School of Natural Sciences & Math – Math Focus Group
Executive Summary Report

The Math Focus Group Committee was established in Spring of 2006, to study and make recommendations on the retention issues related to mathematics gateway courses (mainly calculus courses). The Committee consisted of Drs. Ray Allum, Cy Cantrell, Mary Chaffin, Michael Coleman, John Ferraris (Committee Chair), John Hoffman, Ali Hooshyar, and Simeon Ntafos. To understand the retention issues a considerable amount of data was studied, some of which will be presented in this summary. In order to have some DFW benchmark rates, average DFW rate over three years for UT-Austin, University of New Mexico and UTD are presented:

University	Science Calculus I	Pre-Calculus	Applied Calculus I
U of New Mexico	46.20%	41.50%	45.10%
UT-Austin	30.15%	25.35%	36.82%
UT- Dallas (over all)	42.07%	34.72%	35.61%
UTD (1st time freshman)	28.07%	31.66%	22.50%

The Committee's finding indicates that UTD's DFW rate for first-time freshmen is comparable to tier-one schools. However, unlike tier one schools, UTD has more upper division students, part-time students and transfer students who are still taking gateway courses, or are repeating them. Thus a higher over all DFW rate is obtained as compared to tier one schools. Looking into details of DFW rates by students' background (such as SAT, major and class level) led the Committee to make following recommendations:

1.) A grade of "C" or better be required for prerequisite courses. For example to enroll in Math 2417, students should have received a grade of "C" or better in Math 2312. This recommendation requires the undergraduate catalog to be revised accordingly.

2.) Available data indicates that students who received less than 50% on the first two quizzes in Math 2417 have a 77% chance of being in the DFW category in Math 2417. Since such "at risk" students can be identified within the first two weeks of a semester, the Committee recommends that such students be notified and be required to attend additional supplemental help sessions throughout the remaining part of the semester.

3.) The Mathematical Sciences Department continues its curriculum coordination with the clientele departments and contacts them to review and if needed update content of their service courses accordingly.

4.) Too much grade variation was noticed between different sections of pre-calculus and applied calculus. The need for further coordination between instructors teaching different sections of such courses was recommended. Similarly, further coordination between instructors teaching prerequisite courses and instructors teaching gateway courses are recommended.

5.) Requiring students to retake prerequisites, if they have satisfied prerequisites in the distant past is favored by the committee, but needs further consideration. In other words having satisfied the

prerequisites in the distant past does not guarantee readiness for a course. Need to put in place the mechanism of testing readiness for such students.

6.) Available data indicates that performance in a course was better for those students who took the prerequisites as compared to those who repeated the course. Thus, it is recommended that student advisors encourage their students who receive a grade of D or F in a gateway course to take the prerequisites over again before repeating the course.

7.) Class attendance is believed to improve the DFW rate. To test this hypothesis Dean Coleman has assigned a work study student to take attendance in three sections of Math 2417 and three other sections of Math 2417 will not be taking attendance. DFW comparison between these groups at the end of the semester will assist the committee in making recommendations regarding this issue.

8.) Available data indicated that SAT II Math 2C of 630 is a good benchmark for placement in Math 2417 and SAT II 1C score of 550 is an appropriate benchmark for admission to Math 2312. However, available SAT II 1C data did not provide satisfactory benchmarks for placement in Math 2417 or Math 1325. Dean Coleman offered to provide similar data for fall 2006, so that SAT benchmark decisions and course placement could be made after more data becomes available.

Placement and Performance in Mathematics Gateway Classes

July, 2006

Introduction

Many of the undergraduate degree programs at the university have, at their core, the requirement that students first master a set of mathematical skills considered necessary to their chosen disciplines. In the Schools of Engineering and Computer Science and Natural Sciences and Mathematics this mathematical base is contained in two semesters of calculus, Math 2417 and Math 2419. In the School of Management the foundation mathematics sequence in comprised of two semesters of applied calculus, Math 1325 and Math 1326. Success in these classes is a prerequisite to further mathematics' requirements unique to specific programs within each of the schools as well as numerous disciplinary courses that require the application of these foundation mathematical skills. Core calculus classes serve as portals through which students enter their disciplinary training and the number who successfully passes through these gateways sets the upper limit of those who will ultimately receive degrees in the specific academic programs.

Many students complete their required calculus requirements as freshmen. For fall 2005, 69% of the students enrolled in Math 2417 were freshmen. This percentage dropped to 42% for Math 1325, reflecting the greater number of transfer students in the School of Management where 51% of those enrolled were sophomores or junior. For the last two years, the Office of Undergraduate Education has assisted the Mathematics Program in trying to better place freshmen students in the entering calculus sequences by administering the SAT Mathematics Subject Area Tests and setting score benchmarks required of students to enter these classes rather than beginning their preparation with the pre-calculus class Math 2312. This report summarizes our success by looking at the throughput of students in the calculus sequences as well as the extent to which pre-calculus serves as adequate preparation for entering the calculus sequence.

There are two SAT Mathematics Subject Area Tests. The SAT IIC test is designed for students who have completed high school calculus while the IC test is recommended for students who completed pre-calculus in high school. In fall 2004, the benchmark SAT mathematics subject scores for entry into Math 2417 were set at 560 for the IC test and 530 for the IIC test. Having no empirical basis by which to set these benchmarks, the decision was made to use the standards used by the Austin campus, given the similarity between the math curriculum and the student characteristics of the two campuses. For fall 2005, these standards were increased to a score of 630 on either test based on the test results and calculus grades of the 2004-2005 freshman class. Students are also allowed into Math 2417 if they have completed an Advanced Placement Calculus class in high school and scored three or higher on the subsequent test. For applied calculus, Math 1325, a score of 480 was required on either SAT test. A score of 460 on either test was set as the benchmark for Math 2312, Precalculus.

Math 2417/2419

Table 1 presents the grade distribution in Math 2417 for fall 2005 partitioned by student classification. Grades have been compressed into whole letter grades for ease of presentation. Each cell contains both the number and percentage of students receiving a specific grade. The rightmost column summarizes the percentages of students who received either a grade of 'D' or 'F' or withdrew from the class during the semester. While 'DFW' rates vary by course and institution, most Research 1 universities report rates between 15% and 22% for introductory courses. The lower segment of the table also partitions freshmen into those who began classes in fall 2005 versus continuing freshmen who have yet to complete 30 semester credit hours and progress to sophomore status.

The overall 'DFW' rate was almost 41% and consistent across section ranging from a low of 37% to a high of 46%.The rate was generally higher for non-freshmen. The small number of seniors (23) makes their data hard to interpret. For fall 2004, 22 seniors had a 'DFW' rate in Math 2417 of almost 73%. At all other student classifications, the rate was within five percent for each of the two years. The 'DFW' was also very different for first-time freshmen (28%) versus continuing freshmen (71%). Further analysis of continuing freshmen revealed that many of these students were taking Math 2417 for the second or third time. Seventeen of the 27 continuing freshmen who failed for fall 2005 had failed the class at least once previously. Moreover, 13 of the non-freshmen who failed in fall 2005 had also failed the class previously. In sum, 30 of the 109 failures in this class (27%) were students failing for the second time.

Table 2 reviews the relationship between performance on the SAT Mathematics Subject Matter tests and grades in Math 2417. The top segment contains the letter grades earned by students distributed by ranges on the SAT II C where a benchmark of 630 was considered the threshold for admission into the class. The selection process was considered successful if the student obtained a score of 'C' or better. The darkened section of the chart encompasses the successful placements. Just over 79% of those students who scored a 630 or above on the IIC made grades of 'C' or better in first-semester calculus. Given that the test measures only mathematical aptitude and not motivation, also a prime factor in freshmen performance, the current benchmark seems useful but should be reviewed again after the 2006-2007 academic year.

The SAT IC test for high school students completing pre-calculus was not as useful a predictor of Math 2417 performance. Using 630 as the benchmark, only 59% of the freshmen earned a grade of 'C' or better in the class. To reach a predictive efficiency comparable to the IIC test, the benchmark would have to be reset to a score of 710. Of the 107 freshmen who took the IC test in summer of 2005, only 35 scored at or beyond this threshold. At the same time, it seems reasonable to expect a higher standard for entrance into Math 2417 for this group who did not have a calculus course in high school.

A third placement alternative was also used for entry into Math 2417 for fall 2005. Students who completed Advanced Placement Calculus in high school and scored a three or higher on the Calculus AB test were also considered eligible to enroll in 2417. Table 3 illustrates their success. In this case, 85% of those students meeting the AP test criteria completed Math 2417 with a grade of 'C' or better.

Of the 482 students who enrolled in Math 2417 for fall 2005, 245 went on to take Math 2419, Calculus II, in the spring of 2006. While the 'DFW' rate for Math 2417 was almost 41%, those continuing to Math 2419 in the spring had just under an 8% 'DFW' rate for the fall, consisting mostly of students who earned a grade of 'D' for the first semester. Table 4 includes throughput information from Math 2147 to 2419 for both fall 2004 and fall 2005. The 2004-2005 data are provided for comparative purposes but this discussion focuses on the 2005-2006 data. The cell entries read by row represent the grades earned in Math 2417 while reading by column expresses the grades earned in Math 2419. As an example, while almost 38% of these students earned a grade of 'B' in Math 2417, only 24% earned a grade of 'B' in Math 2419. The rightmost columns represent the probability of making 'Higher', 'Same', or 'Lower' grades in Math 2419 than in Math 2417.

While these students could be considered the successful products of Math 2417, having a 'DFW' rate of less than 8%, the 'DFW' rate for Math 2419 was almost 32%. Of the 245, entering this class, only 167 emerged with grades of 'C' or better. This yields a success rate of about 67%. Going back to fall semester Math 2417, only 167 or about one-third of the original 482 students entering the calculus sequence completed the courses successfully in a single year. Only those students who completed Math 2417 with a grade of 'A' were most likely to maintain their grade in Math 2419 while all others were most likely to receive a lower grade in the second class. For those making a 'C' or less in Math 2417, the 'DFW' rate in Math 2419 was over 60%

Several points are obvious at this juncture in the discussion. Foremost, a throughput of only 33% is far too low for the entering calculus sequence and necessarily extends the college career of many students and forces others to rethink their professional aspirations. At the same time, the 'DFW' rate for Math 2417 varies substantially as a result of a student's classification. At 28%, the 'DFW' rate for entering freshmen may not be excessive for one of the most demanding 'gateway' classes at the university. However, doubling that rate for non-entering freshmen is indicative of a major problem. Moreover, having students who fail Math 2417 simply take it again seems a poor tactic.

While the AP Calculus Test and the SAT IIC Mathematics Subject Test seem useful as placement measures for Math 2417, the benchmark score for the SAT IC Mathematics Subject Test requires revision with a score of 710 appearing to be a reasonable approximation. However, most non-freshmen qualify to enroll for Math 2417 not through a placement test but rather as a function of having achieved a grade of at least 'C-' in Math 2312, Pre-calculus, or its equivalent transfer from another institution. This brings to question the extent such a course is adequate preparation for Math 2417.

Math 2312

Table 5 reviews the grading distribution for 327 students enrolled in Math 2312, pre-calculus during the fall semester of 2005. Most of these students (69%) were from ECS or NS&M who were using the class as preparation for entering the Math 2417/Math 2419 calculus sequence. Just over 73% of the students were freshmen. The DFW rate for this class was almost 43%, comparable to that of Math 2417 with section values ranging from 39% to 43%. While freshmen had the lowest DFW rate, it was still higher than for the more advanced calculus class.

Freshmen entering Math 2312 must achieve a score of at least 460 on either the SAT Math Subject Matter Test IC or IIC. Table 6 relates performance on these measures to the letter grade achieved in this class for fall 2005. All but 5 of these students met this standard. However, only 64% completed the course with a grade of 'C' or better. To reach an accuracy rate comparable to our better placement measures, the SAT standard would have to be increased to 550 which would yield a success rate of 78% for this sample. This standard is actually higher than we currently employ for Math 1325, applied calculus.

Table 7 summarizes the performance of 149 students who completed pre-calculus, Math 2312, during the fall of 2005 and enrolled in Math 2417 during the spring of 2006. Comparable data from fall 2004 to spring 2005 are also included for comparison. The row data represent grades in Math 2312 while reading the columns represent grades for the same students in Math 2417. The original 'DFW' rate for Math 2312 with 327 students was 43%. Within this group almost 75% were entering freshmen and 65% were students in ECS or NS&M. Another 15% were undecided students who are likely taking the class to gauge their chances in more advanced classes. The 'DFW' rate dropped to 8% for those progressing on to Math 2417. However, the 'DFW' rate for Math 2417 was again almost 43%. Only 16 of the 41 students who attained a grade of 'A' in pre-calculus were able to repeat their performance in first-semester calculus. In fact, with a grade of 'B' or lower, a student was most likely to be in the 'DFW' group at the end of Math 2417 (57%). This outcome was even higher for the 2004-2005 academic year (74%).

Of the original 327 students enrolled in Math 2312 during the fall of 2005, only 85 completed Math 2417 with a grade of 'C' or better for a two-semester throughput of about 25%. Moreover, the 43% 'DFW' rate for pre-calculus is almost identical to the subsequent 'DFW' rate for the ensuing Math 2417 even though the 2417 students are those who have been successful in the prerequisite class. This calls into question the extent to which the pre-calculus curriculum is designed to prepare students for entry into the calculus sequence.

Math 1325/1326

Math 1325 is the first of a two-course sequence designed for students in the School of Management. For fall 2005, 309 students enrolled for Math 1325, mostly native freshmen (41%) and transfer juniors (30%). Just over 75% of the students were from the School of Management. Table 8 contains the course grade distribution partitioned by class level. The overall 'DFW' rate was just over 33% with the freshmen value only about one-third that of non-freshmen. However, this outcome is confounded by the 'DFW' rate partitioned by course section which varied from a high 54% to a low of 18% for the two day classes with the two night classes falling between these extremes. Over 60% of the freshmen were enrolled in the Math 1325 section with the lowest 'DFW' rate.

Freshman placement in Math 1325 is determined by performance on the SAT II Math Subject Test IC or IIC. Table 9 includes the whole-letter grade on Math 1325 for 98 freshmen enrolled in the first applied calculus for fall 2005 partitioned by score ranges on the SAT examinations. Students are advised to enroll in this class only if they earn test scores of at least 480 on either test. Using a grade of at least 'C' as the standard for a successful placement in applied calculus, the darkened portion of

the table reveals that 82% of those students meeting the examination standard also met the grade standard suggesting that the SAT benchmark used for this class is effective.

The one-year throughput of students through the applied calculus sequence in 2005-2006 is examined in Table 10. The same analysis for the 2004-2005 academic year is provided for comparison. While the 'DFW' rate for the 309 fall Math 1325 class was just over 33%, the rate for those 135 who continued on to Math 1326 was just under 9%. However, the 'DFW' rate for Math 1326 rose to 32%. It is surprising that the 'DFW' rate for this second class is comparable to that of the first class when the population of the second class is comprised of those considered successful in the initial class. Again, this analysis is somewhat complicated by the fact that the 'DFW' rate for Math 1326 varied by section from a low of 15% to a high of 50%.

The extreme variation in 'DFW' rates by instructor for the Math 1325/1326 sequence for academic year 2005/4006 suggests a closer look at the throughput rate for the 2004/2005 academic year. While the 'DFW' rate for Math 1325 for fall 2004 was virtually the same as for 2005, the rate for students continuing to Math 1326 for spring 2005 was about half that of comparable students in the spring of 2006. The difference between the two academic years is greater consistency in the 'DFW' rates for Math 1326 across instructional sections for 2005 than for 2006.

Summary

An institution that prides itself on preparing students for careers in science, technology, and business must provide an excellent foundation in the mathematical skills required of their disciplines. Career preparation in fields such as engineering, physics, and biology entails completing a highly stratified curriculum with few degrees of freedom and mathematical competency serving as the basic building block upon which the course of study is constructed. Difficulties in mathematics' gateways courses reverberate through the student's career, forcing some to extend their college education while others rethink their career aspirations. Although many students change their course of study as undergraduates, it is important that these decisions result from personal interest and ability rather than limitations in the educational pedagogy that they experience in their curriculum. With this in mind, several suggestions for the mathematics' gateway courses are offered.

- Freshman placement in Math 2417 (Calculus I) using the existing benchmarks for the SAT IIC or the AP Calculus tests seems useful with successful placement rates (calculus grade of at least 'C') of about 80%. While students who have completed a calculus class in high school might be expected to do well in college calculus, part of their success is based on attitude not aptitude. In fact, within such a highly capable group as our entering freshmen, work ethic, organization, time commitment, and dedication to their educational pursuits may be as important as their intellectual skills. These factors will always serve to place an upper limit on the utility of ability testing as a means for predicting successful placement.

- The current standard of 630 for the SAT IC is an inadequate standard for students to use to gauge their potential performance in Math 2417. For students whose high school mathematics' preparation ended with pre-calculus, a much higher standard seems necessary. For the 2005-2006 academic year, a score of 710 on this placement test was required to achieve a successful placement rate approaching 80%. This standard should be revisited

following the fall semester of 2007 when performance for two consecutive academic years is available. We must take care not to chase the standard by changing the benchmark year after year.

- The 'DFW' rate for non-freshmen is much higher than for entering freshmen in Math 2417. Virtually all these students earn their access to this class not through placement testing but by earning a grade of at least 'C' minus in a pre-calculus class. It seems obvious that this is an inadequate standard. In the analysis of the transition from pre-calculus to calculus contained in this report, those students who earned less than a grade of 'A' in pre-calculus were most likely (57%) to reside in the 'DFW' group upon completing Math 2417.

- The 'DFW' rate for Math 2417 is better understood by analyzing only those students enrolled in the class for the first time. Over 25% of those who failed Math 2417 in the fall of 2005 had previously failed the same class at least once before. This rose to 40% for those students classified as freshmen. It is also evident that simply repeating Math 2417 is a poor strategy for students who have previously failed the class. They clearly need more help. While sending them back to pre-calculus seems the simplest solution, as this report points out, Math 2312 doesn't appear to be adequate preparation for more advanced classes.

- The single year throughput in the Math 2417/2419 is far too low. Of the 482 students enrolled Math 2417 for fall 2005 only 167 (35%) completed Math 2419 in the spring of 2006 with a grade of 'C' or better for the second class. While some of this problem is a result of poor placement practices in Math 2417, over 25% of the students who made a grade of 'C' or better in the first class were a part of the 'DFW' group for the second class.

- Almost 70% of the students enrolling in the pre-calculus course Math 2312 are using the class as preparation for Math 2417. Yet performance in this class doesn't seem an accurate gauge of expected performance in Math 2417. As this report attests, students who earn less than a grade of 'A' in pre-calculus are most likely to be in the 'DFW' group in Math 2417. The one-year throughput for Math 2312/Math 2417 with a grade of at least 'C' is only 25%. Clearly, the relationship of the Math 2312 curriculum to the Math 2417 curriculum requires serious analysis.
- The present SAT IC standard for freshman placement into applied calculus Math 1325 seems appropriate with a success rate of 82% for fall 2005. Of course, the test suffers the same limitations noted above for any attempt to use a skill's test to predict student performance in a college class.

- The analysis of Math 1325/1326 defies any clear interpretation as a result of dramatic differences in the 'DFW' rate across sections of the class. Math 1325 for fall 2005 yielded differences in the 'DFW' rate by section from a low of 18% to a high 54%. For fall 2004 the differences were even more extreme, ranging from 17% to 61%. In the absence of strong differences between student ability from section to section, a course with such a well-defined curriculum as Math 1325 should yield far more consistent performance from section to section.

Table 1

CLASS		LETTER GRADE									
		A	B	C	D	F	W	WF	WP	TOTAL	DFW
FRESHMAN	NUMBER	54	90	78	27	68	5	8	4	334	
	PERCENT	16.17%	26.95%	23.35%	8.08%	20.36%	1.50%	2.40%	1.20%	100.00%	33.53%
SOPHOMORE	NUMBER	6	5	14	11	19	5	5	2	67	
	PERCENT	8.96%	7.46%	20.90%	16.42%	28.36%	7.46%	7.46%	2.99%	100.00%	62.69%
JUNIOR	NUMBER	2	6	15	4	17	7	7		58	
	PERCENT	3.45%	10.34%	25.86%	6.90%	29.31%	12.07%	12.07%	0.00%	100.00%	60.34%
SENIOR	NUMBER		8	8	1	5		1		23	
	PERCENT	0.00%	34.78%	34.78%	4.35%	21.74%	0.00%	4.35%	0.00%	100.00%	30.43%
TOTAL NUMBER		62	109	115	43	109	17	21	6	482	
TOTAL PERCENT		12.86%	22.61%	23.86%	8.92%	22.61%	3.53%	4.36%	1.24%	100.00%	40.66%

LISTED AS FRESHMEN
LETTER GRADE

	A	B	C	D	F	W	WF	WP	TOTAL	
NUMBER	54	90	78	27	68	5	8	4	334	
PERCENT	16.17%	26.95%	23.35%	8.08%	20.36%	1.50%	2.40%	1.20%	100.00%	33.53%

IN FALL 2005 FRESHMAN DATABASE
LETTER GRADE

	A	B	C	D	F	W	WF	WP	TOTAL	
NUMBER	54	89	67	27	41	4	6	4	292	
PERCENT	18.49%	30.48%	22.95%	9.25%	14.04%	1.37%	2.05%	1.37%	100.00%	28.08%

CONTINUING FRESHMEN
LETTER GRADE

	A	B	C	D	F	W	WF	WP	TOTAL	
NUMBER		1	11		27	1	2		42	
PERCENT		2.38%	26.19%		64.29%	2.38%	4.76%		100.00%	71.43%

Table 2

LETTER GRADE

TEST	SAT II RANGE	Data	A	B	C	D	F	W	WF	WP	TOTAL
SAT IIC	760-800	NUMBER	6	5	2		1				14
		PERCENT	42.86%	35.71%	14.29%	0.00%	7.14%	0.00%	0.00%	0.00%	100.00%
	710-750	NUMBER	6	3	2	2					13
		PERCENT	46.15%	23.08%	15.38%	15.38%	0.00%	0.00%	0.00%	0.00%	100.00%
	690-700	NUMBER	1	7		1	1	1			11
		PERCENT	9.09%	63.64%	0.00%	9.09%	9.09%	9.09%	0.00%	0.00%	100.00%
	670-680	NUMBER		2	2			1			5
		PERCENT	0.00%	40.00%	40.00%	0.00%	0.00%	20.00%	0.00%	0.00%	100.00%
	660-650	NUMBER	1	6	6		2				15
		PERCENT	6.67%	40.00%	40.00%	0.00%	13.33%	0.00%	0.00%	0.00%	100.00%
	640-640	NUMBER		3		1	2				6
		PERCENT	0.00%	50.00%	0.00%	16.67%	33.33%	0.00%	0.00%	0.00%	100.00%
	630-630	NUMBER		1	4	2	1				8
		PERCENT	0.00%	12.50%	50.00%	25.00%	12.50%	0.00%	0.00%	0.00%	100.00%
	530-620	NUMBER		2	1	5	1				9
		PERCENT	0.00%	22.22%	11.11%	55.56%	11.11%	0.00%	0.00%	0.00%	100.00%
TOTAL		NUMBER	14	29	17	11	8	2			81
TOTAL		PERCENT	17.28%	35.80%	20.99%	13.58%	9.88%	2.47%	0.00%	0.00%	100.00%

Accurate Placement Rate = 59/72 79%

LETTER GRADE

TEST	SAT II RANGE	Data	A	B	C	D	F	W	WF	WP	TOTAL
SAT IC	760-800	NUMBER	4	1							5
		PERCENT	80.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
	710-750	NUMBER	7	8	7	3	4			1	30
		PERCENT	23.33%	26.67%	23.33%	10.00%	13.33%	0.00%	0.00%	3.33%	100.00%
	690-700	NUMBER	5	3	3		6	1	1	1	20
		PERCENT	25.00%	15.00%	15.00%	0.00%	30.00%	5.00%	5.00%	5.00%	100.00%
	670-680	NUMBER		5	1	4	3		1	1	15
		PERCENT	0.00%	33.33%	6.67%	26.67%	20.00%	0.00%	6.67%	6.67%	100.00%
	660-650	NUMBER	1	1	3	1	3		1		10
		PERCENT	10.00%	10.00%	30.00%	10.00%	30.00%	0.00%	10.00%	0.00%	100.00%
	640-640	NUMBER	2	4	2	1	1				10
		PERCENT	20.00%	40.00%	20.00%	10.00%	10.00%	0.00%	0.00%	0.00%	100.00%
	630-630	NUMBER	1		2	3	4		1	1	12

	PERCENT	8.33%	0.00%	16.67%	25.00%	33.33%	0.00%	8.33%	8.33%	100.00%
530-620	**NUMBER**			4				1		5
	PERCENT	0.00%	0.00%	80.00%	0.00%	0.00%	0.00%	20.00%	0.00%	100.00%
TOTAL	**NUMBER**	20	22	22	12	21	1	5	4	107
TOTAL	**PERCENT**	18.69%	20.56%	20.56%	11.21%	19.63%	0.93%	4.67%	3.74%	100.00%

Accurate Placement Rate = 69/103 59%

Table 3

AP SCORE		LETTER GRADE						
		A	B	C	D	F	W	TOTAL
5	NUMBER	12	11	7		1	1	32
	PERCENT	37.50%	34.38%	21.88%	0.00%	3.13%	3.13%	100.00%
4	NUMBER	4	11	5	1	4		25
	PERCENT	16.00%	44.00%	20.00%	4.00%	16.00%	0.00%	100.00%
3	NUMBER		7	9	1	4		21
	PERCENT	0.00%	33.33%	42.86%	4.76%	19.05%	0.00%	100.00%
2	NUMBER		2	2	2	4		10
	PERCENT	0.00%	20.00%	20.00%	20.00%	40.00%	0.00%	100.00%
1	NUMBER			2	2			4
	PERCENT	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	100.00%
TOTAL NUMBER		16	31	25	6	13	1	92
TOTAL PERCENT		17.39%	33.70%	27.17%	6.52%	14.13%	1.09%	100.00%

Accurate Placement Rate = 66/78 = 85%

Table 4

MATH 2419 SPRING 2006

MATH 2417 FALL 2005	LETTER GRADE											2419 GRADE GIVEN 2417		
GRADE	A	B	C	D	F	W	WF	WP	TOTAL	PERCENT	DFW	HIGHER	SAME	LOWER
A	36	15	4	2	1		1		59	24.08%	7.76%	0.00%	61.02%	38.98%
B	6	33	38	11	4			1	93	37.96%		6.45%	35.48%	58.06%
C		11	22	19	14	1	5	2	74	30.20%		14.86%	29.73%	55.41%
D			2	3	10		1	1	17	6.94%		11.76%	17.65%	70.59%
F					1			1	2	0.82%				
TOTAL	42	59	66	35	30	1	7	5	245	100.00%				
PERCENT	17.14%	24.08%	26.94%	14.29%	12.24%	0.41%	2.86%	2.04%	100.00%					
DFW	31.84%													

MATH 2419 SPRING 2005

MATH 2417 FALL 2004	LETTER GRADE											2419 GRADE GIVEN 2417		
GRADE	A	B	C	D	F	W	WF	WP	TOTAL	PERCENT	DFW	HIGHER	SAME	LOWER
A	57	36	6		1			1	101	31.08%	8.00%	0.00%	56.44%	43.56%
B	7	56	33	9	2	2			109	33.54%		6.42%	51.38%	42.20%
C	1	12	35	19	18	2	2		89	27.38%		14.61%	39.33%	46.07%
D		1	3	12	8				24	7.38%		50.00%	50.00%	0.00%
F			1	1					2	0.62%				
TOTAL	65	105	78	41	29	4	2	1	325					
PERCENT	20.00%	32.31%	24.00%	12.62%	8.92%	1.23%	0.62%	0.31%						
DFW	23.69%													

Table 5

CLASS		LETTER GRADE								TOTAL	DFW
		A	B	C	D	F	W	WF	WP		
FRESHMAN	NUMBER	44	57	52	36	40		7	3	239	
	PERCENT	18.41%	23.85%	21.76%	15.06%	16.74%	0.00%	2.93%	1.26%	100.00%	35.98%
SOPHOMORE	NUMBER	3	9	3	2	13	1	2	1	34	
	PERCENT	8.82%	26.47%	8.82%	5.88%	38.24%	2.94%	5.88%	2.94%	100.00%	55.88%
JUNIOR	NUMBER	5	6	5	6	10	1	5	2	40	
	PERCENT	12.50%	15.00%	12.50%	15.00%	25.00%	2.50%	12.50%	5.00%	100.00%	60.00%
SENIOR	NUMBER	2	1		2	5	1	2	1	14	
	PERCENT	14.29%	7.14%	0.00%	14.29%	35.71%	7.14%	14.29%	7.14%	100.00%	78.57%
TOTAL NUMBER		54	73	60	46	68	3	16	7	327	
TOTAL PERCENT		16.51%	22.32%	18.35%	14.07%	20.80%	0.92%	4.89%	2.14%	100.00%	42.81%

Table 6

SAT II RANGE	Data	LETTER GRADE							TOTAL
		A	B	C	D	F	WF	WP	
710-800	NUMBER	1	1						2
	PERCENT	50.00%	50.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
610-700	NUMBER	10	9	6		4	1		30
	PERCENT	33.33%	30.00%	20.00%	0.00%	13.33%	3.33%	0.00%	100.00%
550-600	NUMBER	15	26	18	15	14	1		89
	PERCENT	16.85%	29.21%	20.22%	16.85%	15.73%	1.12%	0.00%	100.00%
500-540	NUMBER	4	4	9	8	11		2	38
	PERCENT	10.53%	10.53%	23.68%	21.05%	28.95%	0.00%	5.26%	100.00%
460-490	NUMBER		2	3	3		2	1	11
	PERCENT	0.00%	18.18%	27.27%	27.27%	0.00%	18.18%	9.09%	100.00%
TOTAL NUMBER		30	42	36	26	29	4	3	170
TOTAL PERCENT		17.65%	24.71%	21.18%	15.29%	17.06%	2.35%	1.76%	100.00%

Table 7

CALCULUS I SPRING 2006

PRECALC FALL 2005	WHOLE LETTER GRADE											2417 GRADE GIVEN 2312		
	A	B	C	D	F	W	WF	WP	TOTAL	PERCENT	DFW	HIGHER	SAME	LOWER
A	16	14	8		2			1	41	27.52%	8.05%	0.000	0.390	**0.610**
B	4	21	14	7	7	1	3	2	59	39.60%		0.068	0.356	**0.576**
C		1	6	10	13		6	1	37	24.83%		0.027	0.162	**0.811**
D			1	1	3	1	4		10	6.71%		0.100	0.100	**0.800**
F							1		1	0.67%				
WF						1			1	0.67%				
TOTAL	20	36	29	18	25	3	14	4	149					
PERCENT	13.42%	24.16%	19.46%	12.08%	16.78%	2.01%	9.40%	2.68%						
DFW	42.95%													

CALCULUS I SPRING 2005

PRECALC FALL 2004	WHOLE LETTER GRADE											2417 GRADE GIVEN 2312		
	A	B	C	D	F	W	WF	WP	TOTAL	PERCENT	DFW	HIGHER	SAME	LOWER
A	11	13	3	3	5				35	35.00%	5.00%	0.000	0.314	**0.686**
B	1	7	8	5	8	8	3	1	41	41.00%		0.024	0.171	**0.805**
C			1	4	8	3	3		19	19.00%		0.000	0.053	**0.947**
D					3				3	3.00%		0.000	0.000	**1.000**
F					2				2	2.00%		0.000	1.000	**0.000**
TOTAL	12	20	12	12	26	11	6	1	100					
PERCENT	12.00%	20.00%	12.00%	12.00%	26.00%	11.00%	6.00%	1.00%						
DFW	56.00%													

Table 8

CLASS		A	B	C	D	F	W	WF	WP	TOTAL	DFW
					LETTER GRADE						
FRESHMAN	NUMBER	56	33	19	9	7	1	1	3	129	
	PERCENT	43.41%	25.58%	14.73%	6.98%	5.43%	0.78%	0.78%	2.33%	100.00%	16.28%
SOPHOMORE	NUMBER	10	15	12	4	13	3	9	1	67	
	PERCENT	14.93%	22.39%	17.91%	5.97%	19.40%	4.48%	13.43%	1.49%	100.00%	44.78%
JUNIOR	NUMBER	13	23	14	14	12	4	12	2	94	
	PERCENT	13.83%	24.47%	14.89%	14.89%	12.77%	4.26%	12.77%	2.13%	100.00%	46.81%
SENIOR	NUMBER	7	2	2		3	1	3	1	19	
	PERCENT	36.84%	10.53%	10.53%	0.00%	15.79%	5.26%	15.79%	5.26%	100.00%	42.11%
TOTAL NUMBER		86	73	47	27	35	9	25	7	309	
TOTAL PERCENT		27.83%	23.62%	15.21%	8.74%	11.33%	2.91%	8.09%	2.27%	100.00%	33.33%

Table 9

SAT RANGE		A	B	C	D	F	W	WF	WP	TOTAL
					LETTER GRADE					
750-800	NUMBER				1	1				2
	PERCENT	0.00%	0.00%	0.00%	50.00%	50.00%	0.00%	0.00%	0.00%	100.00%
700-740	NUMBER	4	1							5
	PERCENT	80.00%	20.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%
650-690	NUMBER	6	2	3	1					12
	PERCENT	50.00%	16.67%	25.00%	8.33%	0.00%	0.00%	0.00%	0.00%	100.00%
600-640	NUMBER	14	6	2	3	2			1	28
	PERCENT	50.00%	21.43%	7.14%	10.71%	7.14%	0.00%	0.00%	3.57%	100.00%
560-590	NUMBER	2	3	3		3	1	1	1	14
	PERCENT	14.29%	21.43%	21.43%	0.00%	21.43%	7.14%	7.14%	7.14%	100.00%
520-550	NUMBER	7	9	5					1	22
	PERCENT	31.82%	40.91%	22.73%	0.00%	0.00%	0.00%	0.00%	4.55%	100.00%
480-510	NUMBER	4	5				1			10
	PERCENT	40.00%	50.00%	0.00%	0.00%	0.00%	10.00%	0.00%	0.00%	100.00%
360-470	NUMBER	1		3		1				5
	PERCENT	20.00%	0.00%	60.00%	0.00%	20.00%	0.00%	0.00%	0.00%	100.00%
Total NUMBER		38	26	16	5	7	2	1	3	98
Total PERCENT		38.78%	26.53%	16.33%	5.10%	7.14%	2.04%	1.02%	3.06%	100.00%

ACCURATE PLACEMENT RATE = 76/93 82%

Table 10

MATH 1326 SPRING 2006

MATH 1325			**WHOLE GRADE**									**1326 GRADE GIVEN 1325**		
	A	**B**	**C**	**D**	**F**	**W**	**WF**	**WP**	**TOTAL**	**PERCENT**	**DFW**	**HIGHER**	**SAME**	**LOWER**
A	24	13	4	1	2	3	1	1	49	36.30%	8.89%	0.000	0.490	0.510
B	11	12	12	3	5	1		1	45	33.33%		0.244	0.267	0.489
C	1	2	7	7	5	3	1	3	29	21.48%		0.103	0.241	0.655
D	1	4	1		1	3	2		12	8.89%		0.500	0.000	0.500
TOTAL	37	31	24	11	13	10	4	5	135					
PERCENT	27.41%	22.96%	17.78%	8.15%	9.63%	7.41%	2.96%	3.70%						
DFW	31.85%													

MATH 1326 SPRING 2005

MATH 1325			**WHOLE GRADE**									**1326 GRADE GIVEN 1325**		
	A	**B**	**C**	**D**	**F**	**W**	**WF**	**WP**	**TOTAL**	**PERCENT**	**DFW**	**HIGHER**	**SAME**	**LOWER**
A	61	25	9	3	3	1		1	103	58.52%	8.52%	0.000	0.592	0.408
B	6	18	6	1	2		1		34	19.32%		0.176	0.529	0.294
C		7	9		6		2		24	13.64%		0.292	0.375	0.333
D	1	2	2	2	4	1	2	1	15	8.52%		0.333	0.133	0.533
TOTAL	68	52	26	6	15	2	5	2	176					
PERCENT	38.64%	29.55%	14.77%	3.41%	8.52%	1.14%	2.84%	1.14%						
DFW	17.05%													

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