San José State University  
Charles W. Davidson College of Engineering  
DEPARTMENT OF ELECTRICAL ENGINEERING  
EE 124L - Electronic Design II, Laboratory Section 02 (Spring 2021)

Coordinator: Dr. Hiu Yung Wong  
Instructor: Armand Cedric Tenkeu  
Office Location: Online (Zoom)  
Email: armand.tenkeu@sjsu.edu  
Office Hours: By Appointment  
Lab Day/Time: Tuesday, 10.30 AM- 1:15PM  
Lab room: Online (Zoom)  
Prerequisites: EE122, and EE128 with grades of C- or better  
Knowledge of building the circuit in LTspice

Course Description

EE 124 Laboratory is part of the EE 124 course. Students taking EE 124 are required to register for one lecture section and one laboratory section. At the end of the semester, laboratory work will be integrated with the lecture part to determine EE 124 course grade. Students must complete the laboratory in order to complete EE 124 course. Major activities of EE124 laboratory are listed as below:

- Understanding the operation of the analog circuits using LTspice simulations
- Design and Implementation of analog circuits and analysis of the output using oscilloscopes and multimeters
- Develop python program for the automation of the signal generation and analysis
- Prepare weekly report

**Technology Intensive and Hybrid Class**

The students are expected to have stable internet access to attend the online labs through Zoom. The students need to have Webcam installed and their computers should be compatible to install LTspice and ADALM2000 and Scopy to do laboratory exercises. Students should also have microphone installed and able to share their screen so that TA’s can help solve their simulation problems. Student can take the option to work on campus but need to inform TA at least 2 weeks before. The availability of this option depends on the university decision if campus is still opened. If not, students are still responsible to do the lab at home. Campus closure cannot be the reason to skip the lab. **Please see the following for more details.**

**Required Lab Manual**

Laboratory handouts and documents will be distributed as soft-copies in Canvas (for students to download).

**Laboratory Protocol**

- You are required to attend every lab meeting (through zoom or on-campus upon approval) and your attendance is mandatory (see “Determination of Grades” section)
- If you’re unable to attend any of the lab then you should co-ordinate with TA.
- Labs sessions cannot be switched, with some exceptions due to unavoidable circumstances.
- If you fail to attend any lab then you won’t be allowed to submit report on that lab, unless it is approved, and TA have been informed with proper arrangement.

**Lab Computers**
• You are responsible to have a computer that can be used to interface the equipment provided whether you are working from home or on-camps.

Laboratory Exercise Reports

Format for the laboratory exercise report will be posted on Canvas. Each laboratory exercise report must be turned in as scheduled. Students may be asked to demonstrate their lab exercises anytime so please make sure that data and programs are always available. Each student is responsible for individual laboratory exercise reports. (see “Determination of Grades” section)

University Policies

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University’s Academic Integrity policy, located at http://www.sjsu.edu/senate/policies/pol_plagiarism_acad_integrity/index.html, requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted or plan to submit for another class, please note that SJSU’s Academic Policy S07-2 requires approval of instructors.

Campus Policy in Compliance with the American Disabilities Act
If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Accessible Education Center (AEC) at http://www.sjsu.edu/aec/ to establish a record of their disability.

**EE Honor Code - Honesty and Respect for Others and Public Property**

The Electrical Engineering Department will enforce the following Honor Code that must be read and accepted by all students. “I have read the Honor Code and agree with its provisions. My continued enrollment in this course constitutes full acceptance of this code. I will NOT:

- Take an exam in place of someone else, or have someone take an exam in my place
- Give information or receive information from another person during an exam
- Use more reference material during an exam than is allowed by the instructor
- Use information, programs/codes from other students for my lab/project reports
- Allow someone else to do lab and/or project for me
- Give other students my lab information, data, programs/codes, reports, or do the labs/project for other students
- Obtain a copy of an exam prior to the time it is given
- Alter an exam after it has been graded and then return it to the instructor for re-grading
- Leave the exam room without returning the exam to the instructor.”

**Measures Dealing with Occurrences of Cheating**
Department policy mandates that the student or students involved in cheating will receive an “F” on that evaluation instrument (paper, exam, project, homework, etc.) and will be reported to the Department and the University.

- A student’s second offense in any course will result in a Department recommendation of suspension from the University.

Grading Information

The lab exercises together with the lecture exams and homework assignments make-up EE 124 course grade. Seven (7) laboratory exercises with reports and demos constitute 25% of the total course score.

Determination of Grades

- Every lab has equal weight (totally 25% of the final score). Unless specified, lab report constitutes 50% of the lab score (lab report score) and lab attendance (through zoom or on-campus upon approval) constitutes another 50% (lab attendance score). Students must attend at least 2 hours in each lab to receive full lab attendance score. Attending less than 2 hours will receive prorated score (e.g. attending 1 hour will receive 50% of the lab attendance score). Students still get full lab attendance score even they attend less than 2 hours if they can demonstrate to TA they have completed the lab.

- Lab reports must be submitted on time to receive full credit. Late submission: Half of the credit will be given if submitted within 3 days after the due date. No credit will be given if submitted after late submission due dates.

Technology Requirements

Students are required to have an electronic device (laptop, desktop or tablet) with a camera and built-in microphone and speaker/headphone. SJSU has a free equipment loan program available for students.
Students are responsible for ensuring that they have access to reliable Wi-Fi during tests. If students are unable to have reliable Wi-Fi, they must inform the instructor, as soon as possible or at the latest one week before the test date to determine an alternative. See Learn Anywhere website for current Wi-Fi options on campus.

**Zoom Classroom Etiquette**

1. Mute Your Microphone: To help keep background noise to a minimum, make sure you mute your microphone when you are not speaking.

2. Be Mindful of Background Noise and Distractions: Find a quiet place to “attend” class, to the greatest extent possible.

3. Avoid video setups where people may be walking behind you, people talking/making noise, etc.

4. Avoid activities that could create additional noise, such as shuffling papers, listening to music in the background, etc.

5. Limit Your Distractions/Avoid Multitasking: You can make it easier to focus on the meeting by turning off notifications, closing or minimizing running apps, and putting your smartphone away (unless you are using it to access Zoom).

6. Use Appropriate Virtual Backgrounds: If using a virtual background, it should be appropriate and professional and should NOT suggest or include content that is objectively offensive or demeaning.

**Additional Rules for Fall 2020 EE Laboratories**

**Code of conduct while in labs on campus**

- Students attending in-person labs are required to wear face coverings, regularly sanitize/wash hands, and maintain 6 feet (about 2 arms' length) distance between each
other at all times while in the building. Check SJSU Health Advisories website for updated information about university requirements and rules

https://www.sjsu.edu/healthadvisories/

• Students need to check with the lab instructor about the process to get on campus.

• Students must only work in designated stations at all times.

• Disposable masks will be provided if forgotten.

• If attending in person lab 2 days in a row, washed/clean cloth masks or new disposable masks must be worn each day.

• Disinfecting wipes are provided in each lab, and students are expected to wipe down their stations before and after each use.

• Students are strongly encouraged to bring a personal mouse or keyboard to avoid using shared devices.

• Please keep in mind drinking fountains are not available, so plan accordingly.

Component Pickup Procedure

• Necessary components and devices will be provided to students by the department.

• Students living within a 60 miles radius from campus will receive a designated time to pick up their components.

• Those living further than 60 miles can have their components and/or devices mailed in which a return label will be included.
• Prior to picking up or mailing, students must fill out the DocuSign form including the designated receiver’s information.

• If a student would like to designate someone else to pick up on behalf of them, there will be an option on the DocuSign.

• In the case components are lost or broken, students must contact the department as soon as possible to avoid an incomplete grade and/or registration hold.

• Students will have to come on campus a second time to pick up the ADALM 2000 should a course requires it. Unfortunately, the shipment for the devices will arrive sometime after school has begun.

Dropping Course after Receiving Components

• Students must return components to the EE department either in person or through mail using the provided return label.

• Components and devices must be in the office by September 8th to avoid an incomplete grade and/or registration hold.

Adding a Course

• If a student has completed a DocuSign form for a course, but components have not been picked up/mailed yet, and they choose to add another course, an email can be sent to ee-techsupport-group@sjsu.edu to amend their previous form.

• If a student has their components or devices already, an additional DocuSign form will need to be submitted prior to adding a new course.
• If multiple courses need to be added, students need to wait until enrolled before submitting one DocuSign for all the courses.

• Please submit these forms prior to September 8th to receive new components or devices.

Returning Components and Devices

• Detailed instructions on returning procedure will be provided to students later in the semester.

• Students need to return components and devices in working condition to avoid an incomplete grade and/or registration hold.

• Course of action will be discussed on a case by case basis for any broken or missing components at the time of return.

• Components and devices need to be returned no later than December 8th. Please plan to drop off or mail components at an appropriate time, as those returned past the deadline will not be accepted and will result in an incomplete grade and/or registration hold.

Laboratory Schedule (tentative)

Schedule and the content of lab assignments are subject to change with fair notice by email and class announcement.

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Lab</th>
<th>Lab Reports</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>26-Jan</td>
<td>No Lab</td>
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<tr>
<td></td>
<td>Date</td>
<td>Description</td>
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<tr>
<td>2</td>
<td>2-Feb</td>
<td>Lab 1: SPICE Modeling of OpAmp</td>
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<td>3</td>
<td>9-Feb</td>
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<td>4</td>
<td>16-Feb</td>
<td>Lab 2: MOS Cascode and Current Mirrors</td>
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<td>5</td>
<td>23-Feb</td>
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<td>6</td>
<td>2-Mar</td>
<td>Lab 3: Design of Audio Amplifier</td>
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<td>7</td>
<td>9-Mar</td>
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<td>8</td>
<td>16-Mar</td>
<td>Lab 4: Physical Verification of OpAmp</td>
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<td>9</td>
<td>23-Mar</td>
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<td>10</td>
<td>30-Mar</td>
<td>No Lab</td>
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<tr>
<td>11</td>
<td>6-Apr</td>
<td>Lab 5: MOS Current Mirrors (continuation of Lab 2)</td>
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<td>12</td>
<td>13-Apr</td>
<td>Lab 6: Differential Pair</td>
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<td>13</td>
<td>20-Apr</td>
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<td>14</td>
<td>27-Apr</td>
<td>Lab 7: High Frequency Modeling</td>
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<td>15</td>
<td>4-May</td>
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<td>16</td>
<td>11-May</td>
<td>No Lab</td>
<td>Report 7 due</td>
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