The "Hybrid" Approach to Engineering & Computer Science Student Orientation

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INTRODUCTION

This freshman orientation course in the College of Engineering and Applied Science (CEAS) at the University of Wisconsin-Milwaukee (UWM) utilizes a "hybrid" approach to new student orientation. In its current form we believe it is unique in the 26-campus University of Wisconsin System. The course effectively combines an expanded campus orientation with an introduction to the study of engineering and computer science. The full semester course is entitled, "CEAS Freshman Orientation", commonly referred to as "EAS (Engineering and Applied Science) 100". It acquaints freshmen, transfer, and prospective engineering and computer science students with programs in the college. The course also covers rules and regulations governing academic progress in the university and the college. Information is provided on the Co-operative work program, student organizations, recommended study habits and skills, and many other areas of benefit to students new to the campus and field. The mission of the course coordinators is to motivate students to create their own assignments for action; to take control of their educational futures.

The course, whether taken by a new freshman, new transfer, second degree student, or prospective student is, by its very nature, most helpful if taken during the student's first semester at UW-Milwaukee. The attached typical syllabus provides an outline of the topics and issues covered.

UNIQUENESS

What makes this course especially unique is the background of its coordinators. To our knowledge, only EAS 100 is facilitated by individuals who are directly and primarily involved with each stage of the students' progress. Although not engineers by training, they are professionals in new student recruitment, one-on-one academic advising, and administration of student services. This allows a strong fostering of early ties with the student that begins with pre-campus contact for high school and transfer students, continues through follow-up contact during campuswide new student orientations sponsored by the Admissions Office the summer before classes begin, and on through contact during regular advising sessions throughout the semester. This way, student progress can more easily be monitored and encouraged by people they already know who care about them, have a stake in their success, and with whom they are more likely to feel comfortable. In addition, the students can develop a rapport with university professionals from pre-UWM enrollment through the orientation and beyond to graduation and employment.

The College of Engineering and Applied Science utilizes essentially a faculty-based advising model, with support of professional academic advising provided by the EAS 100 coordinators. The faculty advisors are coordinated by the Office of Student Services, which maintains the Faculty Advising Handbook and provides updates to the advisors on academic changes that impact advising. Academic actions on behalf of the Dean, such as course substitutions, waivers, and other exceptions to program requirements are handled by the Office of Student Services upon recommendation of the faculty advisor, department chair, and Associate Dean, as appropriate.

Although there does exist among the 13 two-year UW Center System schools a freshman orientation course similar in some respects to EAS 100, student access is limited. It is only taught at a select few of the Center campuses, and generally only those with larger populations of pre-engineering students. While some aspects of that course are indeed similar, such as the concept of outside speakers from the various fields/majors of engineering and representatives of industry visiting class to discuss "real world" experiences, the students may not be exposed to the academic rules and regulations of the campus; they miss the "insider" helpful hints on learning how to successfully negotiate the maze of bureaucratic red tape involved in earning their degrees. Generally speaking, students usually get one or the other--orientation to the campus or orientation to their major or field.

What also makes this course unique is that although required of the CEAS freshmen, it is open to all students across the campus interested in learning about the engineering or computer science programs. In recent years student enrollment in the course has fluctuated from a high of 180 to a low of 49, and not one interested student has been turned away.

COURSE CONTENT

A key component of EAS 100 offers a follow-up to introductory material covered in a one-half day pre-semester Registration/Advising session sponsored by the Admissions Office. Students may have also attended a day-long (and overnight) campus orientation session administered by the campus Dean of Students Office. In an effort to ease the transition to a new school environment, the EAS 100 course coordinators provide the new students a more detailed introduction to academic and other campus resources such as employment and career exploration services of the Career Development, the one-on-one assistance available through the centralized Tutoring and Learning Center of the Department of Learning Skills and Educational Opportunity as well as tutoring available through the College, and free student-run services provided to ensure personal safety and security on campus. Also covered early in the course are topics such as note and test-taking skills, introduction to the computer-aided engineering laboratory, etc.

A second key portion of the course deals primarily with the majors offered in the College. After a discussion of the kinds of work engineers and computer scientists actually do, department chairs or their designees are brought into the class to discuss 1) what a major in his/her particular department is like; 2) what course sequence does one follow to enter it; 3) what employment opportunities are available upon graduation; and a range of other topics. Presentations are often supplemented by audiovisuals. During open discussion, students' questions range from, "How much was your first paycheck as a new engineering professor?" to "What international computer

companies have the best record in minority hiring and retention? Specifically Asian-American females?" In addition, students are exposed to hands-on design projects. Throughout the course, the facilitators stress the importance of regular contact with academic or faculty advisors throughout the students academic career. In addition, the coordinators offer many helpful hints for maximizing use of a system which is efficient but rather dependent on student initiative and self-responsibility.

The class carries one degree credit and is graded on an "A through F" basis. Attendance is mandatory, although one unexcused absence is allowed. Students are required to submit regular homework from the text, "Studying Engineering", by Ray Landis, as well as two design projects, a spaghetti tower and a model car made of newspaper, designed to specific criteria. The tower project is an individual assignment that requires the student to demonstrate creativity, ingenuity, and foresight. The model car project is a group or team effort that emphasizes teamwork.

APPLICABILITY TO OTHER SCHOOLS/PROGRAMS

How would you make this work on your campus? Although EAS 100 has been custom-designed to serve the needs of students at a large, urban, commuter campus, the benefits to other institutions and programs are numerous. The course attempts to accomplish several objectives. First of all, the current structure of the course draws together from various resources both internal and external to the College information the enables students to make informed decisions. Early weeks of the course reiterate and expand upon the main points presented in the campus orientation program offered by the Dean of Students Office and the advising/registration sessions offered by the Admissions Office. Middle and later weeks of the course introduce students to their "chosen" fields of study--the same people who helped welcome them to campus and choose classes the summer before. At all times during the course, the students are constantly encouraged and made to feel comfortable asking questions. The course coordinators are the same people who administer the academic advising in the College, and through an open door walk-in policy make themselves available to students in support of a wide range of services. In addition, if and when students encounter academic difficulty, these are the same people who are authorized to act on the students' behalf to help them get back into school if dropped, and to stay in school when times are rough for them. Nearly one-half of students in the College either work to put themselves through school or may have commitments outside of the classroom such as raising families. The advisors/coordinators/facilitators know this; this student-oriented philosophy is crucial to successful delivery of services in the CEAS Office of Student Services. As students realize that these people are here for them in good times and in bad, bonds strengthen, students are nurtured as needed, and student academic performance grows. This continuity of support is crucial to retention of students in the program.

This course has evolved considerably in a matter of a few semesters. Changes in course structure and format, frequency of offering, availability to non-CEAS majors, etc., are made after each semester upon review of the course evaluations. The evaluation is a survey of satisfaction in which all facets of instructor, course content, delivery, and text are rated verbally (excellent, average, poor). These comments are converted to a numerical rating system of composite scores, with 1.0 indicating a very high level of student satisfaction. Written comments are also solicited.

The course coordinators meet with the Associate Dean to discuss what they felt worked and what didn't, and what the students expressed in this regard. Together, the staff develop and implement a strategy to immediately improve the course for the next semester. Now that the course has essentially 'stabilized' and near future changes will not be as sweeping, or impactful, we can begin to develop measures of effectiveness which involve assessing student success outcomes, such as measuring gpa and pass rates, as well as those measures which indicate students are likely to persist in the program to the second year and ultimately to graduation. Retention of our freshmen is a key issue in the College and on campus.

Student benefit is the key to the delivery of educational services and the mission of most post-secondary institutions, but they are not the only ones to benefit from this hybrid model of orientation. By having a dedicated and high-energy staff who encourage students to take charge of their destiny and take advantage of a cornucopia of support services within and without, the College and campus benefit from a well-informed student body who more efficiently utilize personnel and other resources outside the College's Student Services Office. Of course, central to the successful continuance of such a program are the individuals who administer it and the enthusiasm they are able to generate in the students. Future directions to involve faculty and industry practitioners will enable the course to grow in effective delivery of more directly applicable engineering and computer science problem-solving to the students.

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