

# Enrollment Management for the CIS and CSE Programs

Date: December 22, 2011

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**Summary:** Over the last four years or so, the number of students entering the CIS and CSE majors has increased substantially. As a result, for the last several quarters, almost all sections of all CSE courses, both required ones as well as electives, have been full, many with long waiting-lists. If the situation were to continue, students admitted to the majors will not be able to complete their programs in a timely manner.

The CSE Undergraduate Studies Committee (UGSC) discussed this in its meetings in November and early December. UGSC's calculations, based on our approved enrollment-management formula, indicated that, given our current resources and the demand for the majors, we should admit to the major only pre-majors who have a GPA of 2.5 or above and have completed all other requirements. Following the discussions, UGSC unanimously recommended this to the entire CSE faculty for its approval. The requirement would apply starting with pre-majors who apply for admission to the major in the Spring 2013 semester or beyond, allowing sufficient time for current pre-majors to enter the major under the current rules. Following our usual practice, the recommendation was sent to the CSE tenure-track faculty electronically. The faculty approved the recommendation electronically on December 8. All pre-majors have been informed of the change.

## **Background:**

On a number of occasions over the last thirty years the demand for the CIS and CSE major programs has risen sharply, staying at a high level for several years before dropping back to more moderate levels. In order to ensure that students who are admitted to the CIS or CSE major program are able to take all the required courses and the appropriate electives in a timely manner, the CSE –then CIS– Department proposed an enrollment management scheme that takes into account the faculty resources available for teaching courses, the current demand for the major, and the grade-distribution curve to determine the minimum GPA that pre-majors must achieve, in addition to meeting all the other requirements, in order to be admitted to the major; details of the scheme appear in the next paragraph. The scheme was approved by the university in the mid-eighties and has been used during a number of periods, most recently between 1999-'00 and 2005-'06.

## **Details:**

The following formula is used to determine the number of students to be admitted to the CIS and CSE major programs during the next year:

$$B = (503 * F - 45 * M - 90 * P) / 60$$

Here, 503 is the OSU average for the number of student-credit-hours generated annually by a tenure-track faculty member.  $F$  is the number of CSE tenure-track faculty.  $M$  is the average annual number of MS grads produced by the department during the past three years; 45 is the number of credit hours taken by an MS student.  $P$  is the average annual number of PhD grads produced by the department during the past three years; 90 is the number of (post-MS) credit hours taken by a PhD student. 60 is the minimum number of CSE credit hours that BS-CIS and BS-CSE undergrads are required to complete for the major. Thus the formula says that the department's annual capacity for undergrad majors is equal to the number of student-credit-hours that our faculty can produce per year, less the hours needed to serve the MS and PhD students, divided by the number of credit hours needed per student.

Three points are worth noting. First, 503 as the number of annual student-credit-hours generated by an OSU

tenure-track faculty member has remained essentially unchanged over the years. Second, when we move to the semester calendar, the figures in both the numerator and denominator of the formula will get multiplied by  $2/3$ , thereby essentially leaving the formula unchanged. In fact, this being the third point, under the approved semester programs, the minimum number of CSE credit hours that BS-CIS and BS-CSE majors will be required to complete will be 47 semester-hours, equivalent to just over 70 quarter-hours. Thus, following the conversion, the formula has to be appropriately adjusted.

The formula lets us compute the number of students who should be admitted to the major. We convert that into a GPA requirement by using the OSU grade distribution information:

GPA	% above	% below
3.2	32.5	5.3
3.1	37.8	5.6
3.0	43.4	5.9
2.9	49.3	6.0
2.8	55.2	6.0
2.7	61.2	5.9
2.6	67.3	5.6
2.5	72.7	5.3
2.4	78.0	4.8
2.3	82.7	4.2
2.2	86.9	3.5
2.1	90.4	2.6
2.0	93.0	

Thus, for example, if our current capacity was 60% of our current demand, we would have to impose a GPA requirement of 2.7 (which would admit 61.7% of the students, rather than 60%) for admission to the major.

**Results:**

The current (as of Autumn 2011) values for  $F$ ,  $M$ , and  $P$  are 34, 58, and 18.3 respectively. Hence  $B$  is 214. If we use 70 as the minimum number of CSE quarter-credit-hours that CSE majors must complete which, as noted earlier, will be the case once we switch to semesters, the value of  $B$  becomes 183. The number of “four-quarter-admits” over the last few years has gone from 199 in Au 2008, to 218 in Au 2009, to 238 in Au 2010, and 271 in Au 2011.

Given that we admitted 271 students and we only admit students whose grade is 2.0 or above, according to the table above, 271 reflects 93% of the demand for the major. Hence the actual demand for the major is  $(271/.93)=291.4$ . Hence, if we want to admit only 214 students, as indicated by the formula, we should admit only the top  $(214/291.4)*100$ , i.e., 73%, of the students. That, according to the grade distribution table, translates to 2.5 as the required minimum GPA for admission to the major. If we use 183 as the figure for the capacity, the percentage to be admitted becomes 63%, translating to 2.7 as the GPA for admission.

The CSE Undergrad Studies Committee proposed and the CSE faculty approved that starting with students who apply for admission to the CIS and CSE majors in Spring '13, only pre-majors who have a GPA of 2.5 or above and have completed all other requirements will be admitted to the major program. The other requirements for admission to the CIS major are completion of CSE 221 and 222 with at least C– in each; completion of Math 151, 152 and English 110; and at least 25 cr-hrs earned at Ohio State.