San José State University
Department of Electrical Engineering
EE 97, Introductory Electrical Engineering Laboratory,
Spring 2017

Course and Contact Information

<table>
<thead>
<tr>
<th>Instructor</th>
<th>Sec</th>
<th>Class Time</th>
<th>Office</th>
<th>Office Hours</th>
<th>Phone #</th>
<th>Email address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aditya Garg</td>
<td>04</td>
<td>Th 1330-1615</td>
<td>ENG 249</td>
<td>Th 1230-1330</td>
<td>415.872.2660</td>
<td><a href="mailto:adityagarg700@gmail.com">adityagarg700@gmail.com</a></td>
</tr>
<tr>
<td>Pratik Sane</td>
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<td>Th 1800-2045</td>
<td>ENG 249</td>
<td>Th 1700-1800</td>
<td>408.917-0119</td>
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<tr>
<td>Pranesh Neela</td>
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<td>Fr 0900-1145</td>
<td>ENG 249</td>
<td>Fr 1145-1245</td>
<td>408.680-7572</td>
<td><a href="mailto:pranesh3494@gmail.com">pranesh3494@gmail.com</a></td>
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<tr>
<td>Curtis A. Jones</td>
<td>02</td>
<td>Tu 0900-1145</td>
<td>ENG 255</td>
<td>Th 0900-1100</td>
<td>408.924-4295</td>
<td><a href="mailto:curtis_jones@ieee.org">curtis_jones@ieee.org</a></td>
</tr>
<tr>
<td>Curtis A. Jones</td>
<td>03</td>
<td>Tu 1330-1615</td>
<td>ENG 255</td>
<td>Th 0900-1100</td>
<td>408.924-4295</td>
<td><a href="mailto:curtis_jones@ieee.org">curtis_jones@ieee.org</a></td>
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Classroom: ENG 249

Prerequisites
Corequisite: EE 98

Lab Coordinator

Curtis A. Jones, David Parent, Ping Hsu

Course Description

Basic instruments and experimental techniques in electrical engineering. Oscilloscopes, function generators, frequency counters and multiple-use meters. Measurements of voltage, current, frequency response, and transient response.

Course Goals and Student Learning Objectives

The course covers the following topics.

Topics

- Measurement of voltage, current, resistance, and frequency response.
- The use of oscilloscope, digital multimeter, function generator, and DC power supplies.
- Electrical components including resistors, capacitors, inductors, transformers, diodes, transistors and integrated circuits.
• Sources and the Thevenin model including a battery, DC power supply and function generator. Half- and full-wave rectifier circuits illustrate measurement of both DC and AC components of a voltage. Relations between mean, RMS, peak and peak-to-peak voltages are explored.
• An oscillator built with an NE555 timer IC uses the time constant of exponential decay in an RC circuit.
• Operational-amplifier circuits, LC resonance, amplitude modulation and demodulation are used in a simple radio receiver.
• Written lab reports provide practice in clear descriptions of procedures, simple analysis of data and conventions engineers are expected to follow in presenting results.

Course Content Learning Outcomes

Upon successful completion of this course, students will be able to:

1. read circuit schematics (a,b,c,e)
2. build simple circuits (a,b,c,e)
3. use DC power supplies, digital multimeters, function generators, and oscilloscopes (a,b,c,e,k)
4. measure voltage, current, resistance, and frequency response (a,b,c,e,k)
5. design simple circuits (a,b,c,e)
6. devise simple experiments (a,b,c,e)
7. work in a group (d,g,k)
8. prepare technical documents, lab reports (a,b,d,g,k)

ABET outcomes

The letters in parentheses in the student learning objectives refer to ABET criterion 3 outcomes satisfied by the course. These are listed below as a reference:

(a) An ability to apply knowledge of mathematics, science, and engineering
(b) An ability to design and conduct experiments, as well as to analyze and interpret data
(c) An ability to design a system, component, or process to meet desired needs
(d) An ability to function on multi-disciplinary teams
(e) An ability to identify, formulate, and solve engineering problems
(f) An understanding of professional and ethical responsibility
(g) An ability to communicate effectively
(h) The broad education necessary to understand the impact of engineering solutions in a global and societal context
(i) A recognition of the need for, and an ability to engage in life-long learning
(j) A knowledge of contemporary issues
(k) An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
(l) Specialization in one or more technical specialties that meet the needs of companies
(m) Knowledge of probability and statistics, including applications to electrical engineering
(n) Knowledge of advanced mathematics, including differential and integral equations, linear algebra, complex variables, and discrete mathematics
Basic sciences, computer science, and engineering sciences necessary to analyze and design complex electrical and electronic devices, software, and systems containing hardware and software components.

**Required Texts/Readings**

**Textbook**

*EE 97 Laboratory Manual*, by Ping Hsu; [Rev. Fall 2010], available at IEEE Room ENG 376

**Other equipment / material requirements**

- **Bound Lab Notebook** with printed page numbers

**Course Requirements and Assignments**

This is a practical, hands-on class. Attendance in the scheduled section is mandatory. A well-prepared student should be able to finish the experiments during the formal lab period. Students may use the lab during other EE97 section meeting times (on space available basis) to complete his/her work.

No eating or drinking is allowed in the lab.

Students are expected to leave the lab station neat, with the equipment turned off. Neatness includes: scope probes and leads must be left coiled on the top of the lab bench (to avoid being stepped on); and, no paper, components, wire, or insulation from stripped wire is to be left on top of the bench or on the floor near your work area.

Each student is required to write a laboratory report for each lab as discussed in the introductory section of the Laboratory Manual and Appendix A. Reports are due in class on the dates indicated in the course schedule (last page) at the beginning of the class. No late reports will be accepted.

**Assignments and Grading Policy**

**Exams**

There will be one midterm and one final exam. These exams may be written exams, bench exams, or a combination of both. For a written exam, questions would pertain to the use of lab equipment, to components used, and to experiments performed. For a bench exam, each student will be asked to build circuits, to take measurements, and to discuss the results.

**Grading**

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Lab reports</td>
<td>40%</td>
</tr>
<tr>
<td>Prelab assignments</td>
<td>10%</td>
</tr>
<tr>
<td>Midterms</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
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**Note:** No late lab reports
Letter grades will be assigned starting from

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
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<tbody>
<tr>
<td>100% - 90%</td>
<td>A</td>
</tr>
<tr>
<td>89.9% - 80%</td>
<td>B</td>
</tr>
<tr>
<td>79.9% - 70%</td>
<td>C</td>
</tr>
<tr>
<td>69.9% - 60%</td>
<td>D</td>
</tr>
<tr>
<td>59.9% - 0%</td>
<td>F</td>
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These are minimum grades. The instructor may assign a higher grade if, in the instructor’s judgment, the work deserves a higher grade than the raw score indicates.

**University Policies**

The link below contains university-wide policy information relevant to all courses, such as academic integrity, accommodations, etc. Please note the sections on academic integrity, consent for recording class and public sharing of instructional material, student technology resources, SJSU Peer Connections, SJSU Writing Center, and SJSU Counseling and Psychological Services (which offers workshops on taking exams among others).

Syllabus Information web page at http://www.sjsu.edu/gup/syllabusinfo/

**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/docs/S15-7.pdf, 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.

Plagiarism includes copying *any portion* of your lab report from textbooks, lab notes, previous years’ lab reports, or the reports of other students. Plagiarism also includes copying data. Any figures used from textbooks or the lab manual must be properly cited. Homework assignments that you turn in must have been worked out entirely by you. You can study with friends and work out the problem together, but you must then independently work it through and record your own work. **Students who provide their homework or labs to other students such that they can be copied are also committing a breach of academic honesty. This includes leaving your work on shared computers, leaving your flash drive where others can copy it, etc.** If you wish to help other students
learn the material, studying together is acceptable as long as each individual goes on to produce their own independent work.

For more information about avoiding plagiarism in written reports, see: http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml.

Review of the tutorial on plagiarism at http://tutorials.sjlibrary.org/tutorial/plagiarism/index.htm is recommended.

EE Department Honor Code

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
● 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.
** EE 97 / Introductory Electrical Engineering Laboratory, Spring 2017, Course Schedule **

*Schedule is subject to change with fair notice by announcement in lab.*

Table 1 Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
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<tbody>
<tr>
<td>1</td>
<td>1/26 - 1/31</td>
<td>Lab 1 Characteristics of a Practical DC Source</td>
</tr>
<tr>
<td>2</td>
<td>2/02 - 2/07</td>
<td>Lab 2 Current vs. Voltage Graph</td>
</tr>
<tr>
<td>3</td>
<td>2/09 – 2/14</td>
<td>Lab 2 Current vs. Voltage Graph (continued)</td>
</tr>
<tr>
<td>4</td>
<td>2/16 – 2/21</td>
<td>Lab 3 Light Controlled Switch</td>
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<td>5</td>
<td>2/23 – 2/28</td>
<td>Lab 4 Oscilloscope and Function Generator</td>
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<tr>
<td>6</td>
<td>3/02 -3/07</td>
<td>Lab 4 Oscilloscope and Function Generator (continued)</td>
</tr>
<tr>
<td>7</td>
<td>3/09 – 3/14</td>
<td>Lab 5 Rectifier and Voltage Regulator (Exp. #1&amp; #2 only)</td>
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<tr>
<td>8</td>
<td>3/16 – 3/21</td>
<td><strong>Midterm exam</strong></td>
</tr>
<tr>
<td>9</td>
<td>3/23 – 4/04</td>
<td>Lab 6 Frequency Response (Spring recess between Thurs and Tues.)</td>
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<tr>
<td>10</td>
<td>4/06 – 4/11</td>
<td>Lab 6 Frequency Response (continued)</td>
</tr>
<tr>
<td>11</td>
<td>4/13 – 4/18</td>
<td>Lab 7 Time Constant, Oscillator and Counter (omit Exp. #3)</td>
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<tr>
<td>12</td>
<td>4/20 – 4/25</td>
<td>Lab 8 Operational Amplifiers</td>
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<td></td>
<td>4/27 – 5/02</td>
<td>Lab 8 (continued) AM Receiver</td>
</tr>
<tr>
<td>13</td>
<td>5/04 – 5/09</td>
<td>Review</td>
</tr>
<tr>
<td>14</td>
<td>5/11 – 5/16</td>
<td><strong>FINAL EXAM</strong> (in ENG 249)</td>
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