Lab Instruments and Methods

EE1010 001

Course Description

This course is an introduction to Electrical Engineering and Electrical Engineering Technology. The use of electrical lab equipment is used to construct and test electrical systems. Students will be exposed to career paths in both electrical engineering and electrical engineering technology and the education pathways for each.

Pre-Requisite: ENGR 1010 or MATH 1010 or placement into MATH 1050
Semester(s): All

Course Student Learning Outcomes

- Apply general concepts of AC and DC voltage and current in circuits containing resistors, capacitors, operational amplifiers, diodes, transistors, and embedded processors.
- Demonstrate how and when to use laboratory test equipment to analyze electric circuits.
- Apply basic electric circuit design and production concepts including schematic diagrams, simulation, prototyping, PC board layout and testing.
- Apply Ohm's law to make common calculations to analyze electric circuits.
- Calculate and verify by measuring physical properties commonly found in electric systems.
- Describe decimal and binary number systems and demonstrate conversion between number systems.
- Determine appropriate measurements to analyze circuit performance.
- Select and demonstrate use of suitable tools to make measurements.

- Describe different electrical engineering career opportunities and create an educational plan to achieve those opportunities.

Course Prerequisites

A curiosity for electric toys, or a need to know electronics, or a willingness to endure the subject for 1 hour of credit. The limited programming needed will be taught.

Text: Instead of a formal textbook, a workbook will be provided on the first day of class.

Email sent to Instructor: Submit simulation files (when requested) which have your name and comments to show instructor your understanding of concepts practiced. These comments will help you review methods learned while making similar measurements in later EE classes.

Attendance: Print your name on the roll each day as you come to lab. These rolls are how you receive credit for the assignment each day. Please email the instructor when you expect to be absent from class or when you missed a class, to begin arrangements to make-up missed lab work.

Grading: Each Lab is scored 0 to 10 points. Points encompass attendance as well as schematics, formulas, observations, graphs, and conclusion in notebook.

Communication Plan

The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.

Keys for Success (how to succeed in the course)

For students to be successful in this course, the following actions and student engagement activities are strongly recommended and encouraged:

1. Attend class, take notes, and participate in class activities. Complete all your assignments, and do your best.

2. Read and study the lecture notes, slides, and the relevant handouts.

3. Dedicate at least three hours outside of class for assignments for every one hour spent in class.

4. Use the STEM Learning Resource Center for free tutoring. See their hours here: https://www.slcc.edu/stem/tutoring/stem-learning-resources-hours.aspx

5. Do not hesitate to ask questions.

6. Turn on your Canvas Notifications so that when announcements are posted about the course you get notified immediately.

7. Be familiar with the late policy for this course.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Introduce Yourself	Discussion	0
8/23	Voltage	Assignment	10
8/30	Ohms Law	Assignment	10
9/6	DC Circuits	Assignment	10
9/13	Oscilloscopes	Assignment	10
9/20	Capacitors	Assignment	10
9/27	Diodes	Assignment	10
10/4	MultiSim	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
10/11	OpAmps	Assignment	10
10/25	Transistors	Assignment	10
11/1	Multivibrator	Assignment	10
11/8	Meet with Advisors	Assignment	20
11/8	PCB Layout Editor	Assignment	10
11/15	Micro Controller	Assignment	10
11/22	Soldering	Assignment	10

Brief Description of Assignments/Exams

Pre-Lab Assignments: Most assignments are given along with a few questions due just before class time. These pre-lab questions are the only part of assignments with due dates before the end of the semester. If late, the pre-lab questions can still receive half credit.

Missed Assignments: Some 1-on-1 help is available and some make-up assignments can be prepared. Limited make-up time is available, but you need to ask for it.

It is impractical for students to expect 1-on-1 help for many experiments outside of regular group labs or to try and catch-up several experiments at semester's end. All lab work for which you want credit needs to be completed before the end of the last lab day.

Grading Scale

A 93-100
A- 90-92

B+ 87-89
B 83-86
B- 80-82
C+ 77-79
C 73-76
C- 70-72
D 61-69
E <60

How to Navigate to Canvas

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

You can access the document by clicking on the following link: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, please visit the Institutional Syllabus under the Tutoring and Learning Support tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. We encourage you to take advantage of these resources to help you succeed in your studies. If you

have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, please visit the Institutional Syllabus under the Advising and Counseling Support Services tab: https://slcc.instructure.com/courses/530981/pages/institutional-syllabus. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar