

Course Syllabus: EET1141C – Semiconductor Devices & Circuits – CRN 30496

(3 Credit hours)

**Professor's Information:**

**Instructor:** Prof. Arif Rafay  
**Office:** West Campus, Bldg. 11 – Room 253  
**Phones:** 407.443.1023 (cell)  
**Email:** [arafay@valenciacollege.edu](mailto:arafay@valenciacollege.edu)  
**Office Hours:** After class (if you prefer) and by email



**Textbook(s):** *Electronic Devices (Conventional Current Version), 9<sup>th</sup> edition*  
by Floyd. ISBN: 0-13-254986-7

**Lab Manual(s):** *Semiconductor Devices and Circuits Laboratory Manual*  
by Dr. Hedayat

**Prerequisites:** EET 1025C or EET 1036C

**Catalog Course Description:** First of two-course sequence in electronic semiconductor circuits. Provides basic understanding of electronic circuits which utilize semiconductor diode and transistor circuit elements. Introduces concept of circuit simplification via idealizations, approximations and overview of semiconductor devices and their electrical properties. Emphasis on circuit analysis and various small-signal, linear and power applications utilizing diodes and transistors. Students assigned appropriate hands-on laboratory projects to expose them to practical considerations in implementing various semiconductor circuits analyzed in classroom. (Special Fee: \$68.00)

**Course Learning Outcomes:** Students will be able to learn and demonstrate a working understanding of:

- Semiconductors, inductors, and insulators
- Diodes and Zener diodes and their applications
- Bipolar transistors and their biasing methods
- Small signal amplifiers and power amplifiers
- Amplifier frequency response
- Junction Field Effect Transistors

**Class Time and Location:** **Lecture:** Monday, 5:30 – 7:20 PM, Bldg. 11 – Room 239

**Laboratory:** 7:30 – 9:50 PM, Bldg. 11 – Room 244

**Student Performance Assessment:**

Laboratory Experiments.....	30%	A	90 – 100 %
Homework <sup>1</sup> .....	10%	B	80 – 89 %
Two Exams <sup>2</sup> (20% each) .....	40%	C	70 – 79 %
Final Exam <sup>3</sup> .....	20%	D	60 – 69
		F	< 59 %

<sup>1</sup> No Late work will be accepted. Homework is collected at the beginning of class.

<sup>2</sup> No make-up exams will be given.

<sup>3</sup> Final Exam will be comprehensive

**DISCLAIMER:** Changes in this syllabus may be made at anytime at the instructor's discretion.

## Important Dates:

**Monday, May 30**

**Wed, May 17– Fri May 26**

**Friday, July 7**

**Monday, July 4**

**Monday, July 24**

**Friday, Aug 4**

**Monday, May 15**

Memorial Day – College is closed.

No Show Reporting Period

Withdrawal deadline for “W” Grade

Independence Day – Building Closed

Final Exams Week

Final Grades Viewable in ATLAS

Drop/Refund deadline(Drop classes with 100% refund)

Tentative Course Outline for EET 1141C – CRN 24946; Spring 2016			
Monday	Chapter	Material To Be Covered	Laboratory Experiments
5/08	1	Introduction, Course Overview & Syllabus; Electric Circuits Review & Semiconductor Basics	No Lab
5/15	2	Diode Applications	1 – Diode Characteristics
5/22	3	Special Purpose Diodes	2 - Rectifiers
5/29		<b>Memorial Day</b>	
6/05	4, 5	Bipolar Junction Transistors Transistor Bias Circuits	3 – Zener Diode and Regulator
<b>6/12</b>	<b>6</b>	<b>Exam 1 – Chapters 1 – 3, and Labs 1 – 4 BJT Amplifiers</b>	
6/19	7	Power Amplifiers	3—Basic Logic Circuits 4—Base Biasing(Multisim)
6/26	8	Field Effect Transistors FETs	5– Voltage Divider Biasing 6—CE Amplifier(Multisim)
7/03		<b>Exam 2 Chapters 6 – 8</b>	
7/10	9	FET Amplifiers Amplifier Frequency Response	9– Low and High Frequency Response
7/17	10		10 – FET Amplifiers
<b>7/24</b>	<b>Final Exam (<u>Comprehensive</u>) [Monday, July 24, 5:30 – 8 PM]</b>		

Lab (Assignments) Requirements

- A written lab report will accompany every exercise done in this course. All Labs will be due the week following the start of the lab unless decided otherwise by the Professor. It is the student's responsibility that all labs are handed in by the due date.
- Every report should be typed. **NO hand written reports will be accepted** (hand-drawn tables within the body of the report or scanned materials are not accepted). Microsoft Word or Excel can be used to create tables, diagrams and graphs.
- All labs must be done **during assigned lab** time. Labs will only be accepted if performed during the assigned class time unless prior approval by the instructor is granted.
- **Lab Approval** – All lab exercises must be approved and signed by the instructor or lab personnel. Labs without signatures will not be accepted.
- Must be ready to perform the required laboratory exercises upon arrival to the lab.

## Lab Report Writing Tips

### **All Lab Reports must include the following format and sections:**

**COVER PAGE:** Includes Title of the Laboratory, your name, Course Title & Number, Submitted to: Instructor Name, Department Label, and Date of Submission – all in the same order.

**INTRODUCTION:** What are your goals or objectives in this lab? Explain what you are attempting to learn. In your lab manual or your lecture notes, look up the theory behind what experiment you are performing and discuss away.

**PARTS LIST:** All parts and equipment used should be listed in this section.

**DISCUSSION:** *An in-depth description of the background and theoretical information researched relevant to the experiment. When applicable, governing laws and/or equations should be included.*

1. In your own words discuss the important topics related to the experiment. Use the textbook, MultiSIM and other resources to assist you with the necessary information required for this section of the report.
2. Include **sketches, diagrams, drawings and pictures taken** of the experimental Set-Up and how you intend to fulfill your purpose.

### **VALIDATION OF DATA AND RESULTS:**

*Measured data and calculations; presentation of data through tables and graphs; sketch of experimental configuration; and discussion of experimental results, sources of error(s), and accuracy of measurements.*

Refer specifically to the data collected during your experiment. Discuss any trends that you observed in your data. Do these data trends support the theory behind this lab? Why or why not?

**ANSWERS TO LAB QUESTIONS:** Some lab exercises have questions at the end. They must be answered in this section of the Lab Report.

**CONCLUSION:** Briefly summarize the results of the experiment. Did the experiment yield the desired results? Give your interpretation of the results. What has been learned; recommendation for future work or improvements in the experiment.

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### Departmental Rules and Requirements

- **Absolutely no food or drinks** are allowed in the classrooms or laboratories.
- All Assignments are due at the beginning of class period.
- It is highly recommended to visit the EET Open Lab (Bldg. 9, Room 211) for assistance and practice.
- **Exams:**
  - Are given at the beginning of the class.
  - Work must be properly and adequately organized and shown to earn credit.
  - No make-up quizzes or exams are permitted unless prior arrangement with instructor has been made and approved.
- There are no dropped exam scores.
- Final exam is required. Failing to take the final exam will result in grade F.
- You are expected to be in class **on time**. You are responsible for any information and/or assignments given during class, whether you are present or not.
- **More than two (2) unexcused absences could result in withdrawal from the course or grade F.**
- **It is your responsibility to withdraw from the course. Failure to do so may result in grade F.**

**Note:** students on financial aid should consult an advisor or counselor before withdrawing from a course; there may be financial implications to the student which he or she must know about to make an informed decision before withdrawing from a course. Students with some scholarships who withdraw or are withdrawn from a class must pay the college for the cost of the class. Other scholarship sponsors may also require repayment.

- **You are encouraged to ask relevant questions during class.**
- If you wish to discuss your grades please visit my office. ***Valencia prohibits disclosure of grades over the phone or e-mail except through your Atlas account.***
- No audio or video recording allowed in class unless prior permission is granted from professor and every other student in the class.
- In order to academically maintain financial aid, students must meet all of the following requirements:
  - Complete 67% of all classes attempted, and
  - Maintain a Valencia GPA of 2.0 or higher, and
  - Maintain an overall GPA of 2.0 or higher, and
  - Complete degree within the 150% timeframe

Detailed information about maintaining satisfactory academic progress (SAP) can be found at:

[http://valenciacollege.edu/finaid/satisfactory\\_progress.cfm](http://valenciacollege.edu/finaid/satisfactory_progress.cfm)

- **Cheating:** Using any human, written, electronic, or other resource in any manner not explicitly authorized by the instructor will result in a grade of zero on the exam(s) or assignment(s) involved. **Any student caught cheating; the instructor has the right to withdraw the student from the class and recommend expulsion from the program.**
- **Disruptive Behavior:** Any student engaging in disruptive behavior will be advised on the first offense and will be **dropped** from the course on the second offense.

Students are strongly encouraged to read the Valencia policy Manual *Student Code of Conduct* and *Computer Acceptable Usage* and *Student Core Competencies* found at the following links:

<http://valenciacollege.edu/generalcounsel/policy/ValenciaCollegePolicy.cfm?policyID=180>,

<http://valenciacollege.edu/competencies>

**Students with disabilities** who qualify for academic accommodations must provide a letter from the Office for Students with Disabilities (OSD) and discuss specific needs with the professor, preferably during the first two weeks of class. The Office for Students with Disabilities determines accommodations based on appropriate documentation of disabilities (West Campus SSB 102, ext. 1523).

**DISCLAIMER:**      Changes in this syllabus may be made at anytime at the instructor's discretion.

## **Withdrawal Deadline and Policy**

*“A student who withdraws from class before the **withdrawal deadline of Friday, Jul7, 217** will receive a grade of “W.” A faculty member is permitted to withdraw a student from the faculty member's class up to the beginning of the final exam period, for violation of the faculty member's attendance policy, as published in the faculty member's syllabus. A student is not permitted to withdraw from this class after the withdrawal deadline; if you remain in the class after the withdrawal deadline, you can only receive a grade of A, B, C, D, F or I. An I grade will only be assigned under extraordinary circumstances that occur near the end of the semester. If you receive an I, the work missed must be made up during the following semester, at which time you will get an A, B,C,D or F. Failure to make up the work during the following semester will result in you getting a grade of F in the course. Any student who withdraws from this class during a third or subsequent attempt in this course will be assigned a grade of “F.”*

## **Valencia College Core Competencies**

Include a note explaining the four Valencia College Core Competencies. Here is an example:

*“The faculty of Valencia College has identified four core competencies that define the learning outcomes for a successful Valencia graduate. These competencies are at the heart of the Valencia experience and provide the context for learning and assessment at Valencia College. You will be given opportunities to develop and practice these competencies in this class. The four competencies are:*

- 1. **Think** - think clearly, and creatively, analyze, synthesize, integrate and evaluate in the many domains of human inquiry*
- 2. **Value** - make reasoned judgments and responsible commitments*
- 3. **Communicate** - communicate with different audiences using varied means*
- 4. **Act** - act purposefully, effectively and responsibly.”*

## **Security**

We want to reassure you that our security officers are here around the clock to ensure the safety and security of the campus community. It's important to remain

alert and aware of your surroundings, especially during the early morning or evening hours. Remember that you can always call security for an escort if you feel

uncomfortable walking alone on campus. White security phones can also

be found in many of our buildings; simply pick up the phone and security will answer.

Finally, report any suspicious persons to West Campus Security at 407-582-1000, 407-582-1030 (after-hours number) or by using the yellow emergency call boxes located on light poles in the parking lots and along walkways.