

RETENTION PROGRAMS AND STRATEGIES

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Introduction

In 1984, baccalaureate degree programs in engineering were introduced at the University of Minnesota-Duluth (UMD), and the College of Letters and Sciences was split into the College of Liberal Arts and the College of Science and Engineering (CSE). In 1984 the computer engineering department accepted its first students; the departments of industrial engineering and chemical engineering began their first classes in 1986. Starting "from scratch" with engineering presented the College with a range of challenges and problems--curriculum and faculty development, the ABET accreditation process, and the basic need to attract and retain qualified students.

Also in 1986, a team of external consultants pointed out to campus administrators, faculty, and staff the value of an improved undergraduate experience, and its relationship to increased retention. In response to that advice and other factors, UMD as a whole renewed its commitment to quality education as a mid-sized institution offering a comprehensive range of instruction and research. That commitment formed the basis of new academic plans to improve recruitment and retention of high-quality students. Basic to these plans was the realization that the success of the University and the success of its students are inseparable. State-of-the-art programs and services in the areas of recruitment, orientation, and advisement were developed to promote student success and satisfaction. The goal in all areas was to increase student success by providing personal contact and meeting individual needs.

Five years later, numerous efforts have yielded significant results. All three engineering programs have won accreditation from ABET, graduates are finding suitable employment, and plans are under way to add more baccalaureate engineering degrees as well as master's degree programs in engineering. The College as a whole can measure various successes also: by 1990-1991, 30% of the College's freshman class came from the top 10% of their high school classes; 57% were in the top 20% of their high school graduating classes. Seventy-four Chancellor's Scholars were CSE students, and 34 of 44 Presidential Scholars at UMD were CSE students. The College offers a strong Honors program and stresses undergraduate research opportunities. Last year 22 undergraduate research proposals were funded for a total of \$21,045. For 1990-1991, UMD's overall enrollment was up 1% to 7,522; CSE's enrollment

increased 16.5% to 2,001. Since the introduction of the new programs and procedures, the percentage of academic dismissals from the College has dropped from 7% in 1985-1986 to 4% in 1988-1989. The percentage of students on academic probation has been cut in half--down from 16% in 1985-1986 to 8% in 1988-1989.

Recruitment

Courses in technical fields tend to be rigorous, with a good background in mathematics as a prerequisite to success. In order to obtain a good "institutional fit" between students and programs, the College began aggressively to recruit high-ability students. Students who score in the top 20% on the PSAT and ACT tests and who indicate UMD as one of their choices are sent a personalized letter outlining the College's programs and special opportunities for high-ability students. The mailings include a Fact Sheet on the College and a prepaid reply card so that the student can request more information about specific programs and/or an application for admission. Students are also invited to visit the campus and the College, and to telephone with specific questions. Several such mailings go to targeted groups of students before they apply for admission, when they apply, and when they are officially admitted. Comparable letters go to transfer students.

Because engineering programs were started "from scratch" at UMD, a number of attractive informational brochures were prepared to inform students about the existence of engineering degree programs at UMD, and to outline the courses, laboratory facilities, and academic requirements for each one. A videocassette was created that featured UMD engineering students, faculty, and engineers in regional industry, and a newsletter called *Practical Engineering* was developed. We sent this material not only to students, but to high school counselors in the region, and to a variety of area businesses and industries. (At the same time, analogous recruitment tools were developed for each science and mathematical science department in the College.)

One of the most important goals in the next decade for the College and for the University of Minnesota as a whole is to increase diversity on campus. As one means to this end, the College has just developed a recruiting tabloid aimed specifically at attracting women to degree programs in science and engineering. Mailed to women who are potential students, the tabloid presents interviews with women faculty members in CSE, including the dean, women students in each academic year, and women graduates now employed in technical fields. The tabloid also includes information on undergraduate research, internships, and special groups for women in the College.

Orientation

Making a successful transition to the University and establishing a personal connection with the community is crucial to retention. The new orientation program, now in its fifth year, focuses on the student, with academic purpose and frequent contact with faculty being the primary initial priorities. A major shift in the restructured orientation is the change from one faculty member advising a group of 25-30 freshmen to advisement of individual freshmen one-on-one. Instead of 450 UMD students each day for five days before the start of fall classes, orientation is now spread out on a rolling basis. Redesigned

academic orientation runs 17-18 days during spring and summer for 40 new CSE freshmen each day.

Academic orientation focuses on a warm welcome to students, academic advisement with a faculty advisor, registration for fall classes, familiarization with the campus, and interaction in small groups with other new freshmen and current students. Each student takes a mandatory math placement exam to facilitate crucial proper placement into math courses.

To help students become acquainted with their new environment, the College developed the *CSE Student Handbook* to provide new students with essential information in easily accessible form. The Handbook includes sections on majors and degrees, advisement and registration procedures, academic standards and grading, academic support services, counseling, housing, parking, student organizations, important dates, campus phone numbers, etc.

The second phase of orientation is Welcome Week, which runs immediately before the start of classes. A personalized letter from each academic advisor invites students to Welcome Week. A wallet-size advisor card enclosed with the letter gives students the name, office location, and telephone number of their advisor, outlines advisement procedures, and reminds them that they must meet with their advisor during advisement period each quarter.

Welcome Week goals are to reinforce the College's academic mission through a collegiate welcome and separate departmental programs for students. Freshmen are welcomed by their home departments and have an opportunity to meet their regular faculty advisors and other students currently enrolled as majors in the department. Student support units are introduced, as well as opportunities in student life and extra- and co-curricular activities.

The third phase of orientation, voluntary small-group seminars, is intended to reinforce ideas and values frequently and to increase retention by maintaining contact with freshmen through their first quarter and beyond. Seminar topics include time management, preparing for exams, how to register, finding a major/choosing a career, and financial aid planning.

Advisement

Although the College had a long tradition of faculty members advising students, the effectiveness of the system was diminished by many factors, including lack of information both about the University's policies and programs and also about the individual students themselves. With the advent of new engineering programs and increasing numbers of students enrolled in these programs, the need for more effective advising became critical. Before the redesign of orientation, no entry tests were required and no placement tests or formulas were available. When orientation was restructured, the ACT test was made a requirement for registration, a math placement test was implemented, and formulas were developed to help place students in certain beginning courses.

The next steps in advising were: 1) to provide faculty with extensive information on each of their advisees; 2) to provide them with clear, precise information on all collegiate majors and pre-professional programs; and 3) to train them in the use of this new information. As a result of new tools and training, all faculty advisors are now able to advise any incoming freshman, regardless of the advisee's intended

major.

An innovative Computerized Retention Tracking System was developed initially to provide advisors with a Student Academic Profile that enables them to impact student retention directly by providing them with: 1) an accurate, easy-to-interpret picture of each advisee's academic preparation for college, including high school courses and grades, high school rank, and GPA; 2) data for proper placement of advisees into courses that will help ensure their academic success, including ACT results and results of the math placement exam as well as suggestions for placement into composition, chemistry, foreign language, skills courses, and honors courses; and 3) student self-reported needs and interests. These data, in conjunction with individualized discussion with each advisee, provide indicators of realistic academic expectations for students. The Student Academic Profile is a powerful tool that automates detail tasks for the advisor and supports a personalized focusing on the student.

The Computerized Retention Tracking System was so useful that it was expanded to include all UMD students and became a key component in retention tracking and enrollment management for the campus. As well as the on-line Student Academic Profile, components include computer databases and a series of display screens.

The system picks up a student in an admissions tracking system upon receipt of the ACT tape of students who indicate UMD as an institution of choice. When a student applies, is admitted, and confirms for orientation, her/his record is electronically transferred to the Retention Tracking System. As additional information is obtained, it is added to the system. As a student continues through the undergraduate program, transcript information is added. The system is also used to generate personalized letters to selected groups of students. Furthermore, the Retention Tracking System provides the necessary databases to analyze such items as problem courses for freshmen and effectiveness of math placement.

The system can play an important part in enrollment management. For example, the Academic Profile is used to place students into composition courses for a particular quarter. This balances supply and demand and assures all freshmen a spot in a composition course during the freshman year, an important concern for engineering students who must fit highly structured sequences of classes into their schedules.

The main retention screen provides key information as well as access to ten background screens, some of which have view-only access, whereas others have view and update screens. This feature provides for necessary protection of data and for user interaction with student information so necessary for successful advising. At the end of three years when it comes into full operation, the system will provide information on time-to-degree, retention, change-of-major trends, etc.

A knowledge base on academic programs and procedures was the other half of the information that faculty needed to advise students successfully. The development, distribution, and widespread use of a set of well-organized advising tools, packaged in a 200-page loose-leaf Faculty Advising Handbook, met this need.

Handbook tools include: 1) support materials for the computer generated Student Academic Profile, such as placement formulas; 2) single-page Major/Program sheets for each major or pre-professional program offered in the College, including many engineering specialties

that require transfer after the first two years of pre-engineering. The Major/Program sheets show typical programs of study in the major, educational preparation needed, career outlook, and UMD facilities; 3) Liberal Education Course Guide sheets that outline the content of each course, the amount of reading and writing required for each, the types of tests given, and a statement of how the course fits into the liberal education goals of the university; 4) Career Sheets that provide students with specific information about careers in engineering and the health sciences, including such items as definition of the career, job outlook and salary, tasks performed, locations where work is done, specialties within the field, related careers, education required, admission and financial aid information, and a list of campus, local, regional, and national sources of further information; and 5) miscellaneous aids, including copies of the Student Handbook and handbooks prepared by the College for pre-engineering and pre-med students.

A Student Referral Pad was also developed for advisors to expedite completion of various registration and special procedures for students. The pad cover lists the appropriate location to send students for a variety of needs; the pad of tear-off sheets, signed by the advisor, solicits aid for the advisee at the appropriate campus location--department office, Student Affairs office, Career and Placement Services, Registration Window, etc.--thereby minimizing frustrating bureaucratic "runarounds" for the student.

Two-hour training sessions were held in each of the departments to acquaint faculty members with the details of advising and to familiarize them with the advising tools. Ninety-nine percent attendance attests to renewed faculty commitment to advising. While learning the tools, faculty felt free to express their concerns, observations, and ideas for improving advising in the College. In addition to focusing attention on the freshman experience, these sessions led to suggestions for additional tools to be placed in the Faculty Advising Handbook.

Although the advising system is essentially in place, new projects continue to emerge in response to needs. Some are ongoing, such as the *Advising Newsletter* that is sent to College faculty advisors at least once a quarter to update them on changes in policies or procedures.

Another new project helps freshmen establish a connection with the University community. Freshman Connections is a computer-supported individualized telephone contact model, introduced with great success during 1989-1990. Two telephone calls from specially trained juniors and seniors to every new freshman provide an opportunity to disseminate and gather data related to freshman academic advising, and to gather information useful in predicting first-to-second year retention rates.

Still another effort begins fall 1991. Aimed specifically at retaining women students, and called "Women Mentoring Women," the project trains junior and senior women in science and engineering to be mentors. Each mentor will be assigned up to four proteges, first-year women students entering next fall. The mentors will meet regularly with their proteges, and will function as role models, peer advisors, and facilitators to introduce new students to such available groups as "Women in Science and Engineering," which was started by women faculty this year, and has met with enthusiastic response.

During fall quarter 1990, the "Mid-Quarter Intervention Project" started. Instructors were asked to identify freshmen in core

mathematics and science courses who were doing "D" or "F" work at mid-quarter. The CSE Student Affairs office then sent a personalized letter to all students at risk in one course, suggesting options they might pursue. Students at risk in more than one course were requested to come in and talk with a member of the Student Affairs staff. The students' advisors were also informed of the low grade so they could discuss the problem with the advisee.

Certain new projects are one-time efforts. A mailing in late November 1990 invited freshmen with engineering or undecided major designations to a panel discussion by practicing engineers in the region, including several graduates of UMD's engineering programs. The panel was specifically designed to give freshmen an overview of several of the engineering disciplines to help them clarify academic and career goals. Such mailings, programs, and projects are all intended to meet needs of individual students in the most specific ways possible.

Results

Measures of success in the areas of recruitment, orientation, and advisement are many. CSE's engineering programs are maturing well, with increasing enrollments, good placement statistics for graduates, and growing ties with regional business and industry. The College hopes to start one or two additional engineering degree programs in the next few years, and is paving the way for graduate programs in engineering.

In the College as a whole, the caliber of the student body has improved, enrollment growth and retention have increased significantly, and academic dismissal and probation have decreased measurably. Changes have been so far-reaching and successful that they have led to two national awards: in November 1989, the College of Science and Engineering was presented with the national NACADA Outstanding Institutional Advising Program Award for its innovative and exemplary practices in the academic advising of students, and in July 1990 the College received an award for Outstanding Success in Student Retention Programming from the Noel/Levitz National Center for Student Retention, Inc.