

EE DEPARTMENT FACULTY GUIDE

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ELECTRICAL ENGINEERING DEPARTMENT CALIFORNIA POLYTECHNIC STATE UNIVERSITY

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[†] CAM is the Campus Administrative Manual. A new version of the document, called the CAP (Campus Administrative Policies) is in draft form. More information appears on the web at <http://policy.calpoly.edu/index.htm>

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‡ EE refers to material available in the EE Department Office.

INTRODUCTION AND SUMMARY

The present document is the outcome of the Instructional Committee's work during the academic years 1989-91 and the Academic Policy's Committee's work during the 2002-2003 academic year. As specified by the Department's governance document, these Committees are concerned with instructional methodology, is responsible for mentoring new faculty in acceptable teaching methods and RPT policies and procedures, and introducing innovative teaching techniques.

Original Statements from 1991 Document

In line with the above concerns and responsibilities, and in attempting to address policy and guidelines for new faculty, the committee observed gaps. By making use of existing policies and input from faculty, we generated the present draft document for discussion where no policy is explicitly spelled out. The document contains the following groups of items relevant to the Instructional Committee's task:

Group I - Instructional Policies and Procedures: where the situation allows small room for variance in practice (items 1-8).

Group II - Instructional Guidelines: where the situation allows large room for variance (items 9-16).

Group III – RPT Policies and Procedures: Department guidelines to assist new faculty

Supplement 1 - Documents and Handbooks (items 17-20).

Supplement 2 - Operational Routines and Facilities (items 21-25).

These two supplements contain matters set by existing documents such as the Department Handbook and Campus Manual. Our objective in including the supplement is to provide reference.

Supplement 3 - Appendices: When we were not able to conclude definitive statement on a topic, or it was out of the Committee's responsibility, the views and material were included in an appendix or sent to the APC.

- A. Memorandum to the APC.
- B. Samples of senior project requirements and contract.
- C. Notes on the use of software packages in instruction.

Revisions in 2003 by the Instructional Committee

1. Editorial changes to September 1991 version
2. Added url's for relevant resources available on web
3. Additional comments to encourage instructors to emphasize learning outcomes by students
4. Revised Appendix A.
5. Added Appendices D, E, and F.

1. LABORATORY DOCUMENTATION

Please refer to appendix A and confer with your mentor.

2. AVAILABILITY AND FUNCTION OF INSTRUCTOR DURING LABORATORY PERIODS

Emphasis on laboratory instruction is one of the strengths of Cal Poly's EE curriculum. The lab provides the student with direct familiarity with test equipment operation and measurement procedures. In addition, the relatively small class size permits a close relationship between student and instructor that is difficult to achieve in the environment of lecture courses. Thus, the availability of the instructor to the student and the participation of the instructor in the experimental process are key aspects of the student's learning experience. The importance of instructor availability is not always evident to the instructor, but is readily apparent to the student.

The instructor is expected to be available to the students in the laboratory room for the duration of the assigned lab period, except for brief absences due to personal needs or necessary instructional activities. It is not acceptable for the instructor to be available "in the office"; the availability must be in the assigned lab space.

One aspect of the laboratory course is the "learn-by-doing" process, which complements the theoretical learning process of the lecture. A second aspect is the thought process essential to design, conduct, and *comprehend* the experiment. The instructor is an essential and key element in this process. This does not mean that the instructor "troubleshoots" the student's experimental setup, but rather that the instructor leads the student in learning to troubleshoot. Similarly, the instructor should not operate test equipment, but rather lead the student in learning to operate the equipment. The same holds true for the design and planning of the experiment and its analysis. The above advice aims to enhance the students' learning.

3. COURSE COORDINATORS' RESPONSIBILITIES

Please refer to the department governance document and confer with your mentor.

4. DEPARTMENTAL POLICY ON PREREQUISITE COURSES

The student is responsible for having met the prerequisite requirements when registering for a course. The requirements are those listed in the latest catalog, regardless of student's date of entry to the university. The instructor is not responsible for checking that the requirements have been met by the students. The University POWER (POLYWEBREGISTRATION) system performs a pre-requisite check for some upper division classes. For classes with lower division pre-requisites that students often complete at community colleges, POWER does not perform a pre-requisite check automatically. Recognizing the limitations of POWER, instructors should remind students of their (the students') responsibility to meet pre-requisites.

5. THE FUNCTIONS OF THE ADVISING CENTER

The Advising Center — located in Building 40, Room 115, <http://www.ee.calpoly.edu/CENGAC/> — serves approximately 4,500 students within the College of Engineering. For each student, the Advising Center has a folder that contains their application, transcripts, curriculum sheet, grade reports, grade changes, deviation forms, letters, or anything else related to the student's academic career.

The academic advisor in the advising center is responsible for monitoring students progress in the designated major, advising on course sequencing, determining course equivalencies, approving administrative forms (as advisor and for the Department Chair), academic probation/disqualification, EE graduate application processing, speaking to new or prospective students and their parents, answering questions regarding university and/or Department policies and procedures, and other issues that pertain to students.

The EE Department controls senior project registration. Students wishing to enroll in EE 461, 462, 463 or 464 must fill out a senior project approval form and have the form signed by the faculty member agreeing to take the student on as a senior project student. Similar procedures apply to EE 200, 400, and 500. The faculty signature on the form indicates the faculty member's approval of the student, so faculty should be careful to keep track of who they take on as senior project students so as to not overload themselves with too many. Also, the Department senior project grading policy is as follows: in 461 or 463, instructors may assign a letter grade or a RP (report in progress); in 462 or 464 require a letter grade. Instructors must not assign Incomplete (I) grades in either 461, 462, 463 or 464. If a student does not complete the project, the student will receive an F grade and retake the course in a subsequent quarter.

6. POLICY ON CONTENT OF PREREQUISITE COURSES

The pace of courses at Cal Poly, particularly in the junior and senior year, does not allow time for remedial instruction. Most instructors devote one or two lectures to the review of material from prerequisite courses. However, this is only a review and cannot encompass new material, which was omitted from the prerequisite courses(s). Therefore, it is necessary for instructors in prerequisite courses to ensure that students learn all of the material listed in the expanded course outline. As Gary Granneman says, “the object is to uncover the material, not just cover it.” Academic freedom does not include the license to omit material for which the student will be held responsible in subsequent courses.

When a course is not prerequisite to other courses (senior electives, some grad courses), it is appropriate for the instructor to exercise professional judgment on the inclusion or omission of material in an attempt to make the course more effective. This constant editing is in fact essential to updating advanced courses and the student in this case does not suffer in subsequent course exposure.

Direct suggestions for course content to the applicable course coordinator or technical area committee.

7. NEW AND EXPERIMENTAL COURSES

Prepare proposals for new courses as an ABET expanded course outline and a Course Description Form (<http://www.academics.calpoly.edu/curriculum/index.htm>). To access ABET expanded course outlines for existing courses, go to my.calpoly.edu and use single click access to the EE Faculty channel (<https://myportal.calpoly.edu/SingleClickAccess?desiredapp=eefaculty>). University curriculum procedures appear online at the Catalog & Curriculum Development Website maintained by the Academic Senate Curriculum Committee (<http://www.academics.calpoly.edu/curriculum/index.htm>). Notice that the Course Description Form offers a mechanism to allow the university to schedule experimental courses that appear in the course schedule with an “X” prefix. Submit the forms to the Curriculum Committee for approval, after obtaining Technical Area Committee approval.

8. DISABLED STUDENTS

See the Disability Resource Center website (<http://drc.calpoly.edu/>).

9. THE USE OF VIEWGRAPHS AND MULTIMEDIA TOOLS

Viewgraphs and multimedia tools can very effectively supplement the blackboard in both lecture and laboratory courses. Instructors are encouraged to consider the use of viewgraphs and multimedia tools in imaginative ways to convey visual material that would be less effective by other means. When using viewgraphs, the instructor should:

Be aware of the pace of presentation of the material. Use handouts where the pace would exceed the students' ability to both copy and consider the material, or refer to it in the text.

When handouts are used, take care to maintain active student involvement in the reasoning and thought process rather than a passive involvement without critical thinking (David Johnson, Roger Johnson & Karl Smith, *Cooperative Learning* (1991, ASHE-ERIC, Higher Education Report No. 4). This may be accomplished by partially completed handouts, which the student must complete during the presentation. In class, concept tests (Eric Mazur of Harvard) and cooperative learning strategies (Spencer Kagan and Laurie Kagan) can aid both student learning and instructor effectiveness.

Instructors may wish to use the campus Blackboard system (<http://blackboard.calpoly.edu/>) to post course materials online. The department copy machine can scan documents to .pdf format and email the files to the instructor.

The campus describes web authoring tips, tools and policies on the following sites:

The Web Authoring Resource Center (WARC) <http://www.calpoly.edu/warc/>
Central Unix Web Tools <http://www.calpoly.edu/~www/>

10. GRADING OF LAB REPORTS

Lab courses are a vital component of instruction at Cal Poly. The philosophy of "learn by doing" has proved effective, especially in engineering courses. The laboratory experience is a chance for the student to experience the instructor's breadth and expertise in a one-on-one relationship.

For many students, this will be the first such contact with an engineer and with the professional demands which the discipline requires. It is particularly important that the student perceive the instructor as an experienced professional who is involved in the experimental activity aimed at developing the same professionalism in the student. The detailed grading of lab notebooks is a key area in which the student experiences the instructors demand for quality.

All instructors should personally participate in the grading of their students' lab reports and indicate by notation the kind of professional quality which is expected. In those cases where an excessive number or character of lab assignments reduces the depth of this personal involvement, the instructor must at the very least supervise and review the grading of a student assistant and add his comments to each lab report. *It is not considered satisfactory for the grading task to be delegated totally to a grader.* Instructors must grade the lab notebooks the first time that they teach a lab course.

See Appendix A for detailed suggestions.

11. ASSIGNMENT OF FINAL GRADES

Because others interpret the final course grade assigned to a student thereafter as a faithful measure of that student's performance in the course, it is of utmost importance that instructors assign these grades fairly, and in light of understood norms. In a typical class—where the average performance is approximately as expected, and where the distribution of these performances does not display any remarkable features (e.g., a marked bimodal nature, or containing only a small number of scores)—the following guidelines for the overall GPA of the class apply:

Lower division (freshman, sophomore) courses:	2.3 (C+) \pm 0.2
Upper division (junior, senior) courses:	2.7 (B-) \pm 0.2
Lower division Laboratory courses:	2.8 \pm 0.2
Upper division Laboratory courses:	3.0 \pm 0.2
Graduate courses:	3.3 (B+) \pm 0.2

The department does not recommend assigning grades of D-, D, or D+ in lower division courses. In such cases, assign a grade of F to ensure that students repeat the course and complete the course with a more thorough mastery of the introductory material.

The primary responsibility of the instructor is to maintain the standards of the institution. In irregular cases where the targets above cannot be met, the instructor should use good judgment and be prepared to justify the discrepancy. For example, note the justification on the grade record for future reference.

With regard to specifically assigning letter grades to a given distribution of performance scores, one possible approach is to use the naturally occurring gaps in the distribution as the division points between adjacent grades; this avoids assigning different grades to nearly equal performances. Another helpful technique is to use the scores of students for which letter grades can be confidently assigned (based on a particular familiarity with their work) as benchmarks for the assignment of grades to the entire class.

12. GRADING OF LECTURE COURSE MATERIAL

Grading of students' performance in lecture courses is based on a combination of the following components. Instructors may use a grader to assist with grading of homework, short quizzes (<15 minutes) and simple projects. Instructors must grade all mid-term exams, final exams, and significant projects themselves.

- (a) Homework
- (b) Quizzes
- (c) Projects
- (d) Mid-term exams
- (e) Final exams

The instructor can determine the weight of each one of the above. Express the weighting in the course syllabus. The following examples illustrate the case of a 3-unit course:

Example 1

- (a) Ten homework sets in the quarter15%
- (b) Five quizzes, 10 minutes each25%
- (c) One mid-term exam, 50 minutes.....20%
- (d) A comprehensive final, 110 minutes40%

Example 2

- (a) Ten homework sets in the quarter10%
- (b) Four quizzes, 10 minutes each20%
- (c) Two mid-term exams, 50 minutes36%
- (d) A comprehensive final, 110 minutes34%

Example 3

- (a) Homework grades affecting border line cases
- (b) Two 50-minute mid-terms and a 20 minute exam60%
- (c) A comprehensive final, 110 minutes40%

Example 4

- (a) Homework.....10%
- (b) Design Project.....15%
- (c) Two mid-terms, 50 minutes each.....40%
- (d) A comprehensive final, 110 minutes35%

Example 5

- (a) Homework or a design project.....15%
- (b) Two quizzes, 10 minutes each10%
- (c) Two mid-terms, 50 minutes each.....40%
- (d) A comprehensive final, 110 minutes35%

Example 6

- (a) Two mid-terms, 50 minutes each.....60%
- (b) A comprehensive final, 110 minutes40%

Also consider the effect of factors such as stress. Some students perform better when under no stress, so consider homework or design projects. If an instructor wishes to use discretion to adjust student scores around the boundaries of the above percentages, the instructor should publish such policies in the course syllabus.

13. CHEATING AND PLAGIARISM

See CAM 684.1 and 684.2

See CAM for campus policies concerning cheating. See <http://cla.calpoly.edu/~fflores/plagiarism.htm> in Appendix E.

14. AIM AND NATURE OF EXAM AND QUIZ QUESTIONS

The primary function of exams and quizzes is to help evaluate students' understanding of the course material. They can also complement teaching.

Design of exams and grading them requires considerable time. The exams also consume classroom time, which is very precious for the full coverage of course material. Therefore, the effort put into the design of exam questions should produce commensurate return. The following can provide some useful tips:

- (a) The exams should search for student's familiarity with the general principles, laws, models, rules, and equations involved with the subject matter. The exam should also search for the student's ability to apply the above. These two aims can be incorporated in a single problem with multiple sections, or by separate questions. In any case, exams should cover both of the above aspects.
- (b) Questions and problems should focus on the course theory, concepts and material as much as possible. In other words, the computational techniques should not dominate the exam. However,

the student is expected to integrate techniques from prerequisite courses and choose the best technique for the solution.

- (c) Problems can be structured to reduce the effect of error propagation on grading. The interdependence between consecutive sections of a problem can be minimized such that an error in one section of the problem will not affect the nature of the problem nor performance of the student in subsequent sections. Partial credit grading for work shown is encouraged. Some benefit exists in helping students learn to exercise care at the beginning of solving a problem to prevent early errors from propagating into larger mistakes.
- (d) The questions should primarily address the most important aspects, or the core, of the material as opposed to the peripheral aspects.
- (e) Write questions in order to minimize the time required to read and understand them.
- (f) The instructor should prepare solutions prior to administering the exam. The process of constructing solutions should assist the instructor in assigning weight to partial credit grading and evaluating difficulties.

15. SUMMARY OF DISCUSSIONS ON SENIOR PROJECT - EE 460/461/462/463/464

The senior handbook gives objectives, policies, and guidelines for senior project. The handbook is the main reference for EE 461, 462, 463 and 464 courses. However, within the above framework, the faculty advisor may also provide clarifying details on individual requirements, expectations from the student, reporting process, etc. Appendix A gives examples.

16. PROFESSIONAL DEVELOPMENT

Continuous professional development is of considerable importance in fulfillment of teaching duties. This may be achieved through means such as the following:

1. Industrial, educational, and research projects supported by sources outside the University (NSF, DOD, DOE, NASA, NIH ...).
2. Industrial, educational, and research projects supported by the University
 - The Grants Development Office (<http://www.calpoly.edu/~grants/>)
 - The Center for Teaching and Learning (<http://academics.calpoly.edu/ctl/>)
 - Faculty Development Grants (http://academics.calpoly.edu/ctl/grants/facdev_grants.html)
 - University Summer Grants Program (<http://academics.calpoly.edu/ctl/grants/sumgrants.html>)
 - State Faculty Support Grants (<http://www.calpoly.edu/~rgp/pdf/sfsg.pdf>)
 - The California Central Coast Research Partnership (<http://www.c3rp.org/>)
3. Curricular development can include enhancing existing courses and developing new courses, in particular, efforts to improve the laboratory experience by improving existing laboratory experiments and developing new ones.
4. Publish scholarly work in peer-reviewed journals.
5. Author textbooks.
6. Present scholarly work at conferences and workshops.
7. Membership and leadership in the professional societies and participation in conferences.
8. Industrial and engineering consulting.
9. Summer opportunities (e.g., professional employment, fellowships).
10. Develop research laboratories.

Information regarding the above is available from the following sources:

- Grants Development Office (<http://www.calpoly.edu/~grants/>)
- Center for Teaching and Learning (<http://academics.calpoly.edu/ctl/>)
- Department Bulletin Board
- Department Industrial Advisory Council (<http://www.ee.calpoly.edu/home/iac/>)
- Office of Vice President for Academic Affairs (<http://www.academics.calpoly.edu/>)
- Office of Research and Graduate Programs (<http://www.calpoly.edu/%7Ergp/index.html>)

17. GENERAL GUIDELINES ON THE USE OF SOFTWARE PACKAGES IN INSTRUCTION

A software package should be used and assigned for use in classwork, lab, homework, or a project if:

- It enhances the active learning process of the course material.
- It is introduced at a time during the course that it does not override the concepts in the course, but it serves as a tool.
- It saves instruction and learning time without sacrificing the objectives of the course.
- It is a realistic program which has similar but more extensive versions in industry.

Coordination between courses and labs which use such packages is necessary. In this respect, the Technical Area committees would supply the following information:

- What packages they are using now (e.g. PSpice, Micro-Cap, MATLAB, VHDL, Verilog, C,)?
- What software packages they want to use in the future?
- If there are limitations, what packages are the minimum?

Technical support for laboratory and computer equipment and software exists:

- lab development
- The department technical support staff assist faculty in obtaining, installing, maintaining and repairing lab equipment and software packages.
- If the department technical staff doesn't have a solution for a computer/workstation problem, other resources exist on campus:
 - Campus User Support Services Helpdesk x67000 (<http://www.helpdesk.calpoly.edu/>)
 - Information Technology Services (<http://its.calpoly.edu/>)
 - Campus Software (<http://software.calpoly.edu/>)
 - Faculty Workstation Program (<http://www.fwp.calpoly.edu/>)

For further details on this subject, see Appendix C.

18-21. RPT SCHEDULE/PROCEDURE/WPAF

The instructional committee highly advises all faculty to read the official university procedures for Retention, Promotion, and Tenure (RPT) posted at:

<http://www.academic-personnel.calpoly.edu/policies.html>

This website contains the most recent versions of several useful documents:

- The Faculty Handbook
- College and Department Personnel Policies and Criteria
- Retention, Promotion and Tenure Memo
- EE Department Criteria
- Checklists for Candidates
- The RPT Timetable
- The Faculty Salary Schedule

Refer also to the EE Department Governance Document for specific department policies and procedures. Discussions with your mentor and other senior faculty can help clarify the procedures and assist faculty to navigate the RPT process. The following comments are not intended for completeness, but rather to highlight key portions of the procedure. Please read The Faculty Handbook completely.

Approximately once per year, as specified by the RPT Timetable, each tenure track faculty member submits a Working Personnel Action File (WPAF) to the Department for review by the Peer Review Committee, Department Chair, Dean, and also higher levels. At the lower levels of review, evaluators return to the probationary faculty a Form 109, available at <http://www.academic-personnel.calpoly.edu/pdf/ap109.doc>, often after visiting the probationary faculty member in class. Each member of the Peer Review Committee also reviews the Personnel Action File of the probationary faculty. The probationary faculty should visit the Dean's office to review this file on an annual basis, according to the RPT Timetable.

Prepare a useful and well-organized WPAF that documents your teaching, professional development, and service. Do include the following items:

- An index to your WPAF
- A resume that highlights your activity during the probationary period
- A resume that includes background activity prior to the probationary period
- Student evaluations of your teaching
- Reports that summarize the numerical student evaluations
- Syllabi for each course taught
- Exams, handouts and websites you've developed and given to students in your courses
- Professional Development Plan
- Papers you've written, presented at conferences or published in peer reviewed venues
- Proposals you've written
- Committees served on and any responsible positions held
- Awards and honors

File copies of such materials as you generate them to save much effort as RPT deadlines approach. Show your mentor your WPAF a few weeks before the deadline and request some feedback.

22. CFA CONTRACT

The Collective Bargaining Agreement (MOU) for Unit 3 Faculty appears at:

http://www.calstate.edu/LaborRel/Contracts_HTML/CFA_CONTRACT/CFAtoc.shtml

The CFA (California Faculty Association) is the union that negotiates with the CSU. The CFA website is <http://www.calfac.org/>.

APPENDIX A
**REVISED MEMORANDUM TO TPFC COMMITTEE CONCERNING LABORATORY
DOCUMENTATION**

State of California
MEMORANDUM

Cal Poly State University
ELECTRICAL ENGINEERING DEPARTMENT

TO: Electrical Engineering Department TPFC **DATE:** Sept. 15, 2003
FROM: David Braun, Gary Granneman, & Jim Harris, APC (Instructional Committee)
SUBJECT: Revision of 1990 version of laboratory documentation guidelines

As part of an extensive revision of the Instructional Committee Document, the APC slightly revised the 1990 memo to the APC concerning laboratory documentation. The original memo appears on the next page. The rest of Appendix A contains the revised version.

**MEMORANDUM TO APC COMMITTEE CONCERNING LABORATORY
DOCUMENTATION; PROPOSING A PREPARATORY COURSE**

State of California

Cal Poly State University

MEMORANDUM

ELECTRICAL ENGINEERING DEPARTMENT

TO: Jim Harris, Chair
APC

DATE: March 19, 1990

FROM: Mahmood Nahvi, Instructional Committee

COPIES: J. Breitenbach
A. Dickerson

SUBJECT: 1. Laboratory Documentation (pp. 2-4, the attachment).
2. Proposing a preparatory course (p. 5, the attachment).

-
1. The Instructional Committee has discussed the topic of documentation of laboratory experiments and the format and contents of the reports. The above topic has more aspects and consequences to be limited to the Instructional Committee and should also be discussed in a broader perspective by the APC. The thoughts and comments of committee members on this topic are documented in the attachments (pp. 2-4) and herewith are sent for the APC's review and discussion.
 2. In discussing a certain class of topics (such as students having the prerequisites skills, report writing, ...), the committee has recognized a set of common features which suggest a preparatory course to be offered by the EE Department for the freshman class with possible GE&B credits. The course could be a follow-on to EE 110. The outline of the goals and format of such a course is prepared by J. Breitenbach (attached page 5) and herewith is being sent to the APC for discussion and consideration.

Attachments: pp. 2-5.

Format and Contents of Laboratory Reports

1. Documentation of the experiments, conclusions, and answers to questions should be done while the experiment is under way.
2. Development of skills to document results of experiments and to present them most clearly, concisely, and efficiently is an important aspect of the laboratory activities. Many EE laboratory manuals include guidelines in that direction. The guidelines to students can include the following:

- (a) Report the work as it was performed. Do not repeat instructions. Summarize actions taken to perform instructions.
- (b) Avoid redundancies, irrelevancies, and stories. Write clearly and concisely using the active voice. Include relevant facts. Use a variety of descriptive verbs. Avoid excessive reliance on the verb “to be” and the passive voice. An example below compares two options:

Version one: Using an Agilent 34401A DMM to measure the output voltage between terminals A and B in Fig. 1, the frequency of the function generator varied from 1 Hz to 10 kHz in at least three steps per decade. Table 1 contains the frequency response results plotted in Fig. 2. A second order pole appears at 1500 ± 15 Hz.

Version two: We then disconnected the oscilloscope from the circuit and using the shorter wire we connected an Agilent 34401A DMM between terminals A and B. We set it on AC voltage range of 20 volts. The frequency of the function generator was changed by rotating the dial clockwise, and readings from the Agilent were written down.

Version one contains more useful information and presents it more clearly than version two.

- (c) In describing the work performed and results obtained, make use of circuit diagrams, tables, and graphs which can improve the report considerably.
3. Achieving ideals in report writing is constrained by time allocations and circumstances specific to each lab. These constraints exist for both the instructor and students. Under such constraints there has to be a compromise between the main function of the laboratory program and reporting the results. It may even be necessary that the report writing becomes subservient to performing the experiment. Recognizing the nature and the role of each laboratory, the coordinators or the instructors can give instructions on how to report the results.
 4. To pass EE 241, EE 242 and EE 346, a student must demonstrate the ability to write a high quality lab report.

Laboratory Experiment Documentation

Concerns

- A 1-unit laboratory should reflect a 1-unit investment of time/work by the student.
- Students should be able to express their thoughts and actions in written form (here, with regard to performing an experiment).
- The documentation of an experiment should not become so burdensome as to interfere with receiving the other benefits of a laboratory, such as: understanding the use of laboratory equipment and good experimental technique, getting students to feel confident in a laboratory setting, reinforcing theoretical concepts and analyses with laboratory experience, having students learn experimental concerns (experimental error and its propagation, noise, stability, physical limitations of equipment and parts, etc.) often omitted from simplified theoretical models and analyses, and experiencing the creative activity of design.
- Differences in lab course may require differences in policy (though this is easy to overstate).
- Select a reliable means of verifying that students have learned the desired theory and practice.
- A departmental lab policy should possess an acceptable balance between instructor conformity and freedom.

Possibilities

- Have one sophomore lab course specifically intended to teach and exercise proper documentation.
- Recognize the senior project as the major report-writing experience in the curriculum.
- Require students to maintain lab notebooks, but mainly for their benefit of learning and recording for later review.
- Require students to use all common-sense rules of documentation. For example, make graphs as clear as possible to display data, trends and concepts, and label tables and graphs completely.)
- Allow some experiments of the "fill-in-the-blank" variety.
- Do not require students to rewrite in their reports what is already clearly stated in the lab manual; rather, the manual plus the student's report should combine to give a complete documentation of the experiment.
- Provide lab manual as a computer file to allow cut/paste as needed.
- Emphasize the "conclusions" aspect of the experiments, on the experiment documentation (perhaps via postlab questions) and via the final exam.
- Require students to take ENGL 218, as it is more oriented toward technical writing, rather than allowing ENGL 215.

Laboratory Notebook Check-Sheet

This notebook or report is deficient in the following respects:

General - Introductory

1.
 - (a) The notebook cover block does not meet departmental specifications.
 - (b) The title page is incomplete or incorrect in form; for example, it does not list lab group number or lab partners.
 - (c) The table of contents is missing or not up-to-date.
 - (d) Notebook pages are not all numbered or blank spaces/pages appear.
2. The purpose of the experiment is not stated.
3.
 - (a) No block diagram (or schematic diagram) of the text set-up is shown.
 - (b) The equipment used is not identified by manufacturer's name and/or model number, and/or manufacturer's serial number (or EE number).
 - (c) Element values used are not shown.
 - (d) No properly descriptive title identifies the figure.
4.
 - (a) State the procedure.
 - (b) Use a third person subject to state the procedure. Tell what was done, not what to do.
 - (c) You failed to follow the instructions given to you with respect to procedure.
5. Use active voice and avoid first person subjects.
6. An incorrect abbreviation or symbol was used.
7. This is not a sentence.
8. Do not erase or obliterate. Line out with a single line and initial.

Tables

9. The title for the data tabulation fails to show:
 - (a) the complete identification for the tested item.
 - (b) the conditions under which the test was made.
 - (c) the correct relationship between the independent variable and the dependent variable.
10. The column headings in the data tabulation do not include the units for the variable.
11. The test data appear to be:
 - (a) incomplete.
 - (b) in error.

Graphs

12.
 - (a) The title should be parallel to the abscissa.
 - (b) The title on the graph fails to show the complete identification for the item tested.
 - (c) The title must list the controlled variable as the independent variable.
 - (d) Assemble the report to make tables and graphs readable from the bottom or left side of the report.
13. The conditions under which the test was made are not shown on the graph.
14. The variable for one or both axes is not identified by a proper label.
15. The zero (or zeros) on the graph were suppressed without showing the break in the axis.
16.
 - (a) The name, units and symbols should appear for the variable plotted on the abscissa.
 - (b) The name, units and symbols should appear for the variable plotted on the ordinate.
17. The signed values of the variable on the abscissa/ordinate should increase to the right/upward, i.e., abscissa/ordinate variable plotted backwards.
18. The independent variable should be plotted on abscissa and dependent variable on the ordinate.
19. Scale divisions should be decimal submultiples or multiples of 1, 2, 5, 10, $\times 10^n$; e.g., 0.2, 0.5, and not 0.333, etc.
20. The data points through which the curve is drawn must be visible.
21. You failed to use distinctive symbols or tokens to identify the curves for different test conditions and/or you failed to place the value of the parameter/s adjacent the curve/s.
22. Disregard obviously "bad" data points when drawing the curve.
23. The curve on the graph appears to have been drawn freehand.
24. The curve on the graph was drawn as a straight line (or series of straight line segments) when it should have been drawn as a smooth curve.

General - Concluding

25. When the same unknowns/unknown is/are measured by two (or more) methods, compare the results in a table or plot. Compare predictions and simulation values to measured data.
26.
 - (a) No sample calculations are shown.
 - (b) Insufficient sample calculations are shown; i.e., some are present, some are not.
27.
 - (a) There is no discussion of problems or difficulties you encountered, or of the things discovered or verified by the performance of this experiment.
 - (b) The discussion which is present is incomplete.
28. The last page of the experiment/report is not dated and signed.

Proposed Preparatory Course to the EE Program

Goals

- Teach/instill self-discipline, responsibility, and an attitude conducive to learning and success in our program.
- Teach proper documentation of laboratory experiments.
- Ensure students possess the necessary prerequisite skills (e.g., matrix algebra, complex arithmetic, etc.).

Format

- A combination of self-study with some formal presentation and some informal contact; but not to be burdensome on the faculty.
- When course would be taken: Immediately upon entering our program, perhaps supplanting EE 110.

Grading

- Pass/fail, and stringent.

Additional benefit

- Such a course should help us with our generation of FTEFs, since it would generate SCUs from those freshman students that might have dropped out of our program before they have taken any of our courses.

APPENDIX B
SAMPLES OF SENIOR PROJECT REQUIREMENTS AND CONTRACTS

Winter 89
Project Advisor: J. Breitenbach

Student _____

Signature* _____

EE 461 REQUIREMENTS

Deadlines:

- 2/6: First progress report
- 3/3: Second progress report
- 3/8: Possible hardware test dates (3/13-3/17) and times discussed with Project Advisor (The actual hardware test date/time will be posted by Project Advisor by 3/10; enter on next line.)
- 3/_: First hardware test

It is the Student's responsibility to insure that the above deadlines are met.

First Hardware Test Specifications and Verification Procedures:

EXPLANATION OF EE 461 REQUIREMENTS

General

All transactions between the Student and the Project Advisor, including the submission of any materials, are to be conducted in person. The Student should always bring his laboratory notebook. The Student is not allowed to contact the Project Advisor at home, except in an emergency; thus, the Student should not assume the availability of the Project Advisor at times other than his regularly scheduled office hours. Failure to follow precisely the format explicated by this contract, except for a legitimate and documented reason, will adversely affect the Project Advisor's evaluation of the Student's performance, and therefore may affect the Student's grade in this course. There will be no exceptions.

Specific

Progress reports: Reports should state clearly and succinctly (1 or 2 pages of explanation) the present status of the project, and include an up-to-date block diagram.

First hardware test date agreement: The Student will discuss with the Project Advisor possible dates (within the allowable period) and times at which he might conduct the first hardware test of the project. The Project Advisor will later post the actual date of the test.

First hardware test: The Student will demonstrate his project, thus far completed. In particular, he must be prepared to convince the Project Advisor that the hardware meets the specifications stated, via the verification procedures stated (if any) in the "First Hardware Test Specifications and Verification Procedures" section.

* *Signature indicates that the Student has carefully read this contract, that he understands its terms (agreement to its terms is implicit in taking the course), and that he has received, read, and understood the document "Explanation of EE 461 Requirements".*

Winter 89
Project Advisor: J. Breitenbach

Student _____

Signature* _____

EE 462 REQUIREMENTS

Deadlines:

- 1/25: Last progress report
- 2/1: Possible hardware test dates (2/6-2/8) and times discussed with Project Advisor (The actual hardware test date/time will be posted by Project Advisor by 2/3; enter on next line.)
- 2/__: Final hardware test (duration: 50 min.)
- 2/13: Table of contents and detailed outline of final report (Project Advisor will review and comment upon at time of submission.)
- 2/24: Draft of final report (Results of Project Advisor's review will be available to the Student by 3/1.)
- 3/10: Final report (one copy, including title and approval pages, cashier's receipt, and manila envelope(s), as stated in Senior Handbook)

It is the Student's responsibility to insure that the above deadlines are met.

Project Hardware Specifications and Verification Procedures:

EXPLANATION OF EE 462 REQUIREMENTS

General

All transactions between the Student and the Project Advisor, including the submission of any materials, are to be conducted in person. The Student should always bring his laboratory notebook. The Student is not allowed to contact the Project Advisor at home, except in an emergency; thus, the Student should not assume the availability of the Project Advisor at times other than his regularly scheduled office hours. Failure to follow precisely the format explicated by this contract, except for a legitimate and documented reason, will adversely affect the Project advisor's evaluation of the Student's performance, and therefore may affect the Student's grade in this course. There will be no exceptions.

Specific

Last progress report: The report should state clearly and succinctly (1 or 2 pages of explanation) the present status of the project, and include an up-to-date block diagram.

Final hardware test date agreement: The Student will discuss with the Project Advisor possible dates (within the allowable period) and times at which he might conduct the hardware test of the project. The Project Advisor will later post the actual date of the test.

* *Signature indicates that the Student has carefully read this contract, that he understands its terms (agreement to its terms is implicit in taking the course), and that he has received, read, and understood the document "Explanation of EE 461 Requirements".*

Final hardware test: The Student will demonstrate his project. In particular, the Student must be prepared to convince the Project Advisor that the hardware meets the specifications stated, via the verification procedures stated (if any) in the "Project Hardware Specifications and Verification Procedures" section. No further work by the student on the hardware portion of the project will be allowed after this test.

Table of contents and detailed outline of final report: The Student will organize his preliminary thoughts on the final report of the project by submitting a table of contents and a detailed outline (two documents, the latter being a more detailed version of the former), both as complete as is foreseeable.

Draft of final report: This is the first and only chance the Student will have to obtain feedback from the Project Advisor about the final report. After this time, the Project Advisor will give only very brief answers to questions about the report. Therefore, the Student is urged to complete as much of the final report as possible by this time; in particular, it is suggested that at least a portion of every section of the report be completed (rather than working from the beginning and leaving off at some point), with additional comments then being made as to what further is intended to be done. The Student should also include an up-to-date table of contents and detailed outline.

Final report: The final report should be written in accordance with Project Advisor's comments on the draft. Some of the criteria in the grading of the report will be its general appearance, format, grammar, readability, use of figures and tables, accuracy, and completeness.

EE Dept. ABET Senior Project Analysis Guidelines appear at http://www.ee.calpoly.edu/~jbreiten/snr_project/

Braun's *Senior Project Guidelines Page* appears at <http://www.ee.calpoly.edu/~dbraun/srprojadvice.html>.

Harris's *Senior Project Web Resources* appears at http://www.ee.calpoly.edu/courseware/461_462/index.html

SENIOR PROJECT CONTRACT FOR EE 461 AND EE 462

Purpose

The purpose of this document is to define the responsibilities of the undersigned; Student and Professor H. Hazebrook in the completion of Senior Project as a requirement for graduation from Cal Poly.

Acceptance

No student will be accepted by the undersigned instructor unless the student has completed all of the catalog requirements for the courses, EE 461 and EE 462.

Any student planning to enroll in Senior Project for the first quarter (EE 461) under the direction of Professor Harry Hazebrook must supply a comprehensive proposal to Professor Harry Hazebrook prior to the last day of classes of the academic quarter prior to the quarter that he or she plans to enroll in EE 461. No one will be admitted without a good comprehensive proposal.

Applicability

This document is in accordance with the policies of California Polytechnic State University, the College of Engineering, the Computer Science Department, and the Electronic and Electrical Engineering Department. This Contract is meant only for the use of Professor Harry Hazebrook and such students as may choose to pursue their Senior Project under Professor Hazebrook's guidance.

Grading

Department policy states that one grade will be given for EE 461 and a second for EE 462. A general statement for grading criteria for 461 is as follows: "The following basis will be used to establish some uniformity in grading".

Grade	Criteria
A	<ol style="list-style-type: none">1. Student exhibits broad familiarity with project and possible problems.2. Student utilizes a systematic approach in isolating and solving problems of implementation and parts procurement.3. Overall conduct of various facets of the project are professional.
B	<ol style="list-style-type: none">1. Project well under way.2. Student applies himself independently in attacking problems encountered.3. Documentation of work complete and in correct form.
C	<ol style="list-style-type: none">1. The approach to the problem is well defined and a block diagram of the system complete.2. The procedures to be utilized have been well defined, perhaps with the advisor's assistance.3. The student has applied himself with regularity and in an effective manner while getting the project under way
D	<ol style="list-style-type: none">1. The project is just "not-off-the-ground".2. Student still looking for ways to handle the project.3. Lack of evidence of real application toward solution of design and procurement problems.
F	<ol style="list-style-type: none">1. Advisor has seen almost no evidence of application by the student.2. Approach to the project still appears nebulous. Perhaps not really defined in the student's mind. Block diagram incomplete or non-existent.

Scheme for EE 461			
		1st	2nd
Each oral report	Apparent Preparation	10	10
	Quality of Presentation	20	20
	Establishment of time schedule	10	--
	Notebook	30	40
	Progress to date	30	30
Each written report	Format	20	
	Completeness of discussion of project status including a comparison of time expended and time allocated	40	
	Progress and technical content	40	
Demonstration	Apparent state of preparation	30	
	Presentation of project status	30	
	Progress toward completion	40	
The five scores are summed and the result is divided by five.			
A: 90-100; B: 78-89; C: 64-77; D: 50-63; F: 47 and below			

Scheme for EE 462	
The following point schedule for EE 462 will be utilized:	
Written progress report	5
Final oral report	5
Notebook	15
Rough draft	20
Final report	15
Quality of work	35
Instrumentation and measurements	5
Total	100

Schedule	
The schedule for the 461 quarter is as follows:	
Proposal	Due prior to admission in class
Outline	Due by Wednesday of Third Week
First Oral Report First Written Report Notebook Check	Due by the end of Fifth Week
Second Oral Report Notebook Check	Due Wednesday of Eighth Week
Prototype Demonstration Second Written Report Notebook Check	Due by the End of Tenth Week
The schedule for the 462 quarter is as follows:	
Third Written Report	Due Wednesday of Third Week
Acceptance Test	Due by the end of Fifth Week
Draft Report	Due Wednesday of Seventh Week
Final Report	Due by the End of Ninth Week

I agree to the terms and conditions of this contract:

ACCEPTED

APPENDIX C
**NOTES ON THE USE OF SOFTWARE PACKAGES IN INSTRUCTION AND THE USE OF
COMPUTERS IN THE LABORATORY**

Uses of Applications Software in Engineering Instruction by Wayne McMorran

For the purpose of my report, I shall divide the topic into four areas: (a) CAD (Computer Aided Design) packages, (b) CAM (Computer Aided Manufacturing) packages, (c) CAI (Computer Aided Instruction) packages and (d) SUPPORT packages (word processors, etc.).

CAD Software Packages

Our students should surely be introduced to this sort of software since they will be using it on the job if they get into any kind of position where they are doing design. The questions are: (1) What CAD packages (or types of CAD packages) should be used and (2) to what extent?

Most CAD packages are not especially useful for educational purposes for one of two reasons. Commercial packages, by their nature, tend to be very sophisticated programs and hence require a considerable length of time to learn to use. There is little value in having a student spend a lot of time learning the specifics of a CAD package that he or she may never see again. Carl has proposed using the ABLE4 Digital CAD package in the lab. I think we shall do so, but I have some reservations and do not intend to make MUCH use of it. In order to have the student make use of the package and get meaningful results, I think it will mean that we supply the student with the basic data file and have him or her make minor editorial changes to reflect the particular design they are doing. They will get the "feel" for the design process but certainly will not learn very much about the specifics.

Other CAD packages might really be considered CAI packages in that they are vastly stripped down versions of a commercial product. These are easy to learn but the question to be considered is whether or not they are realistic enough to be educational.

I have written a lot of CAD packages for EE 259/EE 359 which, I hope, will fall somewhere in between.

The question that remains is how much? Not all design is done on a computer - some of it is still done on a napkin or the back of an envelope. We do not want to deprive the student of learning how to do simple design "by hand".

In the past, I have stayed away from CAD packages because, until the students go to the point where they had ready access to the computational resources needed to use these packages, it took too much of their time just carrying out the logistics of submitting data and getting results. This problem, however, has essentially been eliminated.

CAM Packages

I believe that, for the most part, we should avoid spending student's time on these packages. At most, demonstrate on or more of them for one week in some lab. We might make some less complex ones available for use in Senior Project and let the students learn to use them on their own. Real CAM packages are not generally operated by the "typical" engineer. Usually, a company will have a group of engineers who are specially trained in the CAD system that do all of the CAM work.

CAI Packages

As noted above, some CAD packages are really CAI packages. I see CAI packages as being a valuable tool in the lecture class but of limited value in the lab. I am concentrating in this report basically on lab usage.

Support Packages

I strongly believe that we need to move into the era where "laboratory notebooks", "lab reports", or whatever you wish to call them, should be electronic in nature (i.e., the student turns in a floppy disk with his or her report on it). If this be the case in the lab, we need to supply the student with a SIMPLE text editor that meets the needs of the report without having all of the bells and whistles of popular word processors. I am contemplating TED (Tiny Editor) in the EE 259 lab since it uses only 10 function keys (displayed as a menu at the bottom of the screen) and "standard" editing keys (arrow keys, backspace, delete, etc.).

General

Bottom line, I believe that whatever software packages we use in a particular laboratory course, it must be integrated (i.e., all work together in a relatively easy fashion) and should be reasonably standard throughout the department. In other words, don't use SPICE in one lab and some other similar program in the next. We should limit the number of packages to the minimum required to meet the needs of the labs and the need to introduce the student to their use.

Computers in the Laboratory by Wayne McMorran

While this article is aimed primarily at software used in engineering laboratories, it may also be applied, in general, to similar software used in lecture and discussion courses. The focus of this article might be termed CAE software - Computer Aided Engineering.

I have used the term CAE to encompass a number of other terms commonly in use: CAD (Computer Aided Design), CAM (Computer Aided Manufacturing), CAA (Computer Aided Analysis) and so on. It is really difficult to identify a particular piece of software as belonging to one of these categories since (a) analysis is part of the design process and design is part of the manufacturing process, and so on, and (b) many packages cover several of these areas.

The original purpose of this article was to enumerate packages which are available that meet the needs of our department. It was soon discovered that such a goal (a) is not possible to achieve since so much software is available and (b) is valid for only about 24 hours since new software is being written all of the time.

The actual purpose of this article, then, is to describe in general terms, what one should look for in selecting a CAE package. Several representative packages will be identified. Finally, an overview of a complete package for the EE 259 lab will be given.

Selecting CAM Software

1. It should be inexpensive. Preferably, the cost should be low enough that students could buy their own copies of it and run on their own computers. Certainly, it should be inexpensive enough that an

entire lab (say 8 work stations) could be equipped. Note that much of the commercially used software does not meet this criteria - but some companies offer substantial discounts to universities.

2. It should be a commercially used software package or, at least, emulate such software. In other words, the experience the students gain from using it should carry over into their work after graduation. Note that much of the commercially used software requires a considerable amount of time to learn its use. For this reason, simplified emulations are probably preferable.
3. It should be USER FRIENDLY. In other words, it should be such that a student could learn to use it, in a limited manner, very quickly. One might consider two software packages: (1) one in which the amount of learning time required is proportional to how much one wishes to do with the software and (2) another which requires a more-or-less fixed amount of time to learn and then one can do just about everything with it.

Unless the second program can be learned in a reasonable length of time, the first package would be preferable since the students would not likely be using the software to its fullest extent.

4. It should give reasonably accurate results. There is a lot of "cheap" CAE software available which pretty well satisfies the above three criteria, but is so simplified that the results are less than desirable. This type of software should be avoided.
5. The software should be "pretty and fun to use". This may sound facetious, but the simple fact is the more enjoyable the program is to use, the more time a student is likely to spend with it and hence the greater amount of learning.
6. The software should be "modular", meaning that it can be easily interfaced with other software modules to provide an integrated development environment. As an example, if one were to purchase a drafting package, a logic design package, and a PCB layout package, they should interface with each other so that the output from one package would be the input to another. This modularity may be at several levels:
 - (a) Interfacing is done via conversion packages which convert the output from one program to the proper format for the other.
 - (b) Interfacing is direct since either the files are compatible or, at least, each program has a common exchange format.
 - (c) Interfacing is internal with the output of one program going directly to the input of the other. This level can only be obtained in software written specifically for this purpose. This means that the software is written to run under systems packages such as Windows3, DESQview, etc., or comes with its own shell program.
7. The software should run on as many platforms (computer systems) as possible to give the greatest degree of flexibility.
8. The software should generate a history file, which traces what the student did in running the program. This file could then be incorporated into the student report and thus give validity to the results reported on in the report.

Note: It is unlikely that a software package will be found that rates high in all eight categories. One must then attempt some ranking of the available software.

Some Existing Packages

Below is a short list of some of the packages already available and in use in the department.

ANALOG: PSpice, MicroCap, etc.
DIGITAL: ABEL4, PLDesigner, CELLS (my own software), etc.
GENERAL: EasyCad, MathCad, etc.

The EE 259 Laboratory - An Example

As an example of how an integrated package might be put together, this short introduction to the EE 259 laboratory software - the CELLS System, is provided. A conceptual view of this system is shown on the next page. Two software modules are responsible for the overall operation of the system.

BOOT is a program which, as its name implies, is used to boot up the system. This includes operations such as:

1. Configuring the DESQview windows menu for the software used for a particular experiment (i.e., the experiment to be performed).
2. Configuring the EASYCAD drawing menus for the functions needed (if any) to run the experiment.
3. Creating the header for the report to be turned in (on a floppy disk) at the end of the experiment.
4. Creating or transferring any files needed to run the experiment to the student's USER DISK.

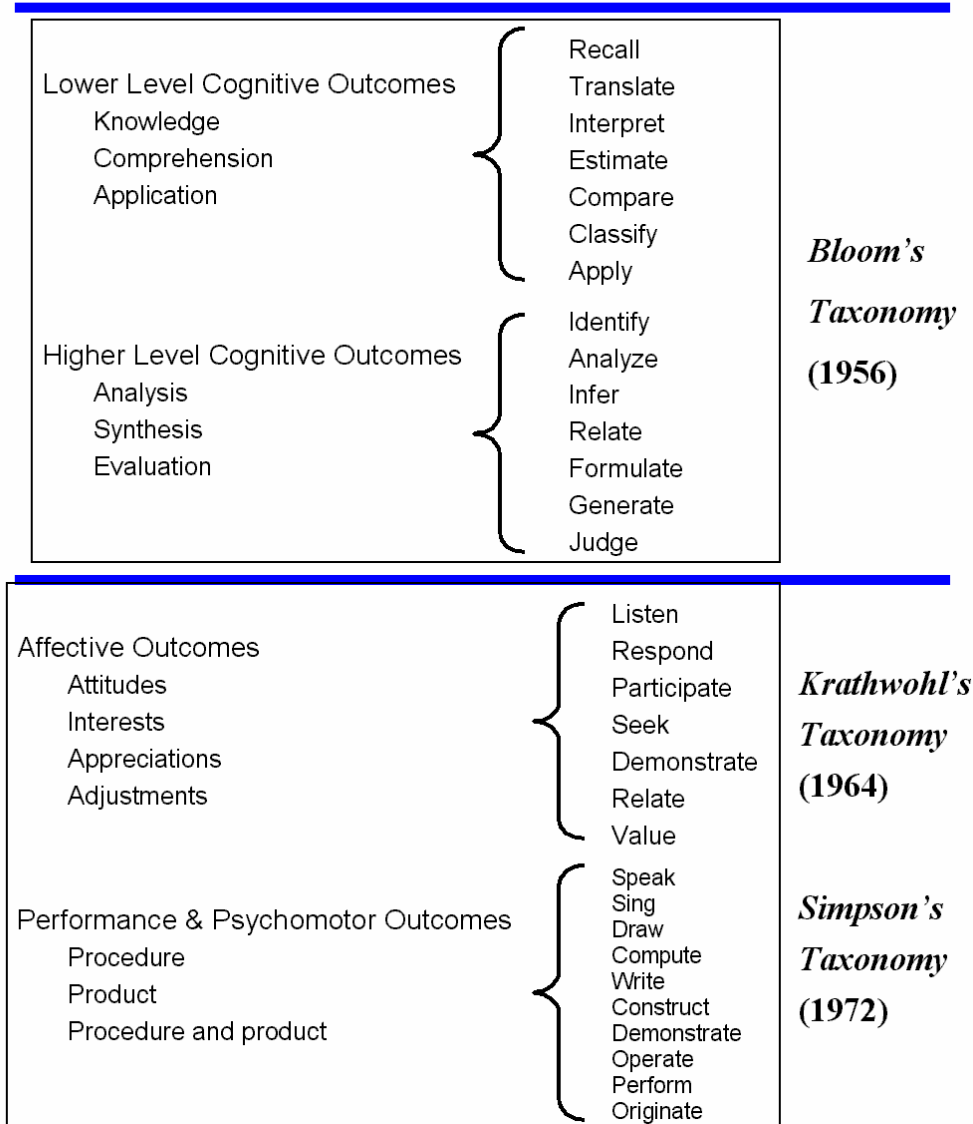
BOOT also provides some basic utility functions such as:

1. Formatting the USER DISK.
2. Printing or displaying a document file.
3. Displaying the system status (including the USER DISK).
4. Displaying a student's scores.
5. Obtaining fundamental help in using the system.

Once BOOT has performed its functions, DESQview is called into action and the rest of the experiment runs under DESQview's window management (and other associated functions). DESQview is a multitasking environment - meaning that two or more programs may be running at the same time in different windows. In general, one of these will be the TEXT EDITOR used to write the student's reports.

APPENDIX D
TAXONOMIES OF EDUCATIONAL OBJECTIVES

FIGURE 10—1 Types of Learning Outcomes Common to Many Areas and Levels of Instruction



From: Gronlund, N.E., *How to Write and Use Instructional Objectives*. 5th ed. (2000) Prentice Hall Inc., Upper Saddle River, New Jersey, p. 72.

Also see:

- Cognitive Domain (<http://faculty.washington.edu/krumme/guides/bloom.html>)
- Affective Domain (http://www.olemiss.edu/depts/educ_school2/docs/stai_manual/manual9.htm)
- Psychomotor Domain (http://www.olemiss.edu/depts/educ_school2/docs/stai_manual/manual10.htm)

APPENDIX E

CAMPUS POLICIES ON CHEATING AND PLAGIARISM

From Francisco Flores, <http://cla.calpoly.edu/~fflores/plagiarism.htm>, accessed July 2, 2003.

Also see <http://www.calpoly.edu/~acadsen/documents/Cheating&Plagiarism.html>

1. Definition of Plagiarism

Plagiarism is defined as the act of using the ideas or work of another person or persons as if they were one's own without giving proper credit to the source. Such an act is not plagiarism if it is ascertained that the ideas were arrived [sic] through independent reasoning or logic or where the thought or idea is common knowledge. Acknowledgement of an original author or source must be made through appropriate references; i.e., quotation marks, footnotes or commentary. Examples of plagiarism include, but are not limited to, the following: the submission of work, either in part or in whole, completed by another; failure to give credit for ideas, statements, facts or conclusions which rightfully belong to another; *failure to use quotation marks when quoting directly from another, whether it be a paragraph, a sentence, or even a part thereof; close and lengthy paraphrasing of another's writing without credit or originality* [italics mine]; use of another person's project or programs or part thereof without giving credit.

Campus Administrative Manual, §684.3

2. University Policy on Plagiarism:

Plagiarism may be considered a form of cheating and therefore subject to the same policy which requires notification of the Vice President for Student Affairs and includes possible disciplinary action. (See Section 684.2 [below](#)) However as there may be a technical plagiarism which is the result of poor learning or poor attention to format, and may occur without intent to deceive, some instructor discretion is appropriate. Under such circumstances notification of the Dean [sic] of Student Affairs is not required. An instructor may choose to counsel the student and offer a remedy (within his/her authority) which is less severe than that required for cheating, providing there was no obvious intent to deceive. However an instructor may not penalize the student for plagiarism in any way without advising the student that a penalty has been imposed. The instructor should further advise that an appeal is possible through the Fairness Board, once the Department Head [sic] has been consulted regarding the appeal. Instructors should be confident that plagiarism has occurred. If there is any doubt, the student should be consulted and/or additional information sought prior to taking action for plagiarism. Students' rights shall be ensured through attention to due process.

Campus Administrative Manual, §684.4

3. Definition of Cheating

Cheating is defined as obtaining or attempting to obtain, or aiding another to obtain credit for work, or any improvement of evaluation of performance, by any dishonest or deceptive means. Cheating includes, but is not limited to: lying; copying from another's test, unless such discussion is specifically authorized by the instructor; taking or receiving copies of an exam without the permission of the instructor, using or displaying notes, "cheat sheets," or other information devices inappropriate to the prescribed test conditions; and allowing someone other than the officially enrolled student to represent same.

Campus Administrative Manual, §684.1

4. University Policy on Cheating

The penalty for cheating requires an "F" course grade and further attendance in the course of is prohibited. However, if a student appeals the charge of cheating, she/he shall be permitted to remain in the class through the appeals process. The instructor is obligated to place evidence of the cheating in writing before the Coordinator of Campus Student Relations and Judicial Affairs with copies to the department head of the student's major. Physical evidence, circumstantial evidence, and testimony of observers may be included. The student should be notified in writing that, if he or she denies cheating, an appeal is possible through the Fairness Board once the department head of the course of records has been consulted regarding the appeal. Instructors should be confident that cheating has occurred; if there is any doubt, the student should be consulted and/or additional information sought prior to taking action for cheating. Student's rights shall be ensured through attention to due process. The Coordinator of Campus Student Relations and Judicial Affairs shall determine if any disciplinary action is required in addition to the assignment of a failing grade. Possible disciplinary actions include, but are not limited to: required special counseling, special paper or research appointments, loss of student teaching or research appointments, loss of membership in organizations, suspension or dismissal from individual programs or from the university. The most severe of these possible actions shall be reserved for a grievous cheating offense or a repeated offense by an individual.

Campus Administrative Manual, §684.2

APPENDIX F
EE DEPARTMENT ACRONYMS
(Updated 9/22/03)

Acronym	Definition	Description
APC	Academic Policies Committee	Committee responsible for developing and modifying departmental academic policies and guidelines.
ARDF	Applied Research and Development Facilities & Activities	Bldg. 4
ARPT	Appointment, Retention, Promotion, Tenure	Refers to faculty appointment procedures, plus the stages of the evaluation process (see also "RPT")
ASI	Associated Students, Inc.	
ATL	Advanced Technology Lab	Bldg. 7 (CENG)
BRAE	Bioresource & Agricultural Education	Bioresource & Agricultural Education department and course prefix
CCS	Computing and Communication Services	
CENG	College of Engineering	
CES	Candidate Evaluation Subcommittee	Three-member subcommittee formed for each probationary faculty member, whose responsibility it is to prepare the draft evaluation document.
CPE	Computer Engineering	Computer Engineering Program (jointly administered by the Electrical Engineering & Computer Science departments) and course prefix
CSC	Computer Science	Computer Science Department and course prefix
FDL	Faculty Development Lab	Our conference room (20-206)
IACC	Instructional Advisory Committee on Computing	Instructional Advisory Committee on Computing
IDHC	Instructional Department Head's Council	Committee of all campus department heads/chairs. Liaison with Provost.
IME	Industrial & Manufacturing	Industrial & Manufacturing Engineering department and course prefix
ITS	Information Technology Services	Campus organization unit that houses CCS, MDS, telecommunication services, etc.
MATE	Materials Engineering	Materials Engineering department and course prefix
MDS	Media Distribution Services	Audiovisual and other equipment check-out
MESA		
PAF	Personnel Action File	Each faculty member's official personnel file that resides in the Dean's office.
PRC	Peer Review Committee	Committee responsible for evaluating probationary faculty members
RPT	Retention, Promotion, Tenure	Stages of the evaluation process
TAC	Technical Area Committee(s)	Six committees (circuits, computers, electronics, microwave & photonics, power, and systems)
TFC	Tenured Faculty Committee	Committee comprised of tenured faculty members
TPFC	Tenured & Probationary Faculty Committee	Committee comprised of both tenured and probationary faculty members
WEP	Women in Engineering Program	
WPAF	Working Personnel Action File	The file that a probationary faculty member prepares each year to provide documentation for the evaluation process.

APPENDIX G
EE DEPARTMENT E-MAIL ALIASES
(Updated 9/22/03)

Alias	Addresses in It
apc	Members of the Academic Policies Committee (APC) Department Chair Diane Van Noy, Judy Parker
awards.cmt	Members of the EE Student Awards Committee Department Chair Judy Parker
ccnotes	eefaculty alias cpefaculty alias Chair of CSC Curriculum Committee <i>(for sending out Curriculum Committee summary notes)</i>
cengadmin	CENG Administrative Assistants
cesahlgren	Candidate Evaluation Subcommittee (CES) for Ahlgren
cesarakaki	Candidate Evaluation Subcommittee (CES) for Arakaki
cesfrench	Candidate Evaluation Subcommittee (CES) for French
cesliddicoat	Candidate Evaluation Subcommittee (CES) for Liddicoat
cesmealy	Candidate Evaluation Subcommittee (CES) for Mealy
cessaghri	Candidate Evaluation Subcommittee (CES) for Saghri
cesslivovsky	Candidate Evaluation Subcommittee (CES) for Slivovsky
cestaufik	Candidate Evaluation Subcommittee (CES) for Taufik
cesyu	Candidate Evaluation Subcommittee (CES) for Yu (Helen)
ceszhang	Candidate Evaluation Subcommittee (CES) for Zhang
circuits.cmt	Members of the Circuits Technical Area Committee Department Chair Diane Van Noy, Judy Parker
comp.cmt	Members of the Computers Technical Area Committee Department Chair Diane Van Noy, Judy Parker
cpeappt	Members of the CPE Appointments Committee: all tenured EE and CS/CPE faculty members Diane Van Noy
cpefaculty	Computer Engineering faculty members Wayne McMorran Diane Van Noy, Judy Parker, Rhonda Walker, Ellen Stier, Ralph Nicovich
cpeprc	prc alias Tenured CS/CPE faculty members
cpescreen	Members of the CPE Screening Committee: all members of EE Appointments Committee, CPE Director, one CS/CPE faculty member
curr.cmt	Members of the Curriculum Committee Department Chair Diane Van Noy, Judy Parker Stacey Breitenbach
deptnotes	eefaculty alias cpefaculty alias

Alias	Addresses in It
	EE Engineering Student Council representative Ellen Stier <i>(to send out summary notes from department meetings)</i>
eefaculty	All tenured, tenure-track, and lecturer faculty, including FERPs. Some retired faculty (Datta, Dickey, Horton, McMorrان, Wassel) Diane Van Noy, Judy Parker, Ralph Nicovich Chair of CSC Department CPE Director
eegrads	EE grad students Graduate Coordinator Department Chair Diane Van Noy, Judy Parker
eestaff	EE staff members Department Chair
eetechs	EE technicians Diane Van Noy
elec.cmtly	Members of the Electronics Technical Area Committee Department Chair Diane Van Noy, Judy Parker
exec.cmtly	Department Chair Associate Department Chair Curriculum Committee Chair TPFC Chair Diane Van Noy, Judy Parker
feecmte	EE Student Fee Allocation Committee (SFAC) members CPE SFAC Representative Diane Van Noy
grad.cmtly	Members of the EE Graduate Committee Department Chair Diane Van Noy, Judy Parker
iac	EE Industrial Advisory Council (IAC) members Department Chair Diane Van Noy iacsub alias
iacsub	Certain IAC substitutes
lab.cmtly	Members of the EE Laboratory Committee Department Chair Diane Van Noy, Judy Parker
lecturers	All active lecturers Diane Van Noy
micro.cmtly	Members of the Microwaves & Photonics Technical Area Committee Department Chair Diane Van Noy, Judy Parker
power.cmtly	Members of the Power Technical Area Committee Department Chair Diane Van Noy, Judy Parker

Alias	Addresses in It
prc	EE Peer Review Committee (PRC) members
retired	Some retired faculty (Datta, Dickey, Horton, McMorran, Wassel)
sched.cmt	Members of the EE Scheduling Committee Department Chair Diane Van Noy, Judy Parker
summer	All faculty teaching during Summer quarter Diane Van Noy
systems.cmt	Members of the Systems Technical Area Committee Department Chair Diane Van Noy, Judy Parker
teachassoc	Grad students who are teaching Graduate Coordinator Diane Van Noy, Judy Parker
Tentrack	All tenure-track faculty members Diane Van Noy
tfc	All Tenured Faculty Committee (TFC) members, including FERPs Diane Van Noy
tpfc	All Tenured & Probationary Faculty Committee (TPFC) members, including FERPs Some retired faculty (Datta, Dickey, Horton, McMorran, Wassel) Diane Van Noy

APPENDIX H
REFERENCES AND FURTHER READING

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