodations due to pregnancy, please advise me and make appropriate arrangements with Helen Thomas, 912-538-3126, hthomas@southeasterntech.edu.

WITHDRAWAL PROCEDURE

Students wishing to officially withdraw from a course(s) or all courses after the drop/add period and prior to the 65% portion of the semester (date will be posted on the school calendar) must speak with a Career Counselor in Student Affairs and complete a Student Withdrawal Form. A grade of "W" is assigned when the student completes the withdrawal form from the course.

Students who are dropped from courses due to attendance (see your course syllabus for attendance policy) after drop/add until the 65% point of the semester will receive a "W" for the course. Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of 'F' being assigned.

After the 65% portion of the semester, the student will receive a grade for the course. (Please note: A zero will be given for all missed assignments.)

There is no refund for partial reduction of hours. Withdrawals may affect students' eligibility for financial aid for the current semester and in the future, so a student must also speak with a representative of the Financial Aid Office to determine any financial penalties that may be assessed due to the withdrawal. All grades, including grades of 'W', will count in attempted hour calculations for the purpose of Financial Aid.

Remember - Informing your instructor that you will not return to his/her course does not satisfy the approved withdrawal procedure outlined above.

MAKEUP GUIDELINES (TESTS, QUIZZES, HOMEWORK, PROJECTS, ETC...)

Students are required to take all tests and complete all assignments scheduled during the semester. Failure to take Tests/Exam(s) and complete assignments will result in a grade of zero. There will be no makeup of assignments or EXAMS. If Internet or browser failure occurs, contact instructor immediately. A decision will be made at that time if the exam will be reset. Instructor reserves the right to deduct points from the exam scores for exceeding the scheduled time limit on the exam and/or requiring student to come to campus to take the final exam. Note: If student notifies instructor about exam problems because of technical issues after the due date or on the last day of the semester, the student will NOT be allowed to make-up the exam. No exceptions! Assignments must be turned in on the assigned date and will not be accepted late, a grade of zero will be given. ALL Assignments are due according to the lesson plan.

ACADEMIC DISHONESTY POLICY

The STC Academic Dishonesty Policy states All forms of academic dishonesty, including but not limited to cheating on tests, plagiarism, collusion, and falsification of information, will call for discipline. The policy can also be found in the STC Catalog and Student Handbook.

PROCEDURE FOR ACADEMIC MISCONDUCT

The procedure for dealing with academic misconduct and dishonesty is as follows:

1. First Offense

Student will be assigned a grade of "0" for the test or assignment. Instructor keeps a record in course/program files and notes as first offense. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus. The Registrar will input the incident into Banner for tracking purposes.

2. Second Offense

Student is given a grade of "WF" for the course in which offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of second offense. The Registrar will input the incident into Banner for tracking purposes.

3. Third Offense

Student is given a grade of "WF" for the course in which the offense occurs. The instructor will notify the student's program advisor, academic dean, and the Registrar at the student's home campus indicating a "WF" has been issued as a result of third offense. The Vice President for Student Affairs, or designee, will notify the student of suspension from college for a specified period of time. The Registrar will input the incident into Banner for tracking purposes.

STATEMENT OF NON-DISCRIMINATION

The Technical College System of Georgia and its constituent Technical Colleges do not discriminate on the basis of race, color, creed, national or ethnic origin, sex, religion, disability, age, political affiliation or belief, genetic information, disabled veteran, veteran of the Vietnam Era, spouse of military member or citizenship status (except in those special circumstances permitted or mandated by law). This school is in compliance with Title VI of the Civil Rights Act of 1964, which prohibits discrimination on the basis of race, color, or national origin; with the provisions of Title IX of the Educational Amendments of 1972, which prohibits discrimination on the basis of gender; with the provisions of Section 504 of the Rehabilitation Act of 1973, which prohibits discrimination on the basis of handicap; and with the American with Disabilities Act (ADA).

The following individuals have been designated to handle inquiries regarding the nondiscrimination policies:

ADA/Section 504 - Equity- Title IX (Students) - OCR Compliance Officer	Title VI - Title IX (Employees) - EEOC Officer
Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1 st Street, Vidalia Office 108 Phone: 912-538-3126 hthomas@southeasterntech.edu	Blythe Wilcox, Director of Human Resources Vidalia Campus 3001 East 1 st Street, Vidalia Office 138B Phone: 912-538-3147 bwilcox@southeasterntech.edu

GRIEVANCE PROCEDURES

Grievance procedures can be found in the Catalog and Handbook located on STC’s website.

ACCESS TO TECHNOLOGY

Students can now access Blackboard, Remote Lab Access, Student Email, Library Databases (Galileo), and BannerWeb via the mySTC portal or by clicking the Current Students link on the [STC website](#).

TCSG GUARANTEE/WARRANTY STATEMENT

The Technical College System of Georgia guarantees employers that graduates of State Technical Colleges shall possess skills and knowledge as prescribed by State Curriculum Standards. Should any graduate employee

within two years of graduation be deemed lacking in said skills, that student shall be retrained in any State Technical College at no charge for instructional costs to either the student or the employer.

GRADING POLICY

Assessment/Assignment	Percentage
Exams	55%
Homework	10%
Laboratories	25%
Study Guides	10%

GRADING SCALE

Letter Grade	Range
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

****Disclaimer Statements****

- (1) Instructor reserves the right to change the syllabus and/or lesson plan as necessary.
- (2) The official copy of the syllabus is located inside the student's online course shell or will be given to them during face to face class time the first day of the semester. The syllabus displayed in advance of the semester in a location other than the course you are enrolled in is for planning purposes only.

*** ELECTRONICS COMPETENCY EXAMS:**

ELCR-1030 grading is based on the individual chapter exams and labs for the course. However, the final exam for ELCR-1060 (Linear Integrated Circuits) is the ESA Level 3 Exam which covers both Solid State Devices (ELCR-1030) and Linear Integrated Circuits (ELCR-1060).

As we complete each chapter (or area) of the solid state devices material, you will see an icon that will tell you specifically which portions of the ESA-3 material you should now be reviewing for your final exam in ELCR-1060.

No minimum grade is required for this exam; however, this exam will carry a 35% grading weight. Poor performance on this exam could result in a final class grade of <70 out of 100 which will require the student to retake ELCR-1060.

Upon successful completion of all four parts of the ESA exams (i.e. $\geq 75\%$ on ESA I through IV exams), the student is awarded their Associate CET Certificate from the ISCET.

Students who wish to retake any ESA Exam in order to improve their grades to receive their Associate CET Certificate can do so at a cost of \$15 per exam within two years of the original purchase of their test voucher for that exam.

ELCR-1030 Solid State Devices

Fall Semester 2017 Lesson Plan

WEEK 1

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Aug 14	1.1 1.2 1.3	Class Introduction – Syllabi, Outline, Work Ethics, Rules, and Regulations Coverage Section 1.1 – Atomic Structure Section 1.2 – Materials Used in Electronics Section 1.3 – Current in Semiconductors	[On Blackboard] Review “Start Here” Information Post on “Acknowledge” Message Boards Read Sections 1.1, 1.2 & 1.3	1, b,c
15	1		Read Sections 1.4 & 1.5	1,b,c
16	1.4 1.5	Section 1.4 – N- & P-Type Semiconductors Section 1.5 – The PN Junction	LabVolt – Intro to Semiconductors	1, b,c
17	1	BLACKBOARD	Complete Chapter 1 Study Guides Complete Chapter 1 Homework Study for Chapter 1 Exam	1, a,b,c

WEEK 2

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Aug 21	1 2.1 2.2 2.3	BLACKBOARD Section 2.1 – Diode Operation Section 2.2 – V-I Characteristics Section 2.3 – Diode Models	Chapter 1 Exam Read Sections 2.1, 2.2 and 2.3	1,2, b,c
22	2		Read Sections 2.4, 2.5 & 2.6	2,b,c
23	2.4 2.5 2.6	Section 2.4 – Half-Wave Rectifiers Section 2.5 – Full-Wave Rectifiers Section 2.6 – PS Filters & Regulators		2, b,c
24	2		Read Sections 2.7, 2.8, 2.9 & 2.10	2,b,c

WEEK 3

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Aug 28	2.7 2.8 2.9 2.10	Section 2.7 – Diode Limiters & Clamps Section 2.8 – Voltage Multipliers Section 2.9 – The Diode Data Sheet Section 2.10 – Troubleshooting		1, b,c
29	2	BLACKBOARD	Begin Chapter 2 Study Guides Begin Chapter 2 Homework	1,2, a,b,c
30	2	Chapter 2 Review	LabVolt – Diodes & Half-wave Rectification LabVolt – Full-Wave Rectification & Filter	1,2, b,c
31	2	BLACKBOARD	Complete Chapter 2 Study Guides Complete Chapter 2 Homework	1,2, a,b,c

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Sept 4		HOLIDAY – LABOR DAY	HOLIDAY – LABOR DAY	

WEEK 4

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Sept 5	2		Study for Chapter 2 Exam	1,2, b,c
6	2 3.1 3.2 3.3 3.4	BLACKBOARD Section 3.1 – The Zener Diode Section 3.2 – Zener Diode Applications Section 3.3 – The Varactor Diode Section 3.4 – Optical Diodes	Chapter 2 Exam Read Sections 3.1, 3.2, 3.3 and 3.4	1,2,3, b,c
7	3		Read Sections 3.5 and 3.6 Begin Chapter 3 Study Guides Begin Chapter 3 Homework	1,3,6, a,b,c
11	3.5 3.6	Section 3.5 – Other Types of Diodes Section 3.6 – Troubleshooting Chapter 3 Review	LabVolt – Diode Wave Shaping & Zener Regulation	1,3,6, b,c

WEEK 5

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Sept 12	3	BLACKBOARD	Complete Chapter 3 Study Guides Complete Chapter 3 Homework Study for Chapter 3 Exam	1,3,6, a,b,c
13	3 11.1 11.2 11.3 11.4	BLACKBOARD Section 11.1 – The Four-Layer Diode Section 11.2 – The SCR Section 11.3 – SCR Applications Section 11.4 – The Diac and Triac	Chapter 3 Exam Read Sections 11.1, 11.2, 11.3 and 11.4	1,3,6, b,c
14	11		Read Sections 11.5, 11.6 and 11.7 Begin Chapter 11 Study Guides Begin Chapter 11 Homework	1,3,6, a,b,c
18	11.5 11.6 11.7	Section 11.5 – The SCS Section 11.6 – The UJT Section 11.7 – The PUT	LabVolt – Silicon Controlled Rectifier	1,3,6, b,c

WEEK 6

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Sept 19	11	BLACKBOARD	Complete Chapter 11 Study Guides Complete Chapter 11 Homework	1,3,6, a,b,c
20	11	Chapter 11 Review	LabVolt – UJT Triggered SCR Power Control Study for Chapter 11 Exam	1,3,6, b,c
21	11	BLACKBOARD	Chapter 11 Exam Read Sections 4.1, 4.2 and 4.3	1,3,6, b,c
25	4.1 4.2 4.3	Section 4.1 – BJT Structure Section 4.2 – Basic BJT Operation Section 4.3 – BJT Characteristics & Parameters		4, b,c

WEEK 7

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Sept 26	4		Read Sections 4.4, 4.5 and 4.6	4, b,c
27	4.4 4.5 4.6	Section 4.4 – The BJT as an Amplifier Section 4.5 – The BJT as a Switch Section 4.6 – The Phototransistor		4, b,c
28	4	BLACKBOARD	Read Sections 4.7 and 4.8 Begin Chapter 4 Study Guides Begin Chapter 4 Homework	4, a,b,c
Oct 2	4.7 4.8	Section 4.7 – BJT Categories & Packaging Section 4.8 – Troubleshooting	LabVolt – Transistor Junctions & PNP Bias	4, b,c

WEEK 8

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Oct 3	4		Complete Chapter 4 Study Guides Complete Chapter 4 Homework Study for Chapter 4 Exam	4, a,b,c
4	4	BLACKBOARD	Chapter 4 Exam	4, b,c
5	5		Read Sections 5.1 and 5.2	4, b,c
9	5.1 5.2	Section 5.1 – The DC Operating Point Section 5.2 – Voltage-Divider Bias MID-TERM		4, b,c

WEEK 9

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Oct 10	5		Read Sections 5.3 and 5.4	4, b,c
11	5.3 5.4	Section 5.3 – Other Bias Methods Section 5.4 – Troubleshooting	LabVolt – Introduction to Transistor Amps	4, b,c
12	5	BLACKBOARD	Begin Chapter 5 Study Guides Begin Chapter 5 Homework	4, a,b,c
16	5	Chapter 5 Review	LabVolt – Bias Stabilization	4, b,c

WEEK 10

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Oct 17	5		Complete Chapter 5 Study Guides Complete Chapter 5 Homework Study for Chapter 5 Exam	4, a,b,c
18	5	BLACKBOARD	Chapter 5 Exam	4, b,c
19	6		Read Sections 6.1, 6.2, and 6.3	4, b,c
23	6.1 6.2 6.3	Section 6.1 – Amplifier Operations Section 6.2 – Transistor AC Models Section 6.3 – The Common-Emitter Amp	LabVolt – Common Emitter Circuit	4, b,c

WEEK 11

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Oct 24	6	65% Point for Full Term Fall Semester	Read Sections 6.4, 6.5, and 6.6	4, b,c
25	6.4 6.5 6.6	Section 6.4 – The Common-Collector Amp Section 6.5 – The Common-Base Amp Section 6.6 – Multistage Amplifiers	LabVolt – Common Collector Circuit Read Sections 6.7 and 6.8 Begin Chapter 6 Study Guides Begin Chapter 6 Homework	4, a,b,c
26	6		Read Sections 6.4, 6.5, and 6.6	4, b,c
30	6.7 6.8	Section 6.7 – The Differential Amplifier Section 6.8 – Troubleshooting Chapter 6 Review	Study for Chapter 6 Exam	4,6, b,c

WEEK 12

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Oct 31	6	BLACKBOARD	Complete Chapter 6 Study Guides Complete Chapter 6 Homework	4, a,b,c
Nov 1	7.1 7.2	BLACKBOARD Section 7.1 – The Class A Power Amp Section 7.2 – Class B and Class AB Amps	Chapter 6 Exam Read Sections 7.1 and 7.2	4,6, b,c
2	7	BLACKBOARD	Read Sections 7.3 and 7.4 Begin Chapter 7 Study Guides Begin Chapter 7 Homework	4,6, a,b,c
6	7.3 7.4	Section 7.3 – The Class C Amp Section 7.4 – Troubleshooting Chapter 7 Review	Study for Chapter 7 Exam Complete Chapter 7 Study Guides Complete Chapter 7 Homework	4,6, a,b,c

WEEK 13

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Nov 7	8	BLACKBOARD	Chapter 7 Exam Read Sections 8.1, 8.2, 8.3 and 8.4	4,6, b,c
8	8.1 8.2 8.3 8.4	Section 8.1 – The JFET Section 8.2 – JFET Characteristics & Parameters Section 8.3 – JFET Biasing Section 8.4 – The Ohmic Region		5, b,c
9	8	BLACKBOARD	Read Sections 8.5, 8.6 and 8.7 Begin Chapter 8 Study Guides Begin Chapter 8 Homework	5, a,b,c
13	8.5 8.6 8.7	Section 8.5 – The MOSFET Section 8.6 – MOSFET Characteristics & Parameters Section 8.7 – MOSFET Biasing		5, b,c

WEEK 14

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Nov 14	8		Read Sections 8.8 and 8.9	5, a,b,c
15	8.8 8.9	Section 8.8 – The IGBT Section 8.9 – Troubleshooting Chapter 8 Review	LabVolt – Junction FETs Study for Chapter 8 Exam Complete Chapter 8 Study Guides Complete Chapter 8 Homework	5, a,b,c
16	8	BLACKBOARD	Chapter 8 Exam Read Sections 9.1, 9.2, 9.3 and 9.4	5, b,c
20	9.1 9.2 9.3 9.4	Section 9.1 – The Common-Source Amp Section 9.2 – The Common-Drain Amp Section 9.3 – The Common-Gate Amp Section 9.4 – The Class D Amplifier		5,6, b,c

WEEK 15

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Nov 21	9		Read Sections 9.5, 9.6 and 9.7 Begin Chapter 9 Study Guides Begin Chapter 9 Homework	5,6, a,b,c
22		HOLIDAY - THANKSGIVING	HOLIDAY - THANKSGIVING	
23		HOLIDAY - THANKSGIVING	HOLIDAY - THANKSGIVING	
27	9.5 9.6 9.7	Section 9.5 – MOSFET Analog Switching Section 9.6 – MOSFET Digital Switching Section 9.7 – Troubleshooting		5,6, b,c
28	9	BLACKBOARD	Begin Chapter 9 Study Guides Begin Chapter 9 Homework	5,6, a,b,c
29	9	Chapter 9 Review	LabVolt – JFET Amplifier	5,6, b,c
30	9	Semester Classes End	Study for Chapter 9 Exam Begin Chapter 9 Study Guides Begin Chapter 9 Homework	5,6, b,c

FINAL EXAM WEEK

Date	Chapter/ Lesson	Content	Assignments & Tests Due Dates	Comp. Area
Dec 5	9	BLACKBOARD	Chapter 9 Exam	5,6, b,c
6	9		Complete by Midnight	5,6, b,c

Competency Areas:

1. PN Diodes
2. Power Supplies
3. Voltage Regulation
4. Bipolar Junction Theory and Application
5. Field Effect Transistors
6. Special Applications

General Core Educational Competencies

- a) The ability to utilize standard written English.
- b) The ability to solve practical mathematical problems.
- c) The ability to read, analyze, and interpret information.