



ELCR-1060 Linear Integrated Circuits
COURSE SYLLABUS
Fall Semester 2018

COURSE INFORMATION

Credit Hours/Minutes: 3 Hours / 3000 Minutes
Campus / Class Location: Vidalia Campus / Building B, Room 827
Class Meets: Monday and Wednesday (MW), 3:00 PM to 4:50 PM
Course Reference Number (CRN): 20205
Preferred Method of Contact: Text or Email to Instructor

INSTRUCTOR CONTACT INFORMATION

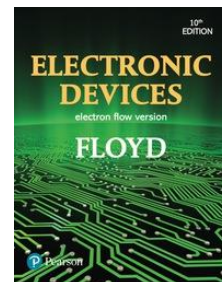
Instructor Name: William (Chip) Greene
Office Location: Vidalia Campus / Building B, Room 822
Office Hours: MTWR from 8:00 AM to 9:00 AM and 10:30 AM to 11:30 AM
Email Address: wgreene@southeasterntech.edu
Phone: (912) 538-3102
Fax Number: (912) 538-3106
Preferred Method of Contact: Text or Email to Instructor

SOUTHEASTERN TECHNICAL COLLEGE'S (STC) CATALOG AND HANDBOOK

Students are responsible for all policies and procedures and all other information included in Southeastern Technical College's [Catalog and Handbook](http://www.southeasterntech.edu/student-affairs/catalog-handbook.php) (<http://www.southeasterntech.edu/student-affairs/catalog-handbook.php>).

REQUIRED TEXT

Electronic Devices, Electron Flow Version
10th edition
by Thomas L. Floyd,
published by Prentice Hall,
ISBN# 0-13-442010-1



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. Students should not share login credentials with others and should change passwords periodically to maintain security.

COURSE DESCRIPTION

Provides in-depth instruction on the characteristics and applications of linear integrated circuits. Topics include: operational amplifiers, timers, and three-terminal voltage regulators.

PREREQUISITE(S)

ELCR 1020

MAJOR COURSE COMPETENCIES / COURSE OUTLINE

1. Operational Amplifiers
2. Timers
3. Three-Terminal Voltage Regulators

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.

TRADITIONAL 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 \(hthomas@southeasterntech.edu\)](mailto:hthomas@southeasterntech.edu), 912-538-3126, 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 inform your instructor 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% point of the term in which student is enrolled (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 for the course(s) when the student completes the withdrawal form.

Important – Student-initiated withdrawals are not allowed after the 65% point. After the 65% point of the term in which student is enrolled, the student has earned the right to a letter grade and will receive a grade for the course. Please note: Abandoning a course(s) instead of following official withdrawal procedures may result in a grade of 'F' being assigned.

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

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. A grade of 'W' will count in attempted hour calculations for the purpose of Financial Aid.

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:

American With Disabilities Act (ADA)/Section 504 - Equity- Title IX (Students) – Office of Civil Rights (OCR) Compliance Officer	Title VI - Title IX (Employees) – Equal Employment Opportunity Commission (EEOC) Officer
Helen Thomas, Special Needs Specialist Vidalia Campus 3001 East 1 st Street, Vidalia Office 108 Phone: 912-538-3126 Email: Helen Thomas hthomas@southeasterntech.edu	Lanie Jonas, Director of Human Resources Vidalia Campus 3001 East 1 st Street, Vidalia Office 138B Phone: 912-538-3230 Email: Lanie Jonas ljonas@southeasterntech.edu

ACCESSIBILITY STATEMENT

Southeastern Technical College is committed to making course content accessible to individuals to comply with the requirements of Section 508 of the Rehabilitation Act of Americans with Disabilities Act (ADA). If you find a problem that prevents access, please contact the course instructor.

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 [Southeastern Technical College \(STC\) Website \(www.southeasterntech.edu\)](http://www.southeasterntech.edu).

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	30%
Homework	10%
Laboratories	20%
Study Guides	5%
Final Exam *	35%

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:

The ELCR-1060 Final Exam is the ESA Part 3 – Solid State Devices and Linear Integrated Circuits Exam. The cost for taking this exam is \$35 payable to the STC Business Office before the last week of the semester. Please plan for this cost to complete the Direct Current series of classes successfully. A grade of 75% or higher on this exam will result in the student being awarded their ESA 3 certificate from the ISCET.

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-1060 Linear Integrated Circuits

Fall Semester 2018 Lesson Plan

WEEK 1 (AUG IS AUGUST)

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Aug 13	12.1, 12.2	Class Introduction – Syllabi, Outline, Rules, and Regulations Coverage (Sect is Sect) Sect 12.1 – Introduction to Operational Amplifiers (Op-Amp) Sect 12.2 – Op-Amp Input Modes and Parameters	[On Blackboard] Read / Review START HERE info POST to appropriate Message Boards Read Sect 12.1 & 12.2	1, a,b,c
Aug 14	12		Read Sect 12.3 & 12.4	1, b,c
Aug 15	12.3, 12.4	Sect 12.3 – Negative Feedback (FB) Sect 12.4 – Op-Amps with Negative FB		1, b,c
Aug 16	12		Read Sect 12.5 through 12.9 Begin Chapter 12 Homework Begin Chapter 12 Study Guides	1, b,c

WEEK 2

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Aug 20	12.5, 12.6, 12.7, 12.8	Sect 12.5 – Effects on Op-Amp Impedances Sect 12.6 – Bias Current and Offset Voltage Sect 12.7 – Open-Loop Responses Sect 12.8 – Closed-Loop Responses		1, b,c
Aug 21	12	BLACKBOARD	Complete Chapter 12 Homework Complete Chapter 12 Study Guides	1, a,b,c
Aug 22	12.9	Sect 12.9 – Troubleshooting	LabVolt – Introduction to Op-Amps	1, a,b,c
Aug 23	12	BLACKBOARD	Chapter 12 Exam Read Sect 13.1 and 13.2	1, b,c

WEEK 3 (SEPT IS SEPTEMBER)

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Aug 27	13.1, 13.2	Sect 13.1 – Comparators Sect 13.2 – Summing Amplifiers		1, b,c
Aug 28	13		Read Sect 13.3	1, b,c
Aug 29	13.3	Sect 13.3 – Integrators and Differentiators	LabVolt – The Inverting Summer	1, a,b,c
Aug 30	13		Read Sect 13.4 Begin Chapter 13 Homework Begin Chapter 13 Study Guides	1, b,c
Sept 3	No Class	HOLIDAY – LABOR DAY	HOLIDAY – LABOR DAY	No Class

WEEK 4

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Sept 4	13		Read Sect 13.4	1, b,c
Sept 5	13.4	Sect 13.4 – Troubleshooting	LabVolt – Integrators and Differentiators	1, a,b,c
Sept 6	13	BLACKBOARD	Complete Chapter 13 Homework Complete Chapter 13 Study Guides	1, a,b,c
Sept 10	13	BLACKBOARD	Chapter 13 Exam	1, b,c

WEEK 5

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Sept 11	15		Read Sect 15.1, 15.2 and 15.3	1, b,c
Sept 12	15.1, 15.2, 15.3	Sect 15.1 – Basic Filter Responses Sect 15.2 – Filter Response Characteristics Sect 15.3 – Active Low-Pass Filters		1, b,c
Sept 13	15		Read Sect 15.4, 15.5, 15.6 and 15.7	1, b,c
Sept 17	15.4, 15.5, 15.6 15.7	Sect 15.4 – Active High-Pass Filters Sect 15.5 – Active Band-Pass Filters Sect 15.6 – Active Band-Stop Filters Sect 15.7 – Filter Response Measurements	Begin Chapter 15 Homework Begin Chapter 15 Study Guides	1, b,c

WEEK 6

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Sept 18	15	BLACKBOARD		1, a,b,c
Sept 19	15		LabVolt – Low Pass Filter (part 1) LabVolt – High Pass Filter (part 1)	1, a,b,c
Sept 20	15	BLACKBOARD	Complete Chapter 15 Homework Complete Chapter 15 Study Guides	1, b,c
Sept 24	15	BLACKBOARD	LabVolt – Band Pass Filter (part 1) Chapter 15 Exam	1, a,b,c

WEEK 7 (OCT IS OCTOBER)

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Sept 25	15		Read Sect 16.1 and 16.2	1,2, b,c
Sept 26	16.1, 16.2	Sect 16.1 – The Oscillator Sect 16.2 – Feedback Oscillator Principles		1,2, b,c
Sept 27	16	(RC is Resistor Capacitor) (LC is Inductor Capacitor)	Read Sect 16.3 and 16.4	1,2, b,c
Oct 1	16.3, 16.4	Sect 16.3 – Oscillators with RC Feedback Sect 16.4 – Oscillators with LC Feedback		1,2, b,c

WEEK 8

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Oct 2	16		Read Sect 16.5 and 16.6	1,2, b,c
Oct 3	16.5, 16.6	Sect 16.5 – Relaxation Oscillators Sect 16.6 – The 555 Timer as an Oscillator		1,2, b,c
Oct 4	16	BLACKBOARD	Begin Chapter 16 Homework Begin Chapter 16 Study Guides	1,2, a,b,c
Oct 8	16	MID-TERM (for Full Term)	ISCET MATERIAL REVIEW	1,2, a,b,c

WEEK 9

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Oct 9	16	BLACKBOARD	Complete Chapter 16 Homework Complete Chapter 16 Study Guides	1,2, a,b,c
Oct 10	16	BLACKBOARD	Chapter 16 Exam	1,2, b,c
Oct 11	No Class	Staff Development Day – No Class	Staff Development Day – No Class Read Sect 17.1 and 17.2	No Class
Oct 15	17.1, 17.2	Sect 17.1 – Voltage Regulation Sect 17.2 – Basic Series Regulators		1,3, b,c
Oct 16	17		ISCET MATERIAL REVIEW	1,3, b,c

WEEK 10

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Oct 17	17		LabVolt – Series Voltage Regulator	1,3, a,b,c
Oct 18	17		Read Sect 17.3 and 17.4	1,3, b,c
Oct 22	17.3, 17.4	Sect 17.3 – Basic Shunt Regulators Sect 17.4 – Basic Switching Regulators		1,3, b,c
Oct 23	17	65% Point for Full Term Semester	ISCET MATERIAL REVIEW	1,3, a,b,c

WEEK 11

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Oct 24	17	BLACKBOARD	LabVolt – Shunt Voltage Regulator Begin Chapter 17 Homework Begin Chapter 17 Study Guides	1,3, b,c
Oct 25	17	(IC is Integrated Circuit)	Read Sect 17.5 and 17.6	
Oct 29	17.5, 17.6	Sect 17.5 – IC Voltage Regulators (VR) Sect 17.6 – IC-VR Configurations		3, b,c
Oct 30	17		Review Chapter 17	1,3, b,c

WEEK 12 (NOV IS NOVEMBER)

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Oct 31	17		LabVolt – Three-Pin IC Regulator	3, a,b,c
Nov 1	17	BLACKBOARD	Complete Chapter 17 Homework Complete Chapter 17 Study Guides	1,3, a,b,c
Nov 5	17	BLACKBOARD	Chapter 17 Exam	1,3, b,c
Nov 6	14		Read Sect 14.1 and 14.2	1, b,c

WEEK 13

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Nov 7	14.1, 14.2	Sect 14.1 – Instrumentation Amplifiers Sect 14.2 – Isolation Amplifiers		1, b,c
Nov 8	14	BLACKBOARD	Read Sect 14.3 and 14.4 Begin Chapter 14 Homework Begin Chapter 14 Study Guides	1, b,c
Nov 12	14.3, 14.4	Sect 14.3 – Operational Transconductance Amplifiers (OTAs) Sect 14.4 – Log and Antilog Amplifiers		1, b,c
Nov 13	14		Read Sect 14.5	1, b,c

WEEK 14

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Nov 14	14.5	Sect 14.5 – Converters and Others	LabVolt – TBA	1, a,b,c
Nov 15	14	BLACKBOARD	Complete Chapter 14 Homework Complete Chapter 14 Study Guides	1, a,b,c
Nov 19	14	BLACKBOARD	Chapter 14 Exam	1, b,c
Nov 20	ESA-3		ISCET MATERIAL REVIEW	1-3, b,c
Nov 21	No Class	HOLIDAY - THANKSGIVING	HOLIDAY – THANKSGIVING	No Class
Nov 22	No Class	HOLIDAY - THANKSGIVING	HOLIDAY – THANKSGIVING	No Class

WEEK 15 (DEC IS DECEMBER)

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Nov 26	ESA-3		ISCET MATERIAL REVIEW	1-3, b,c
Nov 27	ESA-3		ISCET MATERIAL REVIEW	1-3, b,c
Nov 28	ESA-3		ISCET MATERIAL REVIEW	1-3, b,c
Nov 29	ESA-3		ISCET MATERIAL REVIEW	1-3, b,c
Dec 3	ESA-3		ISCET MATERIAL REVIEW	1-3, b,c

FINAL EXAM WEEK

Date	Chapter / Lesson	Content	Assignments & Tests Due Dates	Competency Area
Dec 4	12 – 17	FINAL EXAM (ESA III – Semiconductors)		1-3, a,b,c
Dec 5	12 – 17	FINAL EXAM (ESA III – Semiconductors)		1-3, a,b,c

Competency Areas:

1. Operational Amplifiers
2. Timers
3. Three-Terminal Voltage Regulators

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.