CSM ENGINEERING MAJORS:
A DESCRIPTIVE PROFILE

INTRODUCTION

The following report presents the findings of a survey administered to CSM engineering majors during six consecutive semesters [Spring 1994 - Fall 1996]. The survey instrument was designed and administered by Mikael Kroencke, Professor of Engineering at the College of San Mateo. His contribution to this study has been invaluable. The survey instrument contains a series of questions regarding a wide range of topics including: specific field of study within Engineering, expected transfer school, employment status, and interest in additional CSM engineering coursework. Between Spring 1994 and Fall 1996 surveys were distributed to students enrolled in the following CSM courses: ENGR 210, 230, 260, 270; MATH 222, 251, 252, 253, 270, 275; and PHYS 250, 260, 270. A total of 672 valid questionnaires were gathered for analysis.

DEMOGRAPHIC CHARACTERISTICS

Figures 1 - 5 profile the demographic characteristics of Engineering majors enrolled at the College of San Mateo during the Fall 1996 term.
Enrollment Status. The vast majority [91.5%] of Engineering majors are enrolled full-time [12 or more units] while attending CSM. In comparison, only slightly more than one-quarter [27.5%] of all Fall 1996 CSM students enrolled in 12 or more units. [See Figure 1]

Gender. The proportion of male Engineering majors is considerably greater than that of females: 87.6% vs. 12.4%. Although this gender distribution is considerably skewed when compared to the total Fall 1996 CSM student population [51% female vs. 49% male], these figures closely mirror nationwide statistics regarding the gender composition of community college engineering students. [See Figure 2]

Age. More than three of every four [76.0%] Engineering majors are 25 years old or younger; 22.3% are between 26 and 39 years old. Only 1.6% of all majors are above 40 years of age. [See Figure 3]

Ethnicity. For purposes of comparison, the proportional share of each ethnic group’s enrollment within the total CSM student population is shown in brackets below. The data presented in Figure 4 indicates that White students comprise 33.3% [50.5%] of Engineering majors; followed by Asians - 27.9% [17.9%]; Filipino - 14.6% [6.6%]; Hispanic - 12.6% [15.2%]; Black - 3.1% [3.9%]; Pacific Islander - 1.4% [1.0%]; Native American - 0.2% [0.6%]; and Other/Unknown - 6.8% [4.2%].

Citizenship Status. More than one-third [34.3%] of Engineering majors are not US citizens [i.e., permanent residents, visa holders, refugees, or those granted political asylum]. In comparison, only 19.4% of all Fall 1996 CSM students were not US citizens. [See Figure 5]
STUDY IMPLICATIONS

Enrollment Management. Perhaps the most striking characteristic of Engineering majors is their full-time student status: more than 9 of every 10 majors [91.5%] are enrolled in 12 or more units. [See Figure 1] In comparison, only 27.5% of all CSM students are enrolled full-time. In the context of a 35.7% decline in total CSM enrollment since Fall 1987, the high-unit academic load required of Engineering majors maximizes the College’s generation of FTES.

Counseling and Advising: Curriculum Planning and Transfer. Figures 6 and 7 graphically illustrate the complexity of providing Engineering majors with advice regarding both curriculum and transfer planning. First, there are numerous types of Engineering specialties [e.g., electrical, mechanical, civil, computer], each with its own

ENGINEERING SPECIALIZATION AND TRANSFER INTENTIONS

Engineering Specialization. Figure 6 displays the specific area of curricular specialization of CSM Engineering majors. More than 80% of students are interested in the following programs: Electrical Engineering [28.8%]; Mechanical Engineering [20.9%]; Civil Engineering [16.2%]; and Computer Engineering [14.4%].

Intended Transfer Institution. All [100%] CSM Engineering majors have an explicit interest in transfer to a four-year college or university. Figure 7 displays students’ intended transfer institution. A majority [53.3%] of students indicated interest in a four-year program within 40 miles of CSM: San Jose State University [25.0%]; UC Berkeley [18.4%]; San Francisco State University [7.1%]; and Stanford University [2.8%].

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Counseling and Advising: Curriculum Planning and Transfer. Figures 6 and 7 graphically illustrate the complexity of providing Engineering majors with advice regarding both curriculum and transfer planning. First, there are numerous types of Engineering specialties [e.g., electrical, mechanical, civil, computer], each with its own
specific set of curricular requirements and lower division preparation. Second, CSM Engineering majors are interested in a variety of Engineering programs offered by four-year colleges and universities. [See Figure 7] Transfer admission to four-year Engineering programs are the most highly prescriptive of all transfer majors. Moreover, counseling Engineering students who are uncertain about their four-year college of choice becomes even more daunting because of the variation in transfer admission requirements.

Recruiting Engineering Majors. Figure 5 indicates that more than one-third [34.3%] of Engineering majors are not US citizens. This data suggests that efforts to recruit Engineering majors should focus on the following: freshman applicants to four-year Engineering programs rejected because of English language deficiencies; CSM’s International Student Program; and local intensive English language schools.

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