



Student Advisory Board

University of Hawaii at Manoa

College of Engineering

Department of Electrical Engineering

**Comments and Recommendations
for
the Industrial Advisory Board
in Regards to the
Accreditation Board for Engineering and Technology
(ABET)**

October 4, 2001

Front Matter

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The Student Advisory Board (SAB) attests that this document reflects the concerns and opinions of the electrical engineering student body at the University of Hawaii at Manoa.

The SAB would like to acknowledge the following people for assisting with the creation of this document:

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It is under the SAB's request that the following comments and recommendations be considered and/or addressed by the Industrial Advisory Board in regards to the Accreditation Board for Engineering and Technology (ABET) evaluation. Note, recommendations listed are not exhaustive and do not address all comments.

Comments or remarks can be sent to eesab@spectra.eng.hawaii.edu.

1. Scope

This document presents the comments, both positive and negative, of current electrical engineering students. Some comments will be supported with specific examples. Where possible, student recommendations are made to address listed comments.

Comments and recommendations have been organized into six major categories: faculty, coursework, laboratory courses, student projects, facilities, and miscellaneous.

2. Faculty

This category deals with electrical engineering faculty, primarily professors. Critiques are made of faculty instructional and research quality as perceived by the students.

2.1. Comments

- 2.1.1.** The Outstanding Faculty Award is a positive reinforcement for outstanding instructors, and we are glad it exists.
- 2.1.2.** It is great that we have faculty who are significant members of professional societies.
 - 2.1.2.1.** Institute of Electrical and Electronics Engineers (IEEE), Hawaii Section
 - 2.1.2.2.** IEEE Laser and Electro-Optical Society
 - 2.1.2.3.** IEEE Microwave Theory and Techniques Society
 - 2.1.2.4.** IEEE Information Theory Society
- 2.1.3.** Availability of general faculty outside of class is outstanding.
- 2.1.4.** General faculty genuinely care about students
- 2.1.5.** There is a large variance in instructional quality amongst faculty members. Some professors have poor communication skills. This leads to unequal educational quality for students. (see 2.2.3, 2.2.4)
- 2.1.6.** End-of-the-semester evaluations do not appear to have impact on a faculty's future instructional performance. (see 2.2.7)
- 2.1.7.** There are "gaps" in technical specialties within faculty
 - 2.1.7.1.** Currently, there are no faculty in the area of integrated circuits, merging the fields of devices physics and circuit design.
 - 2.1.7.2.** Faculty in the computer track is limited
- 2.1.8.** More student-professor interaction needed in class (see 2.2.3)
- 2.1.9.** Tenured faculty tend to become complacent
- 2.1.10.** High professor turnover rate – need to retain good professors (2.2.5)
 - 2.1.10.1.** Dr. Michael DeLisio

2.1.10.1.1. Outstanding Faculty Award, 1996-7

2.1.10.1.2. Hi Chang Chai Excellence in Teaching Award, 1999-2000

2.1.10.2. Dr. Greg Uehara

2.1.10.2.1. Student Chapter of the IEEE Outstanding Faculty 1994-1995

2.1.11. More faculty are needed in order to offer more courses for students

2.2. Recommendations

2.2.1. Implement a means for professor to utilize his/her strong area. For example, if a professor excels in teaching, he or she should periodically be given the opportunity to teach more than the normal number of courses. In that case, the professor would be alleviated of some (not all) of his/her research responsibilities. Likewise if a professor excels in research, he or she should periodically be given the opportunity to take on a less course load and focus on research. Student and peer evaluations would determine what a professor's strong area is.

2.2.2. Prior to hiring of professor, have a student screening process, whereby student feedback is taken into consideration for faculty employment.

2.2.2.1. For example, have a prospective faculty member do a lecture for the student body, where he or she is judged on instructional quality.

2.2.2.2. Allow the SAB, or another student-representing body, to interview the candidate.

2.2.3. Require that faculty members participate in instructional improvement course or workshop on a periodic basis (every two years)

2.2.4. Require that faculty get evaluated by a peer group on instructional quality

2.2.4.1. Members of the Education Department could serve as evaluators

2.2.4.2. Have an educational expert evaluate professors and provide training

2.2.5. Increase faculty salaries

2.2.6. Institute a faculty board that looks into student concerns about professors

2.2.7. Institute a student board to look over faculty end-of-the-semester evaluations and based on those evaluations, have influence over faculty promotion and raises.

3. Coursework

This category deals with the structure, quality, and requirements of the electrical engineering course curriculum.

3.1. Comments

3.1.1. Relative to other UH courses, EE courses are good.

3.1.2. Students support waiver of foreign language requirement

3.1.3. The track system is too restrictive and not flexible.

3.1.4. Course pre-requisite structure based on mathematics and physics courses need to be re-evaluated. (see 3.2.3, 3.2.4)

3.1.5. Too many courses are just theory (and very little practical applications). More applied examples of problems in courses (see 3.2.5)

- 3.1.6. Too many courses needed to graduate. A reasonable load would consist of 14 credits per semester for four years. (see 3.2.1)

3.2. Recommendations

- 3.2.1. CE270 (Statics) and ME311 (Introduction to Thermodynamics) should not be required
- 3.2.1.1. Almost all students do not use the technical knowledge from either course
 - 3.2.1.2. Skills obtained in the course are already achieved in other technical curriculum.
- 3.2.2. Make textbooks optional for courses with content that does not require usage of textbook
- 3.2.3. Vector calculus (MATH 243) should not be a requirement for Basic Circuit Analysis Course (EE211).
- 3.2.3.1. You do not need to know vector calculus for EE211.
 - 3.2.3.2. Capable students may be held back from taking EE211.
 - 3.2.3.3. It provides potential majors to sample a basic EE211 and see if engineering is for them.
- 3.2.4. Calculus IV (MATH 244) should not be a requirement for Physical Electronics (EE324).
- 3.2.4.1. You do not need to know vector calculus for EE324.
 - 3.2.4.2. Capable students may be held back from taking EE324.
- 3.2.5. More courses should be application driven.
- 3.2.6. Students should review and comment on the course material at the end of the semester.
- 3.2.7. Students should evaluate whether course material objectives (as submitted to ABET) were achieved at the end of the semester.
- 3.2.8. Course material outline should be consistently evaluated by industry. Applicable comments by industry should be incorporated into course material outline.
- 3.2.9. Professors should coordinate required textbooks for related courses whenever possible
- 3.2.9.1. EE211 and EE213 (Circuit Analysis I and II)
- 3.2.10. Reinstate EE101 course as an overview of electrical engineering
- 3.2.10.1. Include ethics and miscellaneous issues in this course
 - 3.2.10.2. Get qualified teaching assistants, graduate students, or seniors to teach EE101
- 3.2.11. Reinstate specialized courses
- 3.2.11.1. Biomedical engineering courses
 - 3.2.11.2. Power electronic courses
- 3.2.12. Create a Matlab tutorial/course, as well as a Matlab manual
- 3.2.13. Linear algebra should be a program elective, as it is applicable to many electrical engineering courses

4. Laboratory Courses

This category deals with the material, procedures, and teaching assistants involved in the laboratory courses.

4.1. Comments

- 4.1.1. The laboratory courses need to follow the actual course pace more coherently and closely. Currently, laboratory experiments do not directly relate to current topics discussed in class, and in some cases, are ahead of the course material covered. (see 4.2.4, 4.2.5)
- 4.1.2. Although functional, lab equipment is outdated.
- 4.1.3. Lab supplies and components are disorganized and broken. Students waste valuable lab time rummaging through “pile” of supplies.
 - 4.1.3.1. Numerous “fried” operational amplifiers found
 - 4.1.3.2. There is one wire cutter for the entire EE211 laboratory.
 - 4.1.3.3. There are faulty breadboards.
- 4.1.4. The majority of teaching assistants are not of adequate instructional quality. (see 4.2.2, 4.2.3)
 - 4.1.4.1. There is a language barrier between some teaching assistants and students
 - 4.1.4.2. Teaching assistants need to be more aware of students' competence level
 - 4.1.4.3. Some teaching assistants need more familiarity and/or understanding of material
- 4.1.5. The labs for EE160 and EE260 are very interesting and useful.

4.2. Recommendations

- 4.2.1. More laboratory courses should be more design-oriented.
- 4.2.2. Teaching assistants need better instructional skills
 - 4.2.2.1. Have teaching assistants go through seminar on communication and teaching
 - 4.2.2.2. Have teaching assistants meet regularly with the professor to discuss the progress of the course and how the lab can supplement the course's content.
- 4.2.3. Increased incentives for teaching assistants to perform well
- 4.2.4. Increase integration of lab with lecture material
- 4.2.5. Increase professor involvement with the lab content

5. Student Projects

This category deals with the organization and quality of student projects.

5.1. Comments

- 5.1.1. Having student projects courses (i.e. EE196, EE296, EE396, and EE496) every year as part of the curriculum requirements is good.
- 5.1.2. There is a large variance in quality and level of difficulty of student projects. (see 5.2.1, 5.2.2)
- 5.1.3. Students doing project for the first time (freshmen and sophomore level) have difficulty deciding on a project topic.

5.2. Recommendations

- 5.2.1. Develop standards and a form of measure for student projects.
 - 5.2.1.1. Have deliverables (e.g. report) be submitted to EE office for documentation and review.
 - 5.2.1.2. Possible projects should be considered and discussed with a student during the advising process.

- 5.2.2. Have a day/week of presentations for all student projects.
- 5.2.3. Compile a list of student projects so that interested students and faculty can have the opportunity to attend and observe all of the presentations.
 - 5.2.3.1. The list should include a brief description of each project, and information about the time and location of each presentation.

6. Facilities

This category deals with the quality of the department facilities.

6.1. Comments

- 6.1.1. It is great that courses like EE160, EE260, and EE473 are using the Kim Lab.
- 6.1.2. Facilities are either really good or really bad.
- 6.1.3. Need more PCs in POST 208 computer lab
- 6.1.4. We need more state-of-the-art facilities like the Kim Lab.

6.2. Recommendations

- 6.2.1. Allocate an area for a student lounge/study area
- 6.2.2. Holmes courtyard cleaned/landscaped
- 6.2.3. The Physical Electronics Lab (PEL) should be used.

7. Miscellaneous

This category deals with miscellaneous topics.

7.1. Comments

- 7.1.1. Rank of College of Engineering, University of Hawaii is falling in national rankings
- 7.1.2. Classes too large (maximum should be 15-20 students per class)

7.2. Recommendations

- 7.2.1. Advising process should be streamlined, made less confusing for first-year students
- 7.2.2. More tutoring available to students
 - 7.2.2.1. HKN provide limited time slots for certain courses
 - 7.2.2.2. Tutoring services should be at POST or Holmes Hall
- 7.2.3. There should be a minimum standard in place for students
 - 7.2.3.1. Have a student gateway exam that is the same no matter which professor you have
- 7.2.4. Create a student-representing body to implement an ethics enforcing program.
 - 7.2.4.1. The selected honor council would judge cases of ethics violation

8. Student Advisory Board Survey

A survey was distributed amongst the student body to obtain their general opinion on certain topics: faculty instructional quality, quality of laboratory, coursework structure, quality of laboratory course facilities, quality of research facilities, quality of student design projects, quality of student activities in the department, quality of ethics amongst students, and quality of ethics amongst faculty. The results are summarized in Table 8.1. The actual survey is attached to the report.

Topics	5	4	3	2	1	Ave. Score
Faculty Instructional Quality	7.32%	56.10%	31.71%	4.88%	0.00%	3.67
Quality of Laboratory	4.88%	14.63%	12.20%	43.90%	24.39%	2.18
Coursework Structure	12.20%	39.02%	43.90%	4.88%	0.00%	3.55
Quality of Laboratory Course Facilities	2.44%	12.20%	26.83%	46.34%	12.20%	2.48
Quality of Research Facilities	7.32%	41.46%	34.15%	9.76%	7.32%	3.39
Quality of Student Design Projects	17.07%	39.02%	36.59%	7.32%	0.00%	3.61
Quality of Student Activities in the Department	4.88%	24.39%	46.34%	17.07%	7.32%	3.06
Quality of Ethics Amongst Students	14.63%	46.34%	29.27%	4.88%	4.88%	3.52
Quality of Ethics Amongst Faculty	24.39%	51.22%	14.63%	4.88%	4.88%	3.85

Table 8.1: Student Responses to Student Advisory Board Survey

Notes:

1. 41 students were surveyed.
2. Rating of 1 = Poor, Rating of 5 = Excellent.
3. Listed are percentages of students for a given rating.

It is under Student Advisory Board's request that the following comments and recommendations be considered and/or addressed. We have broken the topics into seven categories: faculty, coursework, lab, student project, extra-curricular, facilities, and ethics.

Faculty

Comments

- Large variance in instructional quality of faculty
- Student evaluations do not appear to have impact
- Outstanding Instructor award is positive form of reinforcement for quality faculty
- There are "gaps" in technical specialties within the faculty.
 - No integrated circuits faculty, margining device and circuits
 - Limited computer track professors
- Great to have faculty who are significant members of professional societies
 - IEEE
 - MTTS
- Most professors in the EE faculty are interactive
- Availability of professors for office hours is outstanding

Recommendations

- Implement a means to allow professor to utilize strong area (instruction or research)
- Prior to hiring of professor, have a student screening process, whereby student feedback is taken into consideration for faculty employment.
 - Have a prospective faculty member do a lecture for the student body, where he or she is judged on instructional quality
- Require that faculty members participate in instructional improvement course or workshop on a periodic basis (every two years).
- Require that faculty get evaluated by a peer group on instructional quality
 - Members of the Education Department could serve as evaluators

Coursework

Comments

- The track system is too restrictive and not flexible
- CE270 and ME311 should not be required
- Course pre-requisite structure based on mathematics and physics courses need to be re-evaluated

243 (Calc 3) -> 211

Calc 4 -> 324

- Courses should contain more applications
- Relative to other UH courses, EE courses are good

Recommendations

- Mathematics and physics courses should be pre-requisite for courses that require them.
- Course material outline should be re-evaluated every three years
- Students should review and comment on course material at the end of the semester.
- Students should evaluate whether course material objectives were achieved at the end of the semester.
- Course material outline should be consistently be evaluated by industry

Labs

Comments

- Should be more design-oriented
- Need to follow pace and material of course
- Lab equipment is out-dated
- Teaching assistants need better instructional skill

Student Projects

Comments

- Large variance in quality of student projects

Recommendations

- Develop standards and a form of measure for student projects
 - Have deliverables (e.g. report) be submitted to EE office for documentation and review
 - Have a day of presentations for all student projects

Student Activities

Comments

- Students tend not to join or participate in clubs

Facilities

Comments

- They are really good or really bad.

Recommendations

- Integrate state-of-the-art facilities with coursework

Ethics

Comments

- Ethics course should have clear standards
- Ethics (e.g. cheating) is not a big problem in department

Recommendations

- Implement ethics enforcing program
 - Honor council to judge cases of ethics violation