

Curricular and Student Characteristics of Accredited Engineering/General Engineering Programs

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1. Introduction

The majority of accredited engineering programs in the United States are discipline-oriented programs, such as electrical engineering, mechanical engineering, etc., for which the Accreditation Board for Engineering and Technology (ABET) accreditation criteria comprise both the general criteria that apply to all accredited engineering programs and the accompanying program criteria for that specific area of engineering. The remaining set of accredited engineering programs has no applicable program criteria. These programs are accredited under the general criteria only. Some of these programs also have descriptors that include an adjective that accompanies the word engineering in their title but for which there are no applicable program criteria. Within this subset of accredited programs for which there are no program criteria, an earlier paper reviewed the general status and uses of Engineering programs (the set of programs for which the program name is Engineering or General Engineering).¹ Another paper focused on the history and trends among both Engineering and Engineering Science programs.² This present paper focuses again on the subset of the programs accredited under the general criteria; specifically, Engineering or General Engineering. Specifically, this paper explores the curricular and student characteristics of these programs.

2. Methodology

The institutions offering accredited engineering or general engineering programs were obtained from ABET at http://www.abet.org/accredited_programs/engineering/EACWebsite.asp, with Search by Discipline (select Engineering). From that list of 32 programs, 31 programs named Engineering (29), General Engineering (1) and Engineering (General) (1) were selected for this study. The list of these 31 institutions, with program titles, accreditation dates, and locations is given in Appendix 1.

A contact name for each program was obtained from the ASEE engineering program directory at <http://www.asee.org/publications/colleges/default.cfm>. A questionnaire with brief introduction was sent to that contact address, with the request for response. A copy of the questionnaire is included in Appendix 2. Second and third requests were sent to programs from which responses had not yet been received, in some cases to new names obtained from a search of the program information at the school's web site. Responses were received from a total of 20 of the 31 programs, for a 65% response rate. The 20 respondents and their institutions are acknowledged in Appendix 3.

These institutions range from small private liberal arts (including several church-affiliated) colleges to state university campuses and branches. They include programs first accredited in 1936 and as recently as 1999.

The questionnaire and the accompanying analysis make the distinction between two categories. Category A represents institutions in which the Engineering program is the only engineering program offered on the campus. Category B represents institutions for which other engineering programs in addition to the Engineering program are offered on the campus. The complete responses are included in Appendix 4 for institutions where the Engineering program is the only engineering program on campus, and in Appendix 5 for institutions where the Engineering is not the only engineering program on campus. The responses are not in the same order by institution from question to question. Unfortunately, this eliminates some important relationships among the responses that would be of interest, but seemed necessary since anonymity was promised in the questionnaire solicitation.

3. Analysis and Observations for Institutions with only Engineering on Campus (category A)

Following is a summary of the data and comments from the respondents for the 14 Engineering programs on campuses where they were the only engineering program.

A1. The number of graduates during 2003 ranged from 8 to 64, with a mean of 35 and an average of 34.

A2. The trend in the number of graduates is generally stable, ranging from cyclical variation to stable to growth, and generally equal or better than campus overall.

A3. With regard to why the Engineering program was the only engineering program on campus, most (11 of 14) indicated some combination of size, history and philosophy. Two indicated that state limitations require new programs to be distinct or unique.

A4. Most (10 or 14) felt that prospective students select the field (engineering) first then the institution, although 3 felt it was a combination decision and 1 that it was the institution first.

A5. Nearly all respondents indicated that the Engineering program is more highly regarded among the students than other similar programs on campus. Most regarded the distinction quite dramatic.

A6. Credit hours required for graduation ranged from 128 to 138 semester hours for the 13 institutions with this method of descriptions (3 used credits or courses, with precluded direct comparison). The medial was 133.5 and the average was 133.7.

A7. For the 13 institutions with credit hour measure, the minimum number of hours that must be taken outside of engineering ranged from 39 (out of 136 for the degree) to 80 (out of 128 for the degree). The average was 60, and the median was 57. In terms of percent of total degree requirements, the minimum was 28.6% (39 of 136) and the maximum was 62.5% (80 of 128).

A8. For the 13 institutions with credit hour measure, the minimum number of hours that must be taken in engineering ranged from 48 to 90. In terms of percent of total degree requirements, the minimum was 37.5% (48 of 128) and the maximum was 67.2% (90 of 134).

A9a). Respondents reported that prospective students' views of the program ranged from "usually prefer designated degree" and "with reservations" to good to great" and "drawn by cross discipline nature."

A9b). Respondents reported that current students' views of the program ranged from "see little difference but realize others outside think there is" and "similar to other programs" to "find program challenging and rigorous in comparison to others" and "students remain attracted by interdisciplinary approach."

A9c). Respondents reported that alumni views of the program ranged from "see little difference and liked the degree they received" and "positive" to "passionately in favor of the general nature of the program" and "strongly believe program gives them an advantage in their career."

A9d). Respondents reported that employers' views of the program ranged from "prefer traditional degrees but see little difference with our grads" "generally favorable" to "employers return to hire more of our grads, appreciate their skills" and "with gratitude for a well-rounded engineering."

A10. With regard to the characteristic of their Engineering program of which they were most proud, respondents replies ranged from "very close working/teaching relationship between students and faculty" and "grounding of students in fundamentals in supportive leaning environment" to "excellent students" and "substantial number of graduates now lead technology-based companies."

4. Analysis and Observations for Institutions with Other Engineering on Campus (category B)

Following is a summary of the data and comments from the respondents for the 6 Engineering programs on campuses where they were the only engineering program.

B1. With regard to the sequence of development, the Engineering program was the first engineering program on two of the six campuses, while other engineering programs were first on four of the six campuses.

B2. The number of Engineering graduates during 2003 ranged from 1 to 280 on these six campuses.

B3. The number of Engineering program graduates has ranged from relatively stable to increasing significantly over recent years, with the Engineering program trend generally equal to or better than that of other engineering programs.

B4. With regard to admission requirements, all engineering programs have the same requirements on five of the campuses. On one campus, other engineering programs have slightly higher admission requirements.

B5. With regard to entering student qualifications for Engineering students compared to other engineering students, three respondents indicated that they were the same or about the same. One said Engineering students' qualifications were about the same or slightly above, while two noted the bimodal effect of those who selected the Engineering program because of its flexibility and tended to be better qualified and those who selected the Engineering program to avoid obstacles (courses or requirements they did not like, or first choice was not granted)

B6. With regard to gender balance, most respondents reported results about the same as other programs, but ranging from "so far all Engineering students have been male" to "highest % of female attributed to supportive environment."

B7. Respondents reported that the number of hours required for graduation ranged from 128 to 140, with an average 132.6. Specific numbers were provided by five respondents (128, 128, 131, 136, 139.5-141.5).

B8. Hours required for graduation were the same for all engineering programs on five campuses but other engineering programs required 9 hours more on one campus.

B9. The minimum number of hours that must be taken outside of engineering, according to the respondents, ranged from 52 to 91 (with one saying no minimum number), with a median of 60 and an average of 66.4.

B10. According to five of the respondents, the minimum number of hours that must be taken in engineering ranged from 48 to 76, with an average of 58.2 hours. One respondent reported "ABET minimum criteria."

B11. Regarding transfer between Engineering and other engineering programs, three respondents suggested that transfers in and out approximately balanced, two said more transfers into Engineering (the latter citing "awareness after students are on campus" and "to gain flexibility or avoid obstacles"). One wrote "transfers are not tracked."

B12. With regard to the comparison of placement for Engineering and other engineering students, two indicated a disadvantage for Engineering graduates ("lower recently, because of poor job market and larger program" and "others receive more job offers"), two indicated "don't know," one indicated "same" and one indicated "highest job placement among engineering programs (student flexibility/adaptability, etc.)"

B13a). Respondents reported that prospective students' views of the program ranged from "prefer designated program by a large margin" and "they are unaware of the program" to "love flexibility and specialization."

B13b). Respondents reported that current students' views of the program ranged from "they are interested but concerned about job prospects" to "students come to view it as useful" and "feel well rounded and wanted a program that did not limit them."

B13c). Respondents reported that alumni views of the program ranged from "don't know" to "good opinion of the program" and "would do it again without hesitation."

B13d). Respondents reported that employers' views of the program ranged from "those without experience still have a questioning view" to "very much in demand because of broad knowledge and leadership."

B14. To the question "Of what characteristic of the program are you most proud, respondents replied: maintaining the interdisciplinary core, flexibility to combine engineering with some other interests, the specializations, the flexibility that student can design their own program, interdisciplinary nature and adaptability (from idea to consumer, effective communication skills, business, principles understand the "whole").

5. Conclusion

This review clearly presents the diversity of institutions and contexts that provide undergraduate students with the opportunity a general Engineering program. Indeed, that may be one of the unique characteristics of the institutions and the students who offer or receive an Engineering education. It appears that one can safely conclude that Engineering programs, while graduating only a fraction of the total of engineers each year, are and will continue to fill an important niche among higher educational institutions by providing an unique educational program for students with specialized situation (college experience, career interests, geographical location).

While these Engineering programs may not be considered mainstream by many observers, they clearly have their unique place in American higher education. Nonetheless, it remains clear that they are not well understood by the population at large or even by many employers. While certainly not universally true, perhaps the current situation is well characterized by one of the respondents to the survey on which this paper is based. That engineering educator wrote about the views of Engineering program constituencies that:

prospective Engineering students view the program "with suspicion,"
current Engineering students view the program "with guarded optimism,"
alumni view the program "with appreciation for the broader experience," and
employers view the program "with gratitude for a more well-rounded engineer."

Bibliography

[1] James Farison and Byron Newberry, "The current status and uses of the general (undesigned) engineering program with a case study," ASEE Annual Conference and Exhibition, (Proceedings, CD-ROM, #1765, 9 pages), Nashville, Tennessee, June 22-25, 2003.

[2] Byron Newberry and James Farison, "A look at the past and present of general engineering and engineering science programs, *Journal of Engineering Education*, 93(3):217-226, July 2003.

Biography

Jim Farison joined Baylor University in August 1998 as Prof. and chair of Engineering, after serving in Electrical Engineering (64-96) and Bioengineering (96-98) at the U. of Toledo, including a period as Dean of Engineering (70-80). He holds BSEE, U. Toledo, MSEE and PhD, Stanford U., P.E. (Ohio, Texas), sr. member IEEE, ASEE campus representative and Multidisciplinary Engineering vice chair, and has served as an IEEE ABET/EAC evaluator.

Byron Newberry is Assoc. Prof. of Engineering at Baylor University, and chairs the faculty committee that oversees Baylor's Engineering major. He joined Baylor in 1994, after serving as Asst. Prof. of AE&EM at the Univ. of Cincinnati (1989-1994) and Research Associate at the Center for Nondestructive Evaluation, Iowa State Univ. (1985-1988). His degrees are BSAE from the Univ. of Alabama, and MSAE and PhDEM from Iowa State Univ.

Appendix 1 - ABET Accredited Programs Named Engineering or General Engineering

<u>School</u>	<u>Program Title [accreditation date]</u>	<u>Location</u>
Arkansas State University	Engineering (BS) [1987]	State University, AR
Baylor University	Engineering (BSE) [1989]	Waco, TX
Calvin College	Engineering (BS) [1987]	Grand Rapids, MI
Colorado School of Mines	Engineering (BS) [1983]	Golden, CO
Dartmouth College	Engineering (BS) [1936]	Hanover, NH
Denver, University of	Engineering (General) (BS) [1999]	Denver, CO
Dordt College	Engineering (BS) [1991]	Sioux Center, IA
Geneva College	Engineering (BS) [1995]	Beaver Falls, PA
Grand Valley State University	Engineering (BS) [1990]	Allendale, MI
Harvey Mudd College	Engineering (BS) [1962]	Claremont, CA
Hope College	Engineering (BS) [2000]	Holland, MI
Idaho State University	Engineering (BS) [1985]	Pocatella, ID
Illinois at Urbana-Champaign, University of	General Engineering (BS) [1936]	Urbana, IL
John Brown University	Engineering (BS) [1997]	Siloam Springs, AR
LeTourneau University	Engineering (BS) [1988]	Longview, TX
Maryland, College Park, University of	Engineering (BS) [1976]	College Park, MD
McNeese State University	Engineering (BS) [1981-88; 1989]	Lake Charles, LA
Mercer University	Engineering (BS) [1990]	Macon, GA
Messiah College	Engineering (BS) [1994]	Grantham, PA
Michigan Technological University	Engineering (BS) [1975]	Houghton, MI
Oklahoma, The University of	Engineering (BS) [1960]	Norman, OK
Olivet Nazarene University	Engineering (BS) [2000]	Kankakee, IL
Oral Roberts University	Engineering (BS) [1994]	Tulsa, OK
Roger Williams University	Engineering (BS) [2000]	Bristol, RI
Stevens Institute of Technology	Engineering (BS) [1936]	Hoboken, NJ
Swarthmore College	Engineering (BS) [1936]	Swarthmore, PA
Tennessee at Chattanooga, University of	Engineering (BS) [1977]	Chattanooga, TN
Tennessee at Martin,	Engineering (BS) [1999]	Martin, TN
Texas Christian University	Engineering (BS) [1997]	Fort Worth, TX
Trinity College	Engineering (BS) [1994]	Hartford, CT
Walla Walla College	Engineering (BS) [1971]	College Place, WA

- A4. Do you believe your entering students predominantly select their program area (engineering) and then the institution, or vice versa?
- A5. How do your students view your program (quality, reputation, placement, etc.), in comparison with the most similar other programs (sciences, math, etc.) on your campus?
- A6. What is the number of hours required for graduation?
- A7. What is the minimum number of hours that must be taken outside of engineering ____ ? How explicitly are these hours outside of engineering specified (specific courses, specific areas, distribution, etc.)?
- A8. What is the minimum number of hours that must be taken in engineering ____ ? How explicitly are these hours in engineering specified (specific courses, specific areas, distribution, etc.)?
- A9. How do you find your program viewed in comparison with designated engineering programs (CE, EE, ME, etc.) on other campuses:
- a) by prospective students
 - b) by current students
 - c) by alumni
 - d) by employers
- A10. Of what characteristic of your Engineering program are you most proud?
- A11. Are there other characteristics of your program and/or experiences you would like to add?

B. IF THERE ARE OTHER ACCREDITED ENGINEERING PROGRAMS ON YOUR CAMPUS, PLEASE CONTINUE HERE.

- B1. Was the (general) Engineering program the first engineering program on your campus, or were there other engineering programs on campus when it started? If the latter, why was the Engineering program started?
- B2. What was the number of graduates during calendar 2003 from this program?
- B3. In recent years, is the number of graduates from this program relatively stable, or is it generally increasing or generally decreasing (and, if so, by roughly how much)? How does this compare with the other engineering programs on your campus?
- B4. Compared to the other engineering program(s) on your campus, does this program have about the same, higher, or lower admission requirements? What is/are the primary reason(s) for any difference(s)?
- B5. Is the average entering student in your program generally considered about the same, more highly or less highly qualified than those in the other engineering programs? What is/are the primary reason(s) for any difference?
- B6. Is the male/female student ratio in your program about the same as, higher, or lower than other engineering programs on your campus? What is/are the primary reason(s) for any difference?
- B7. What is the number of hours required for graduation?
- B8. Is the number of hours required for graduation about the same as, higher, or lower than other engineering programs on your campus? What is/are the primary reason(s) for any difference?
- B9. What is the minimum number of hours that must be taken outside of engineering ____ ? How explicitly are these hours outside of engineering specified (specific courses, specific areas, distribution, etc.)?

B10. What is the minimum number of hours that must be taken in engineering _____? How explicitly are these hours in engineering specified (specific courses, specific areas, distribution, etc.)?

B11. Is there more student transfer into and/or out of the Engineering major than the other engineering programs on your campus? If so, to what do you attribute the differences?

B12. Are placement results for engineering majors about the same, higher, or lower than those of the designated engineering programs? If higher or lower, to what do you attribute the difference?

B13. How do you find your program viewed in comparison with the designated engineering programs (CE, EE, ME, etc.) on your campus:

- a) by prospective students
- b) by current students
- c) by alumni
- d) by employers

B14. Of what characteristic of your program are you most proud?

B15. Are there other characteristics of your program and/or experiences you would like to add?

Please return your completed questions ASAP by email (within message or by Word attachment) to Jim_Farison@baylor.edu.

Appendix 3 - Questionnaire Respondents and their Institutions

Designations - Category A represents institutions in which the Engineering program is the only engineering program offered on the campus. Category B represents institutions for which other engineering programs in addition to the Engineering program are offered on the campus.

<u>School</u>	<u>Respondents</u>
Category A Engineering Program Only (14 responses)	
Arkansas State University	Rick Clift
Calvin College	Steve VanderLeest
Dartmouth College	Eric Hansen
Dordt College	Nolan Van Gaalen
Harvey Mudd College	Anthony Bright
John Brown University	Ken French and Shermana Philpott
LeTourneau University	Paul Leiffer
Messiah College	Carl Erikson
Oral Roberts University	Dominic Halsmer
Swarthmore College	Erik Cheever
Tennessee at Chattanooga, U. of	Phil Kazemersky
Tennessee at Martin, U. of	Richard Helgeson
Trinity College	Joseph Palladino
Walla Walla College	Robert Wood
Category B Other Engineering Programs (6 responses)	
Baylor University	Byron Newberry
Colorado School of Mines	David Munoz
Denver, University of	Ronald DeLyser
Idaho State University	Jay Kunze
Illinois at Urbana-Champaign, U. of	Manssour Moeinzadeh
Michigan Technological University	Sheryl Sorby

Appendix 4 - Responses from Category A (Engineering program is the only engineering program on campus). Responses vary in order from question to question so that specific respondents are not easily identified.

A. IF YOUR ENGINEERING OR GENERAL ENGINEERING PROGRAM IS THE ONLY ENGINEERING PROGRAM ON YOUR CAMPUS, PLEASE CONTINUE HERE.

A1. What was the number of graduates during calendar 2003 from your Engineering program?
8, 9, 16, 20, 22, 25, 30, 35, 35, 51, 53, 55, 56, 64

A2. In recent years, is the number of graduates from this program relatively stable, or is it generally increasing or generally decreasing (and, if so, by roughly how much)? How does this compare with the campus as a whole?

- slight decrease from 2000, relatively stable last two years
- somewhat cyclical (next two years down, then up), campus relatively stable
- graduates relatively constant, campus % has dropped from 45% to 35% over past 10 yrs
- stable
- relatively stable
- relatively stable, same as campus
- number of graduates is relatively stable, compares well with campus as a whole
- both are relatively stable
- generally stable, campus has increased slightly
- stable over past six years, science enrollment up through 1990s, then down modestly
- increasing slightly more than campus total
- increasing, campus is increasing somewhat more slowly
- generally increasing (about 5% per year)
- growth at 12%/year from 1995 to 2002, stable last two years

A3. Why does the institution offer only this type of engineering program (mandate, size, philosophy, history, etc.)?

- philosophy (3)
- size (2)
- size and philosophy (2)
- philosophy and history
- size and history and philosophy
- accreditation and class size
- then size now choice
- distinct
- state requirement of uniqueness
- institutional emphasis

A4. Do you believe your entering students predominantly select their program area (engineering) and then the institution, or vice versa?

- | | |
|-------------------------------------|---|
| Institution first, then engineering | 1 |
| Institution and program equally | 3 |

A5. How do your students view your program (quality, reputation, placement, etc.), in comparison with the most similar other programs (sciences, math, etc.) on your campus?

similar in all respects
more difficult, but higher quality
second largest science major (behind biology) and sixth largest overall
better and offering more opportunities
quality and good placement (many are working part-time prior to graduation)
quality and reputation for service
high on quality and reputation, okay on placement
very positively, particularly placement
program record exemplary but not necessarily better than others
high rating on all counts
superior
strong reputation, flagship program on campus
engineering and nursing are recognized as best math/science programs
students among top on campus, judged by class rank and academic honors

A6. What is the number of semester hours required for graduation?

32 credits, 36 credits, 128, 129, 132, 133, 133, 133.5, 134, 136, 137, 137, 138,
about 140 (35 courses)

A7. What is the minimum number of hours that must be taken outside of engineering? How explicitly are these hours outside of engineering specified (specific courses, specific areas, distribution, etc.)?

20 of 32 credits (4 math, 4 science, 3 humanities, 3 social science, 6 other)
19 of 44 courses (2 English/composition, 3 for. lang., 5 HSS, world culture, 9 math/sci)
18.5 of 36 credits (arts, humanities and social science, 10.5 math and science)
39 of 136 hrs (general studies) - math and science?
44 of 134 hrs (various general education courses in specific areas) - math & science?
54 of 129 hrs (specific courses in ethics, aesthetics, global, social + 15 hrs elective)
56 of 132 hrs (most specific courses, some electives in humanities, soc sci, arts)
56 of 137 hrs (specific courses)
57 of 133 hrs (specific math/science, general education by approval of distribution)
67 or 137 hrs (specific math/sci/Eng comp/comp, elect in math, lit/history,HSS, Bible)
68 of 134 hrs (29 general studies, 19 math, 17 science, 3 computer)
70.5 of 133.5 hrs (specific areas in gen educ; specific courses in math, sci, engr)
73 of 138 hrs (mix of math/science, general education and distribution)
80 of 128 hrs (40 hrs math/sci explicitly required courses, 32 hrs HSS specific, 8 elective)

A8. What is the minimum number of hours that must be taken in engineering ? How explicitly are these hours in engineering specified (specific courses, specific areas, distribution, etc.)?

12 of 32 credits (6 specific courses, 6 elective courses)
13.5 of 36 credits
19 of 44 courses (9 for BA, 10 more for BS)

48 of 128 hrs (39 hrs explicitly required, 9 hrs elective)
 59 of 137 hrs (29 hrs in common core, 30 in concentration area)
 61 of 134 hrs
 61 of 138 (mostly specific course, some in specific areas)
 63 of 133 hrs
 63 of 133.5 hrs (specific courses, depending on emphasis)
 75 of 129 hrs (51 hrs in engineering core, 24 hrs in one specialty)
 76 of 132 hrs (33 in core, mostly required, plus 43 in concentration areas)
 76 of 136 hrs
 81 of 137 hrs (mostly specific courses, a few electives)
 90 of 134 hrs (basic and core courses required, then one concentration)

A9. How do you find your program viewed in comparison with designated engineering programs (CE, EE, ME, etc.) on other campuses:

- a) by prospective students usually prefer designated degrees, similar to other programs with reservations
 uncertain-most are unfamiliar with various curricula
 questioning
 quite favorably, with suspicion
 mostly positive but occasionally questioning
 concentrations are necessary but satisfactory
 similar to other programs
 favorable (not a problem in recruiting)
 attracts students desiring an interdisciplinary approach
 comparable but with smaller classes and PhD professors
 good to great
 drawn by cross discipline nature
- b) by current students see little difference but realize others outside think there is similar to other programs
 satisfied
 with conviction
 comparable but smaller classes and instruction by PhD professors, some take an additional concentration
 with guarded optimism
 favorable, this does not seem to be a problem
 positive
 know from student competitions, internships they are competitive
 quite favorably
 good to great
 find program challenging and rigorous in comparison to others
 students remain attracted by interdisciplinary approach
- c) by alumni see little difference and like the degree they received
 positive
 very satisfied

passionately in favor of the general nature of the program
with appreciation for the broader perspective
appreciate breadth, permeating perspective on engineering and life
comparable but with smaller classes, instruction by PhD professors
feel prepared to compete, no disadvantage in workplace
well prepared and competitive with others
often surprised they easily compete in workplace, better GS prep
strongly believe program gives them an advantage in their careers
with enthusiasm
great
superior

d) by employers

prefer traditional degrees but see little difference with our grads
general program w/specialization equivalent to traditional program
generally favorable
mostly positive, in rare cases employer is unfamiliar with program
comparable, and more broadly educated
graduates thought highly of in areas where our program is known
great
very positive, valuable to companies that have hired our graduates
more interested in specific skills (than the degree title)
want broad competence, team skills, big picture, communication
well received
employers return to hire more of our grad, appreciate their skills
with gratitude for a well-rounded engineer
with economic support

A10. Of what characteristic of your Engineering program are you most proud?

very close working/teaching relationship between students and fac.
close student-faculty research interaction
grounding of student in fundamentals, supportive learning environ
integration of faith and learning within a broad technical program
spiritual values in teaching, low student-fac ratio, sr. design project
students seeing their calling to live, work as servants of the Lord
graduates have strong work ethic and strength in fundamentals
our graduates work ethic and character
service-based team-oriented hands-on projects, mentoring relation
our students who do very in regional and national competitions
individual student attention, their accomplishment after graduation
our engineering clinic program
excellent students
substantial no. of graduates now lead technology-based companies

A11. Are there other characteristics of your program and/or experiences you would like to add?

Appendix 5 - Responses from Category B (Engineering program is one among other engineering programs on campus)

B. IF THERE ARE OTHER ACCREDITED ENGINEERING PROGRAMS ON YOUR CAMPUS, PLEASE CONTINUE HERE.

B1. Was the (general) Engineering program the first engineering program on your campus, or were there other engineering programs on campus when it started? If the latter, why was the Engineering program started?

First (2) Others first (4)

Reasons: creative curricula/incubator, innovation/flexibility, from teaching drawing, additional specialties

B2. What was the number of graduates during calendar 2003 from this program?

1, 5, handful, 38, 72, 280

B3. In recent years, is the number of graduates from this program relatively stable, or is it generally increasing or generally decreasing (and, if so, by roughly how much)? How does this compare with the other engineering programs on your campus?

relatively stable

relative stable/increasing slightly

no particular trend; others growing moderately

increasing about 8% per year

fluctuating (109, 58, 72); others similar

increasing about 30 per year; others are stable or shrinking

B4. Compared to the other engineering program(s) on your campus, does this program have about the same, higher, or lower admission requirements? What is/are the primary reason(s) for any difference(s)?

Same, same, same, same, same, a couple of programs have slightly higher

B5. Is the average entering student in your program generally considered about the same, more highly or less highly qualified than those in the other engineering programs? What is/are the primary reason(s) for any difference?

same

nominally the same for all engineering programs

about the same

generally the same or slightly above

two reasons (highly motivated and seeking flexibility, could not get program of choice)

bimodal tendency (flexibility for highly qualified, obstacle avoidance for less qualified)

B6. Is the male/female student ratio in your program about the same as, higher, or lower than other engineering programs on your campus? What is/are the primary reason(s) for any difference?

all so far are male (very small sample)

all so far are male
more males (?)
about the same (15% F)
about the same (4:1 M:F),
highest % of female attributed to supportive environment

B7. What is the number of hours required for graduation?

128 (same)
128 (others are 137)
131 (about same as others)
136 (same)
139.5-141.5 (about the same)
same

B8. Is the number of hours required for graduation about the same as, higher, or lower than other engineering programs on your campus? What is/are the primary reason(s) for any difference?
same, same, same, about the same, about the same, specializations require 9 more

B9. What is the minimum number of hours that must be taken outside of engineering? How explicitly are these hours outside of engineering specified (specific courses, specific areas, distribution, etc.)?

no minimum number
52 (designated hours in four categories)
60 (32 math/bsci, 28 gen ed)
about 60 (math/bsci, gen ed, electives)
69 (all but foreign language and ethics are specified courses)
91 (nine categories)

B10. What is the minimum number of hours that must be taken in engineering? How explicitly are these hours in engineering specified (specific courses, specific areas, distribution, etc.)?

ABET criteria minimum
48 (26 in core, 22 in emphasis area)
52 (26 specific course, 26 electives-some within sets)
55
60-61 (54-55 specific courses, 6 electives)
76 (37 in interdisciplinary core, 11 in technical core, 26 in specialization, 2 elective)

B11. Is there more student transfer into and/or out of the Engineering major than the other engineering programs on your campus? If so, to what do you attribute the differences?

transfers are not tracked
neither
about equal
small either way
more transfer in (gain flexibility, avoid obstacles)
into (awareness after students are on campus)

B12. Are placement results for engineering majors about the same, higher, or lower than those of the designated engineering programs? If higher or lower, to what do you attribute the difference?

- lower recently, because of poor job market and larger program
- others receive more job offers (but gen. engr. majors quite respected on the job)
- don't know
- don't know
- same
- highest job placement among engineering programs (student flexibility/adaptability, etc.)

B13. How do you find your program viewed in comparison with the designated engineering programs (CE, EE, ME, etc.) on your campus:

- a) by prospective students
 - prefer designated programs by a large margin
 - probably do not have much idea what it is
 - they are unaware of the program
 - about the same
 - the best available, most flexibility and allows them to individualize
 - love flexibility and specialization
- b) by current students
 - don't know
 - about the same
 - they are interested but concerned about job prospects
 - most opt for designated programs but show high regard for engr
 - students come to view it as useful
 - feel well rounded and wanted a program that did not limit them
- c) by alumni
 - don't know
 - I have no knowledge
 - most do not know about it
 - about the same
 - good opinion of the program (most graduated from it)
 - would do it again without hesitation with highest % in alumni association and exceptionally committed and involved
- d) by employers
 - those without experience with it still have a questioning view
 - don't know
 - I have no knowledge
 - about the same
 - advisory board thinks it is great but most recruiters are unaware
 - very much in demand because of broad knowledge and leadership

B14. Of what characteristic of your program are you most proud?

- maintaining the interdisciplinary core,
- flexibility to combine engineering with some other interests,
- the specializations,
- the flexibility that students can design their own program,
- interdisciplinarity and adaptability (from idea to consumer, effective communication skills, business principles, understand the "whole")

B15. Are there other characteristics of your program and/or experiences you would like to add?

no

no

not at the moment

no time

in spite of the battle with the faculty the administration and many alumni and employers
are very favorable

ranked #1 in country