Trinity

EXECUTIVE SUMMARY

Most important findings

- Pass rates were within a 52%-100% range for students who finished their courses across various math sections
- Withdraw/did not finish rates were within a 24%-43% across various math sections
- During the Fall semester, Math 030 had the highest rates of students who withdrew and who did not finish
- During the Spring semester, adjunct taught classes had the highest rates of students who did not finish the course
- Students with DSS accommodations need more support for Math 030-101S
- Very low Accuplacer scores are a fairly good predictor for withdrawal in any math course

Overview of the most important recommendations

- Need more co-requisite supports for Math 030-101S
- Need more mathematics faculty with some background in teaching/education
- Consider a pilot course that uses course modules
- Provide built in to the syllabus incentives and/or math contracts
- Require all students placing into 100 and 101 to take a workshop on retention of information
- Students transferring in math courses in order to take Math 108 or Math 109, should not have math courses older than 3 years
- Tailor MML hw so that dependency on learning aids becomes minimized
- Allot some larger sized seating accommodations in the math classrooms
- Math labs should be on a different day from the lecture for maximum absorption of material
- Revision of Math 108 course content

Table of Contents

List of Figures

Introduction

This report will provide a comprehensive overview of findings for each of fourteen courses taught by mathematics teaching faculty across the Fall of 2011 and Spring 2012 semesters. More specifically, it will discuss information for five sections of Math 100, one section of Math 030, two sections of Math 101, two sections of Math 101S, one section of Math 060, two sections of the new piloted Math 108, and one section of Math 109. The primary sources of data used in this report are student enrollment information, course statistics calculated by Mymathlab, and student placement scores from Accuplacer. The main goal of this report is to bring to light the culmination of an academic year's worth of hard work on the part of students and teachers, to identify strengths and weaknesses, and to offer suggestions for ensuring the success of students who will take these courses in the future. Sub-goals include analyzing potential relationships between diagnostic tests and final grades, examining pass/fail rates of students who repeat, and examining factors which affect learning outcomes.

Topics of report

For each course, at the minimum, the following information will be provided: details about the course, pass rates and grade distributions, attendance rates, diagnostic test gains, repeating students, class performance by chapter, and class performance by homework section. Each section concludes with a summary of the data. I conclude the report with some recommendations for future semesters. Below, I provide a brief description of the population served and a snapshot of data across all courses (in which data was available), and then move to discuss each course individually by semester.

Profile of SPS students

School of Professional Studies math learners are students who typically enter Trinity not having taken a mathematics course in 5-10 years or more. These students tend to carry more anxieties and phobias surrounding mathematics than College of Arts of Sciences students (CAS) (many of whom have just matriculated from high school and recently completed Algebra I or II), and thus require specialized attention. Some of these students were registered with Disabilities services and received accommodations. Demographically, the majority of students were of African/African American descent, female, older adults, and juggling responsibilities of family, full time employment, and school.

Snapshot

Table 1: Overview of Fall 2011

Course	Total Enrollment	Regular Attendees	% Withdrew or did not finish	Passing Rate (Original Roster)	Passing Rate (Regular Attendees)
***All sections of Math 030, 100**	70	41	41%	54%	93%
All sections of Math 101, 101S	29	22	24%	59%	77%
Total	**99**	**63**	**36%**	**56%**	**87%**

*Note: The word all in this report means all sections for which data was attainable.

Table 2: Overview of Spring 2012

Course	Total Enrollment	Regular Attendees	% Withdrew or did not finish	Passing Rate (Original Roster)	Passing Rate (Regular Attendees)
All sections of Math 100	32	19	41%	56%	95%
All sections of Math 060, 101, 101S	51	29	43%	29%	52%
All sections of Math 108	30	17	43%	57%	100%
All sections of Math 109	20	13	35%	65%	100%
Total	**133**	**78**	**24%**	**47%**	**81%**

Fall 2011 Data

Math 100 and 030 (Fall 2011)

Course description

Math 100/Math 030 (Math 030 is taught at THEARC) Introduction to Pre-Algebra is designed for students with little or no high school algebra, or those who have not taken high school algebra in a number of years. It provides a comprehensive overview of basic computational skills and their applications, such as fractions, decimals, ratios and proportions, percentages, measurement, and an introduction to algebra.

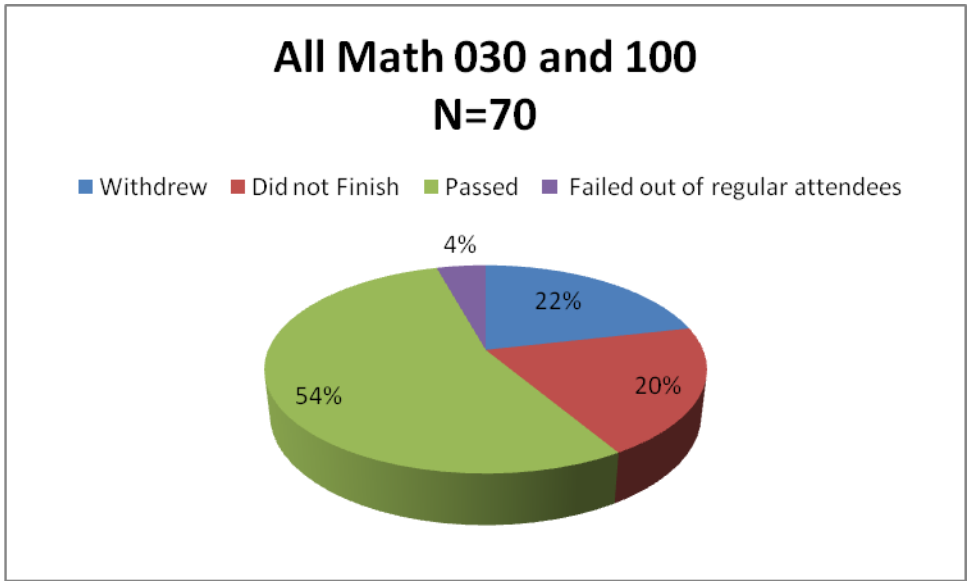
Findings from 1 specialist taught section of Math 030, 2 specialist taught sections of Math 100, and 1 adjunct taught section of Math 100 are presented in the next section.

Findings

Pass rates – all 4 sections

A total of 70 students enrolled in these courses. 15 students (21% of the total) withdrew, 14 did not finish[1] (20%), leaving a total of 41 students (59%) who actually finished the course. Of the students that finished, only 3 failed. Findings are illustrated below.

Figure 1: Enrollment status for all Fall 2011 sections of Math 100 and 030

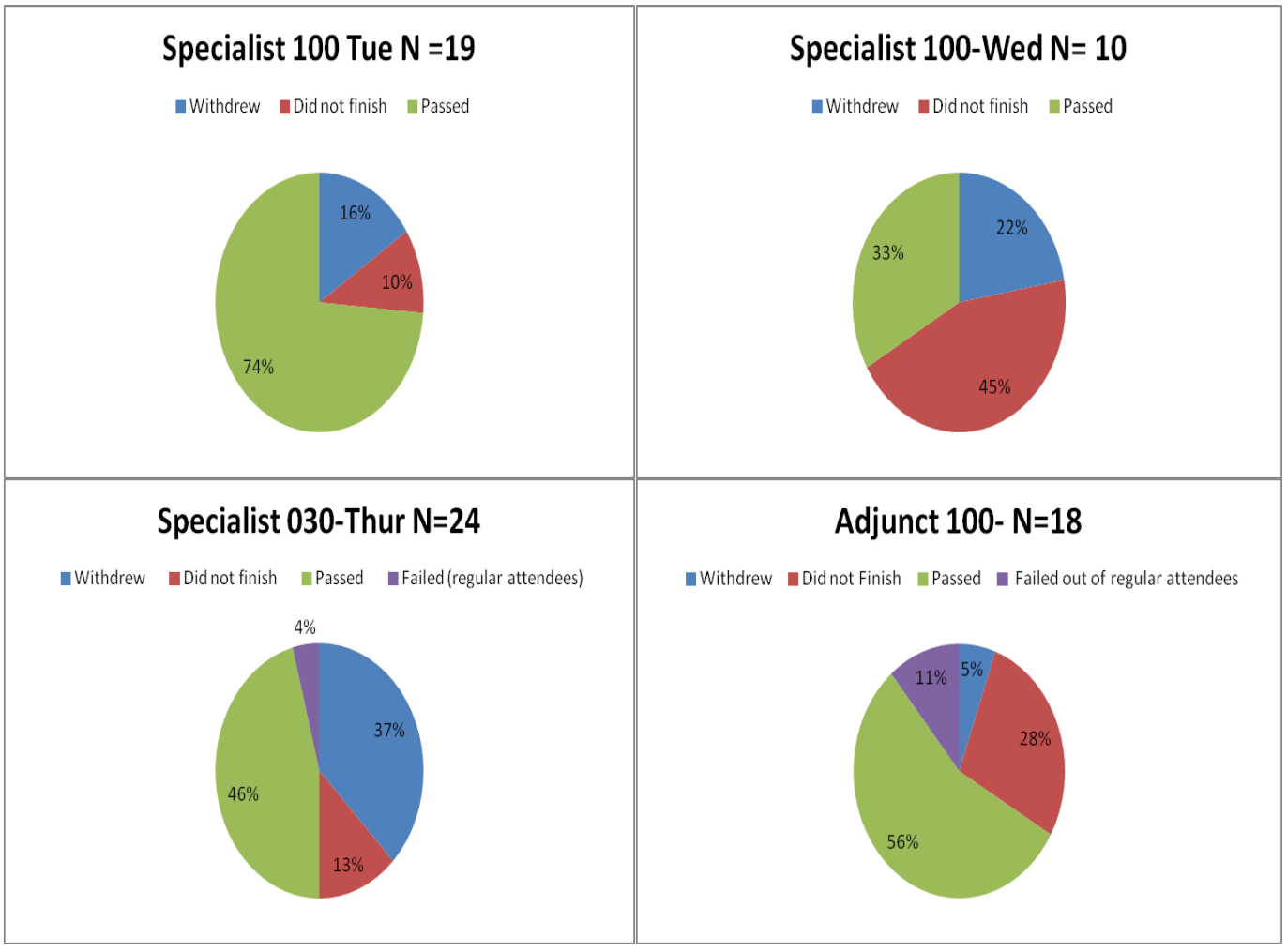


[1] Did not finish means the student stopped attending or did not take the Final exam.

Withdrawals *and* students who do not finish account for 42% of Math 100/030 enrollment status. This is very high, almost half of these students across all four sections. 24%, almost one quarter of students failed (regular attendees and students who did not finish). Across the 3 specialist taught sections, of the 23 students who either withdrew or didn't finish, 22% were registered with DSS. This is almost one quarter of these students across all three sections, and seems significant.

The pass rate across all four sections for all students enrolled was 54% while the pass rate for all students who finished the course was 93%. Below are the enrollment figures for each individual section.

Figure 2: Fall 2011 Math 030/100 enrollment status parsed out by section

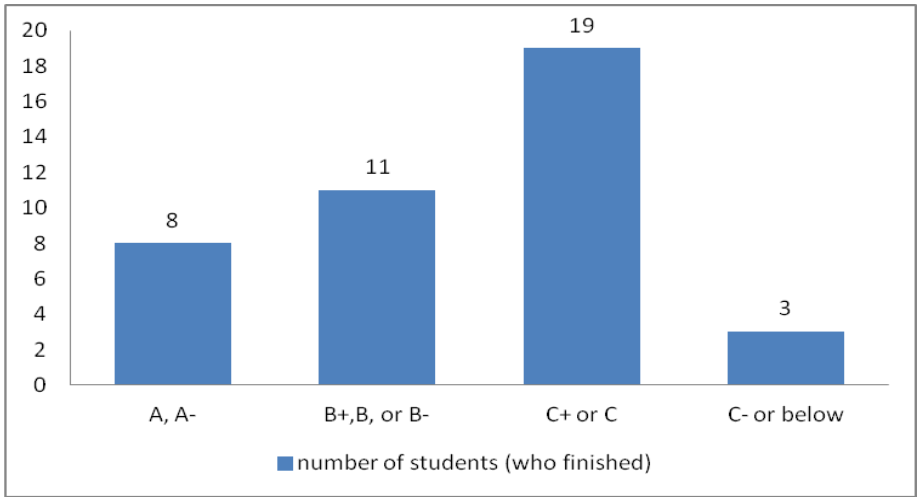


When parsed out by respective sections, the majority of withdrawals come from students in the Math 030 (Thearc) Thursday night class. The bulk of the students who did not finish the course,

come from the Wednesday night 100 section. The Tuesday night and Adjunct sections of Math 100 had the highest pass rates. The Adjunct section of Math 100 had the highest number of regular attendees who failed the course.

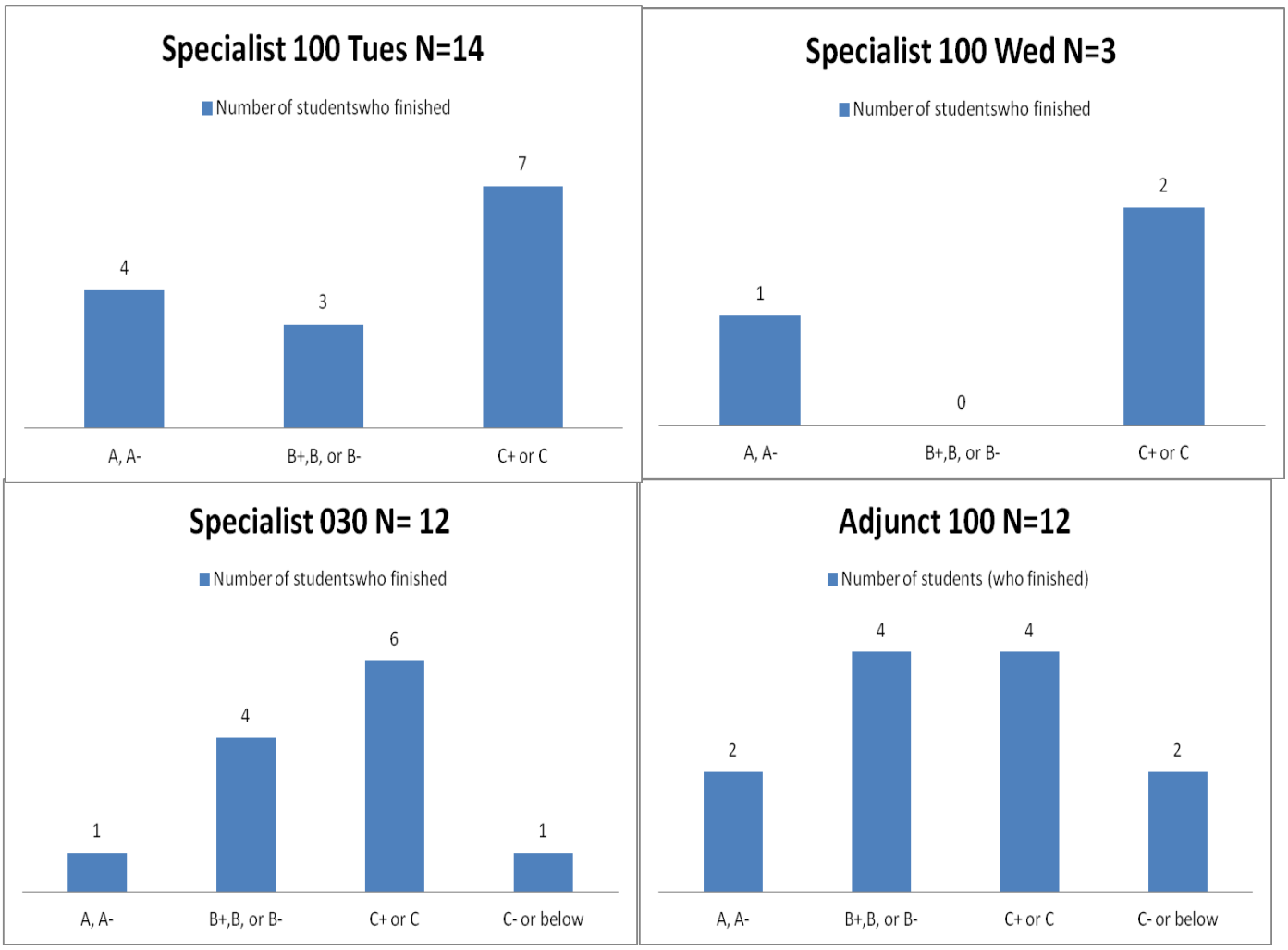
The pass rates for the specialist taught Tuesday night section were 74% for all enrolled and 100% for students who finished the course. The pass rates for the specialist taught Wednesday night section were 33% for all enrolled and 100% for students who finished the course. The pass rates for the specialist taught Thursday night 030 section were 46% for all enrolled and 92% for students who finished the course. The pass rates for the adjunct taught section were 56% for all enrolled and 83% for students who finished the course. Below is an illustration of how grades were distributed across all four sections for students who finished the course.

Figure 3: Overall grade distribution for all Fall 2011 sections of Math 030 and 100



Of the forty-one students who finished the course, eight students earned grades of A or A-, eleven students earned grades of B+, B or B-, nineteen students earned grades of C+ or C, and three students earned a C- or lower. In other words, 20% earned some variation of an A, 27% earned some variation of a B, 46% of the classes earned C or C+, and 7% earned a failing grade. Failing was defined as attaining an overall average of less than a C. Below are the grade distributions for each individual section.

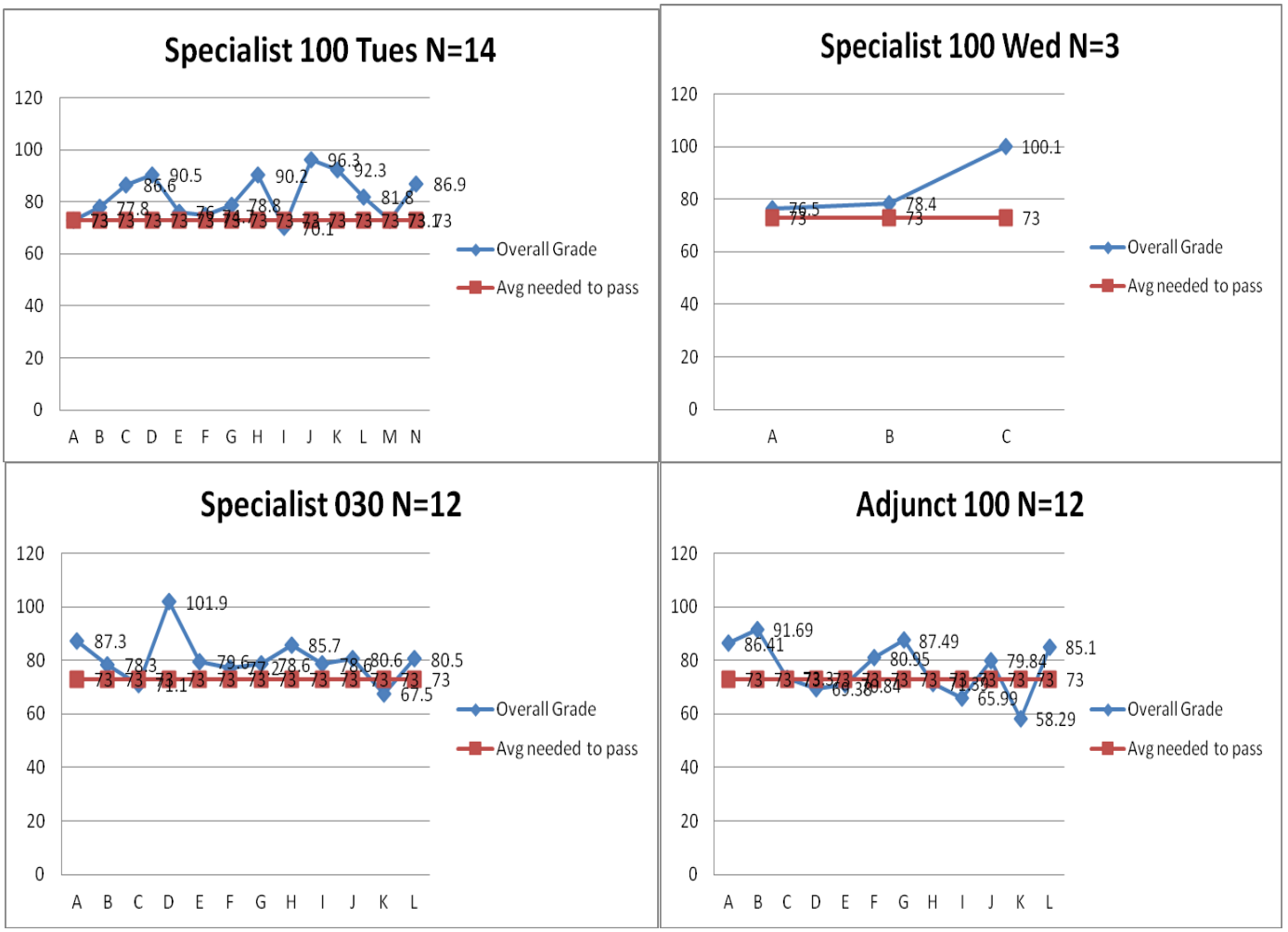
Figure 4: Fall 2011 Math 030/100 overall grade distribution parsed out by section



The Tuesday, Wednesday, and 030 sections seemed skewed towards the lower end of passing, while the adjunct section's grades seemed somewhat more normally distributed. Looking across all classes, the C+ and C's seemed to be the most frequent grade.

Below are the distributions of overall grade averages by student for each section of Math 030 and 100 (as it would be difficult to show all students across all four classes in one graph.)

Figure 5: Fall 2011 Math 030/100 overall student grade average distribution by student parsed out by section



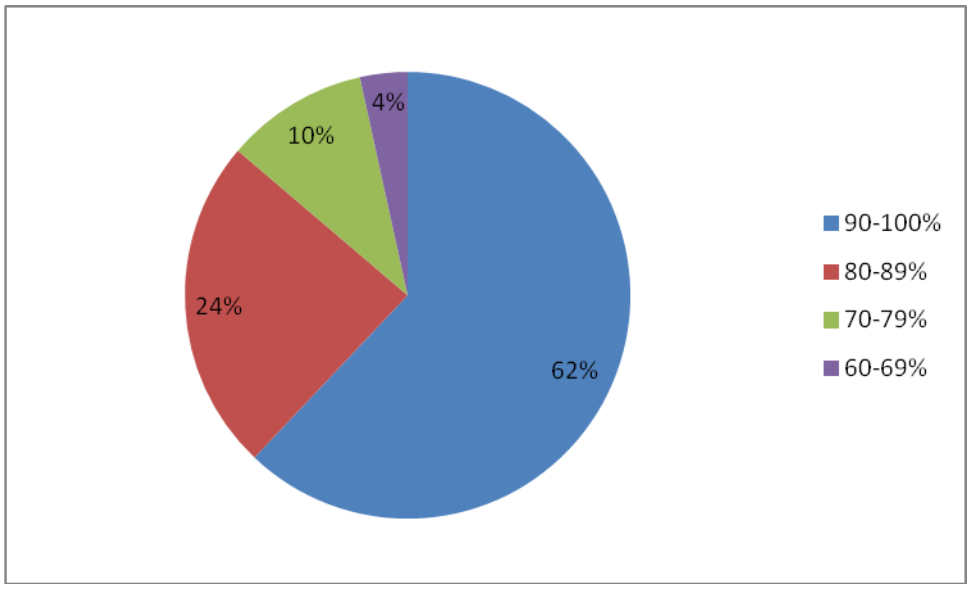
Across all four sections, most students seemed to perform above the minimum standards for passing. The 030 and adjunct sections had some dips in performance. As calculated by Mymathlab, the overall class average for the Tuesday class was 82%, 85% for the Wednesday class, and 80.6% for the 030 class. This data was not available for the adjunct class here. The overall class median for each class respectively was 80.3%, 78.4%, and 79.1%. The classes had relatively good performance.

Math 100/030 Attendance-specialist sections

This data was not available for the adjunct section. 18 (62%) of the 29 students who finished the course, had an attendance rate of 90% or higher. Seven (24%) of these 29 had an attendance rate

of 80% -89%. Three (10%) had an attendance rate of 70%-79% and one student (4%) had a rate of 60%-69%. The attendance rate is illustrated below.

Figure 6: Fall 2011 Math 100/030 attendance rates-specialist sections



Attendance was very good. I attribute this to the policy where a student should miss no more than 2 classes (since it is a foundational course).

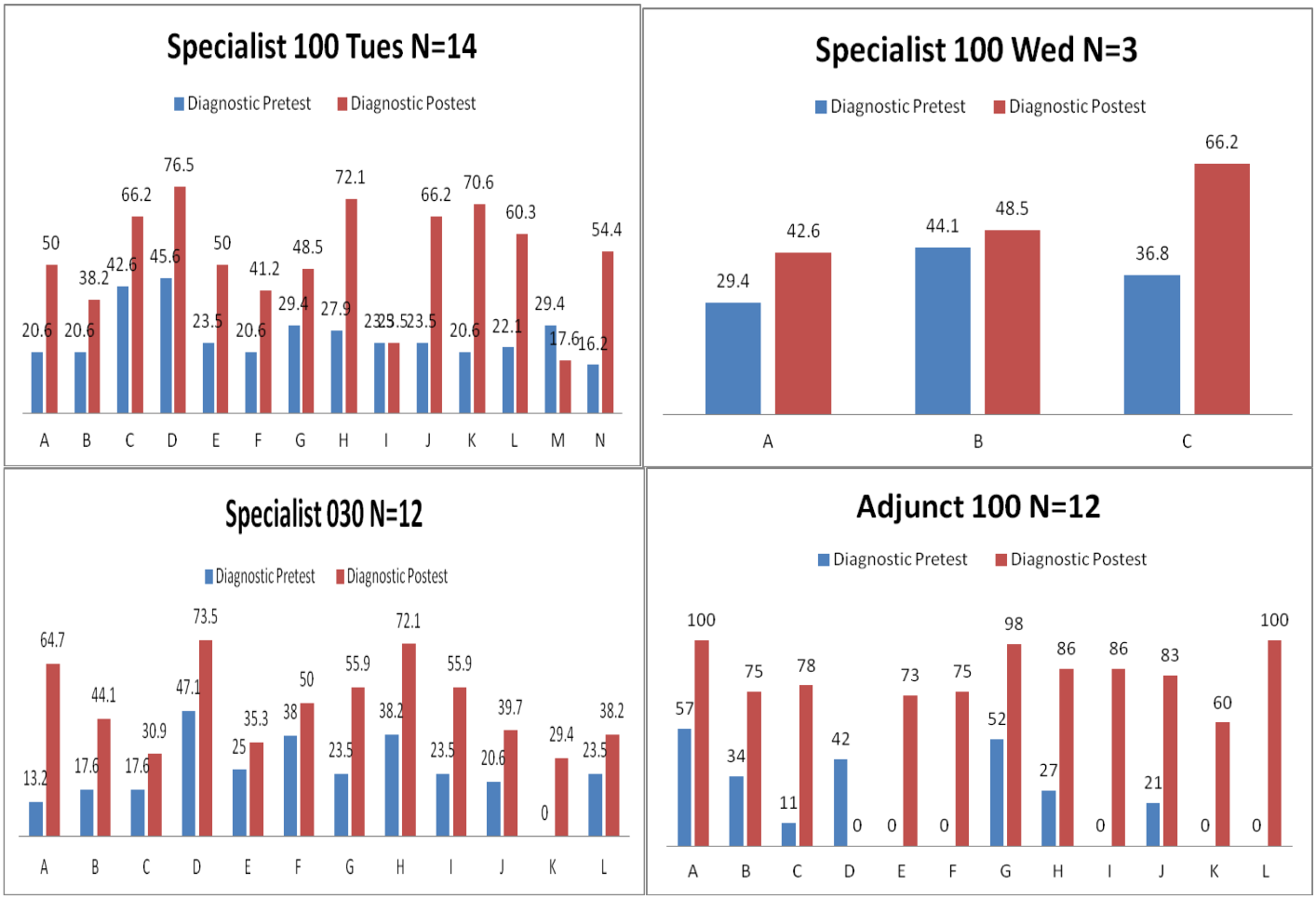
Repeaters-all sections

Of the 70 students enrolled in the course, 16 (23%) were repeating. Half of these repeaters withdrew or did not finish the course, 2 and 6 respectively, and will have to retake the course.

Results of diagnostic pre and post tests-all sections

Students took a diagnostic test via MyMathLab (MML) at the beginning of the semester, and then again at the end of the semester. Both tests contained the exact same items. Below are the results of the students' (who finished) percentage scores on the diagnostic tests for each section.

Figure 7: Fall 2011 Math 030/100 Diagnostic test results parsed out by section

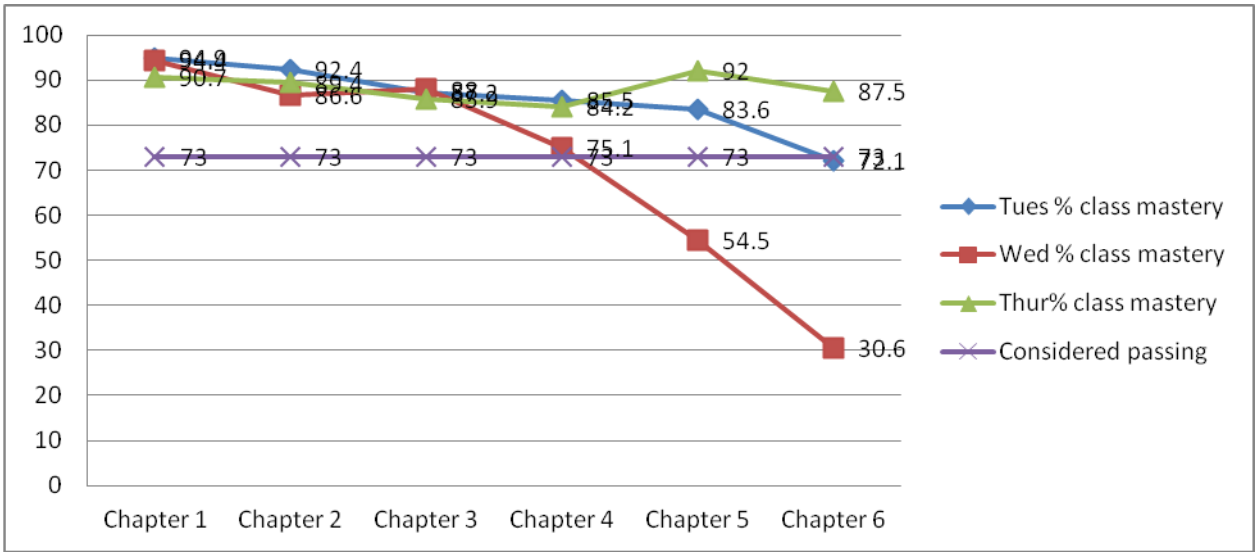


With a small number of exceptions, students who took *both* tests made gains.

Performance by chapter-Math 100/030 specialist sections

Below is an illustration of how all three classes performed on each chapter. Data was not available for the adjunct section.

Figure 8: Fall 2011 Math 030/100 classes' performance by chapter-specialist sections

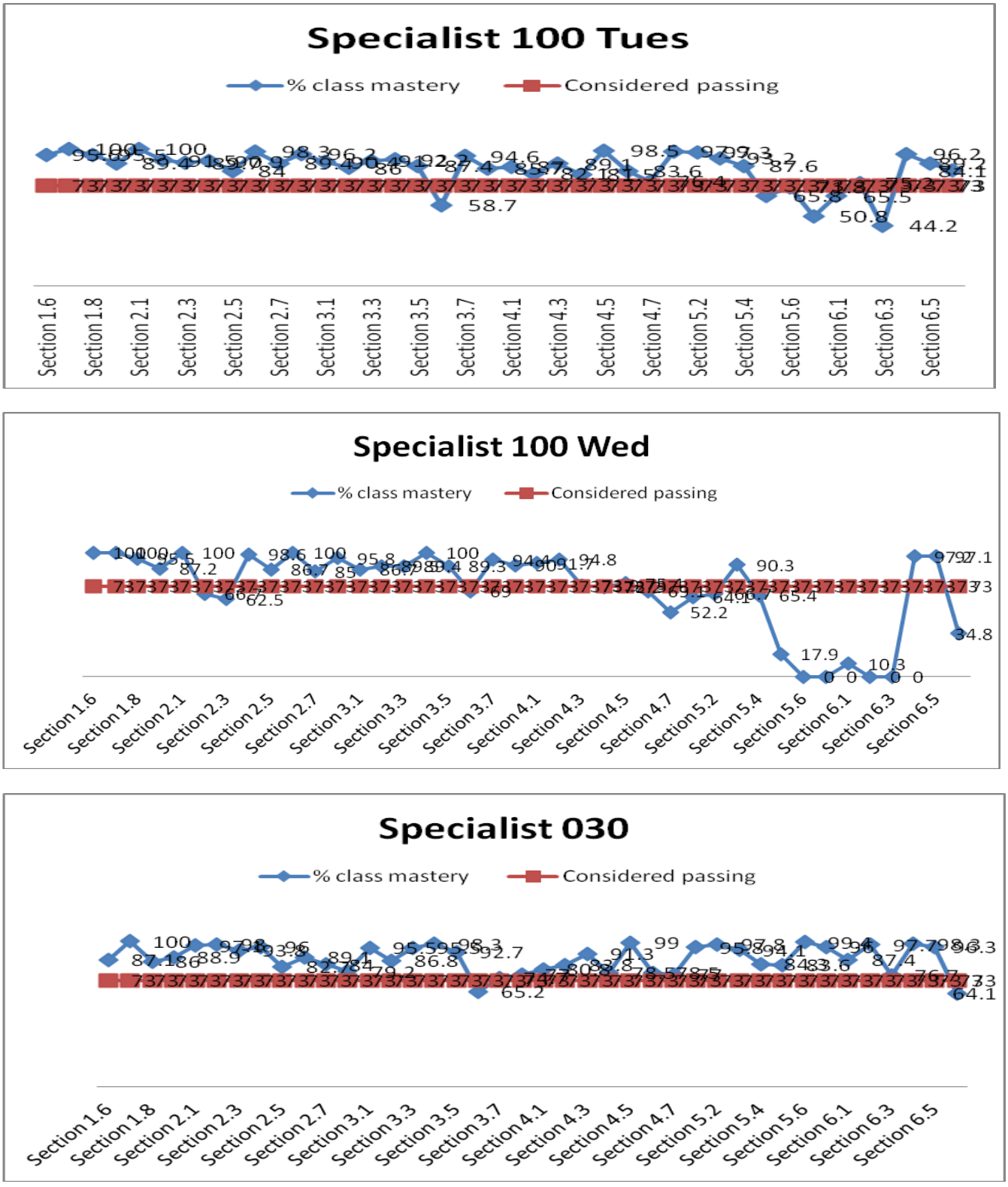


Of all three classes, Thursday (030) students maintained averages above the minimum standards for passing throughout the whole semester. In Chapter 5 on decimals, there was a peak for this class. A decline in average occurs in Chapter 4 on fraction addition and subtraction. The Tuesday Math 100 class strangely, slowly declines with each new Chapter and reaches a minimum in Chapter 6 on percents. The Wednesday Math 100 section falls below the minimum standards for passing in Chapters 5 and 6. A small peak occurs in Chapter 3 on fraction multiplication and division. The three students that remained in the Wednesday section simply stopped completing homework in MML towards the end of the semester which likely accounts for the drastic decline when compared to the other larger classes.

Performance by homework section-specialist

Data was not available for the adjunct section. The illustration below conveys more detailed information about sections within chapters that had variation in performance for the specialist taught sections.

Figure 9: Fall 2011 Math 030/100 class performance by Chapter section for all specialist sections



Looking at all three classes, students struggled in sections 2.2, 2.3, 3.6,4.7, 5.1, 5.2, 5.5, 5.6 5.7, 6.1, 6.3,and 6.6, These sections covered least common multiples; adding, order of operations; subtraction, equations, and applications; more with fraction notation and decimal notation; and solving equations. These are typically the most challenging topics for learners of arithmetic and basic skills, thus the dips in performance make sense.

Visual Summary of Fall 2011 Math 030/100 Data

Figure 10: All Fall 2011 Math 030/100 enrollment

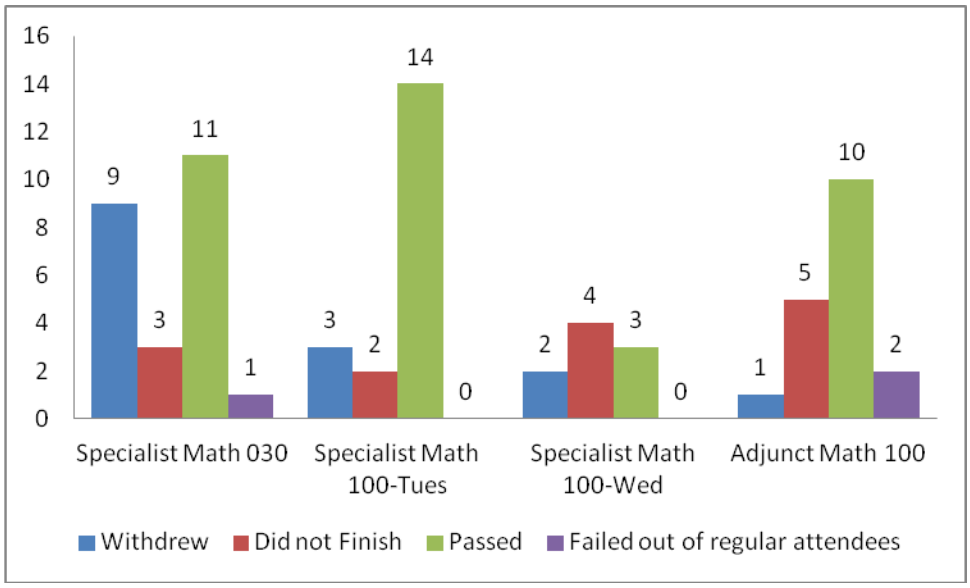


Figure 11: All Fall 2011 Math 030/100 grade distribution

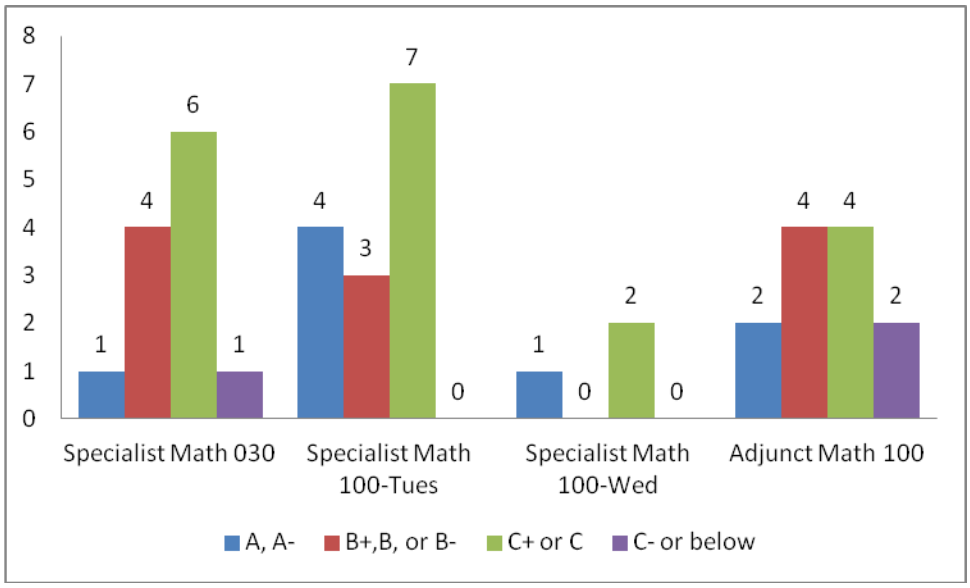


Figure 12: All Fall 2011 Math 030/100 overall grade averages of students who finished

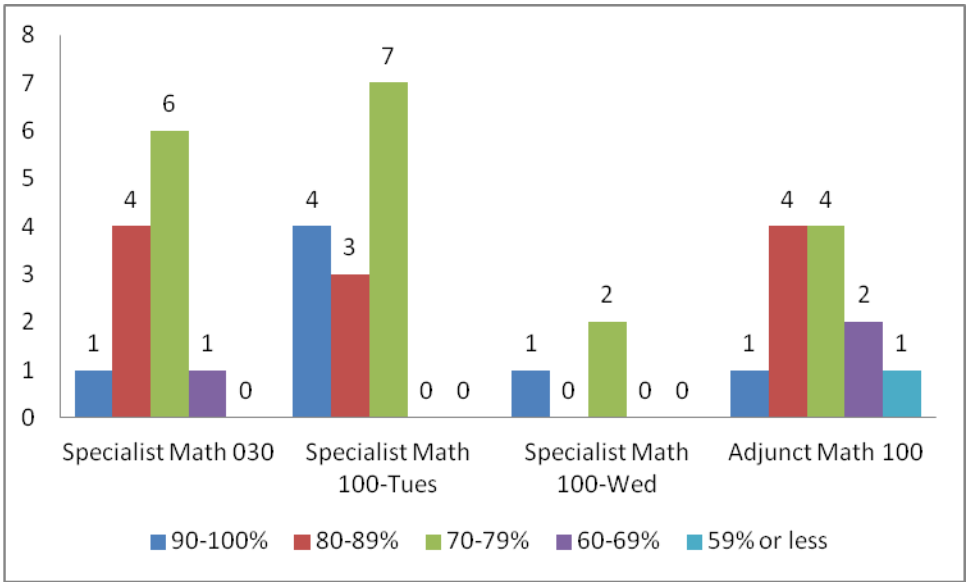


Figure 13: All Fall 2011 Math 030/100 test averages of students who finished

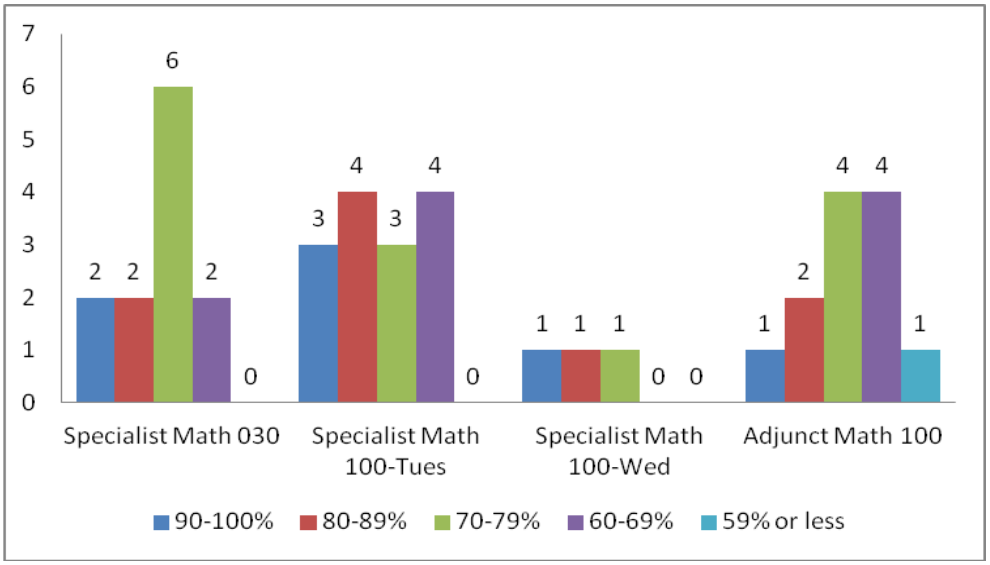


Figure 14: All Fall 2011 Math 030/100 pass rates of students for all enrolled

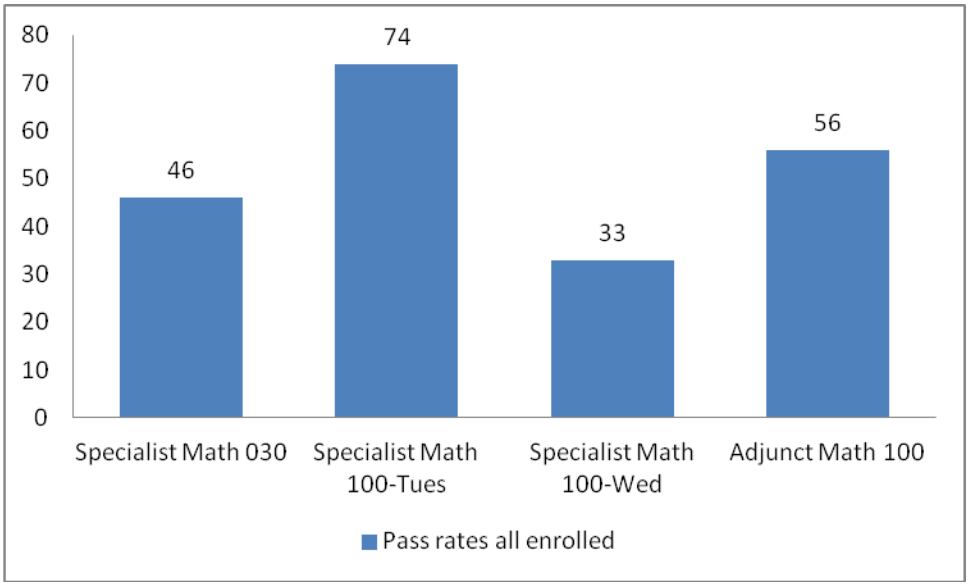
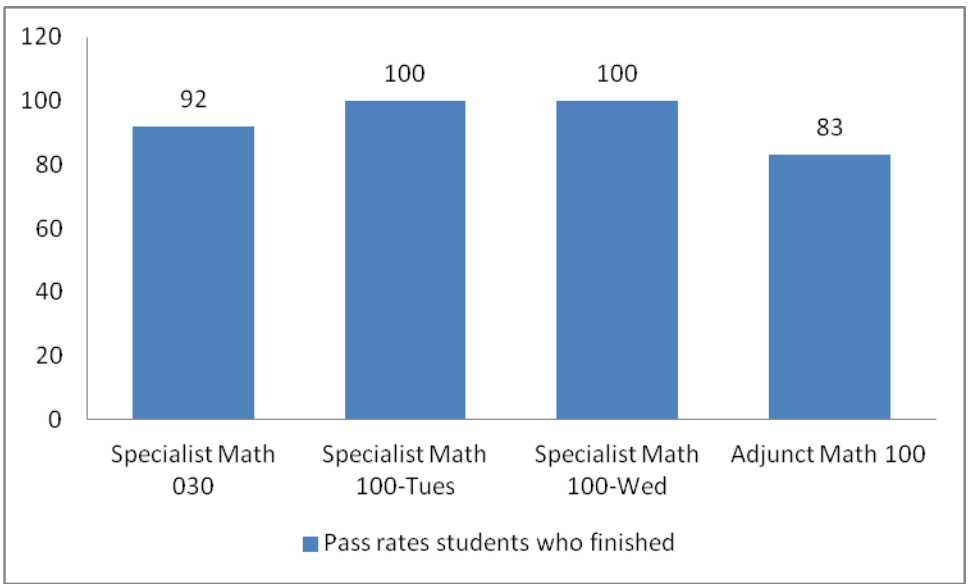


Figure 15: All Fall 2011 Math 030/100 Pass rates for students who finished the course



Summary

Math 030/100 tends to have a lot of withdrawals and not finishing. 46% of students will need to retake this course. The average grade for a student taking this course is a C, which is considered an average level of comprehension. Approximately one quarter of students who took this course was repeating. Attendance and class mastery overall were fairly good. Students with disabilities

will need more support for these courses. The specialist taught sections had lower pass rates for all enrolled but higher pass rates who looking at students who finished.

Math 101 and 101S (Fall 2011)

Course description

Math 101/101S, Introductory Algebra, is a course intended to provide students with an intensive review of high school algebra. Topics include a review of basic arithmetic operations, the real number system, algebraic expression and exponents with basic rules of algebra, linear equations and inequalities with applications, and graphs of equations and inequalities. The S in Math 101S indicates that this course is paired with a 2 hour block of supplementary lab time. During lab, students took opportunities to gain clarity on certain topics, engage in group activity, and become more proficient through extensive practice problems. Labs varied in nature from intense group work to less formal math jeopardy.

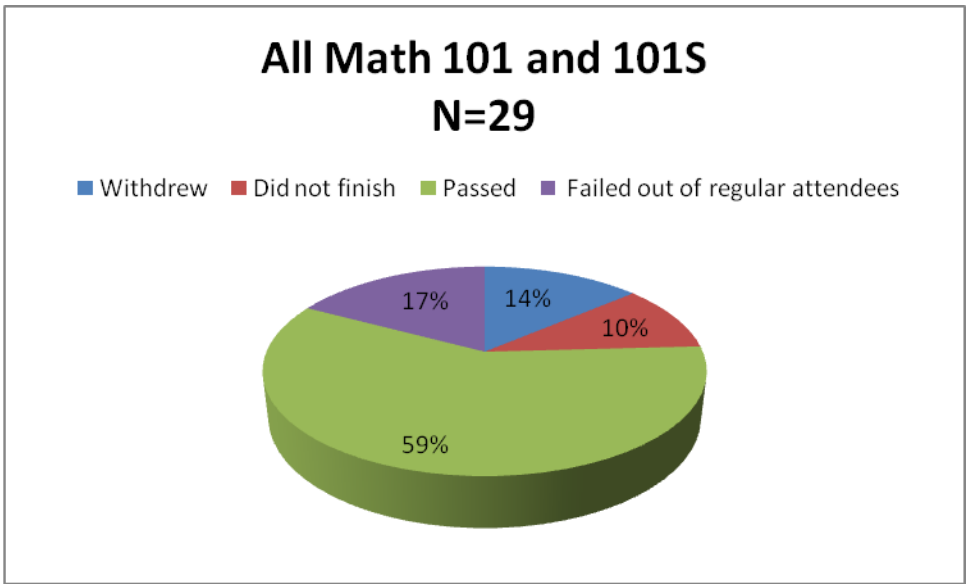
Findings from 1 specialist taught section of Math 101S, and 1 adjunct taught section of Math 101 are presented in the next section. The Math 101S course was taught on Saturdays from 9:00-12:00 in the morning and again from 12:00-2:00 (lab portion) on the same day (this is significant).

Findings

Pass rates – both sections

A total of 29 students enrolled in these courses. Four students (14%) withdrew, three students (10 %) did not finish, and 22 remained (76%). Of the 22 that remained, 5 failed the course. Findings are illustrated below.

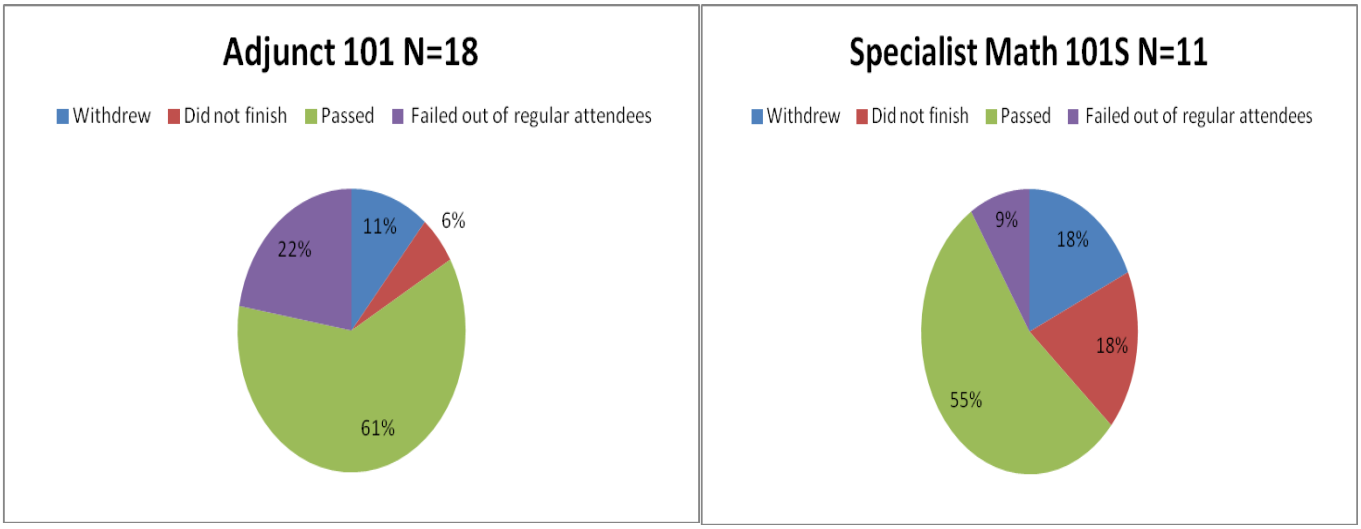
Figure 16: Enrollment status for all Fall 2011 sections of Math 101 and 101S



Withdrawals and students who do not finish account for 24%, almost a quarter of Math 101 and 101S enrollment status. 27% of student failed (regular attendees and students who did not finish). One of the students who did not finish was registered with disabilities services.

The pass rate across both sections for all students enrolled was 59% while the pass rate for all students who finished the course was 77%. Below are the enrollment figures for each individual section.

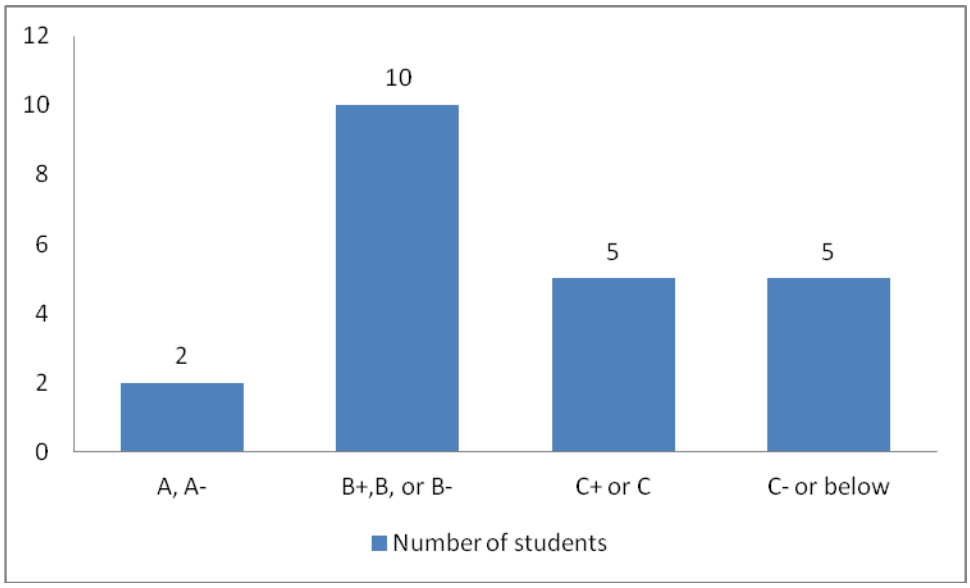
Figure 17: Fall 2011 Math 101/101S enrollment status parsed out by section



When parsed out by respective sections, the majority of withdrawals and students who did not finish come from students in the 101S course. The 101 course had higher pass rates for all enrolled and a higher rate of regular attendees who failed the course.

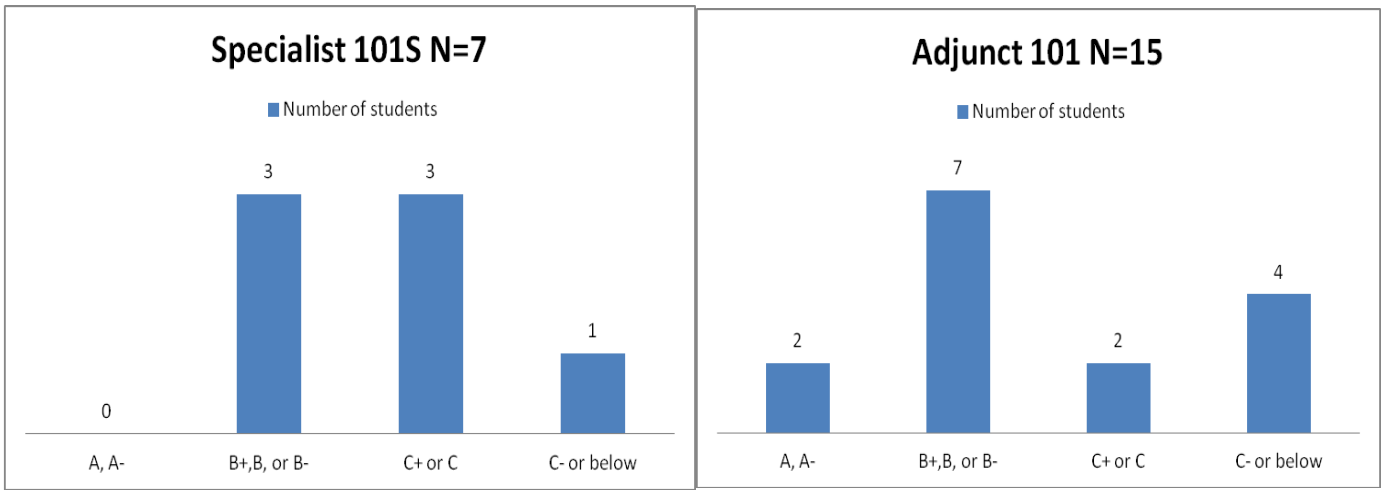
The pass rates for Math 101S were 55% for all enrolled and 86% for students who finished the course. The pass rates for Math 101 were 61% for all enrolled and 73% for students who finished the course. Below is an illustration of how grades were distributed across both sections for students who finished the course.

Figure 18: Fall 2011 Math 101/101S overall grade distribution



Of the twenty-two students who finished the course, two students earned grades of A or A-, ten students earned grades of B+, B or B-, five students earned grades of C+ or C, and five students earned a C- or lower. In other words, 9% earned some variation of an A, 45% earned some variation of a B, 23% of the classes earned C or C+, and 23% earned a failing grade. Failing was defined as attaining an overall average of less than a C. Below are the grade distributions for each individual section.

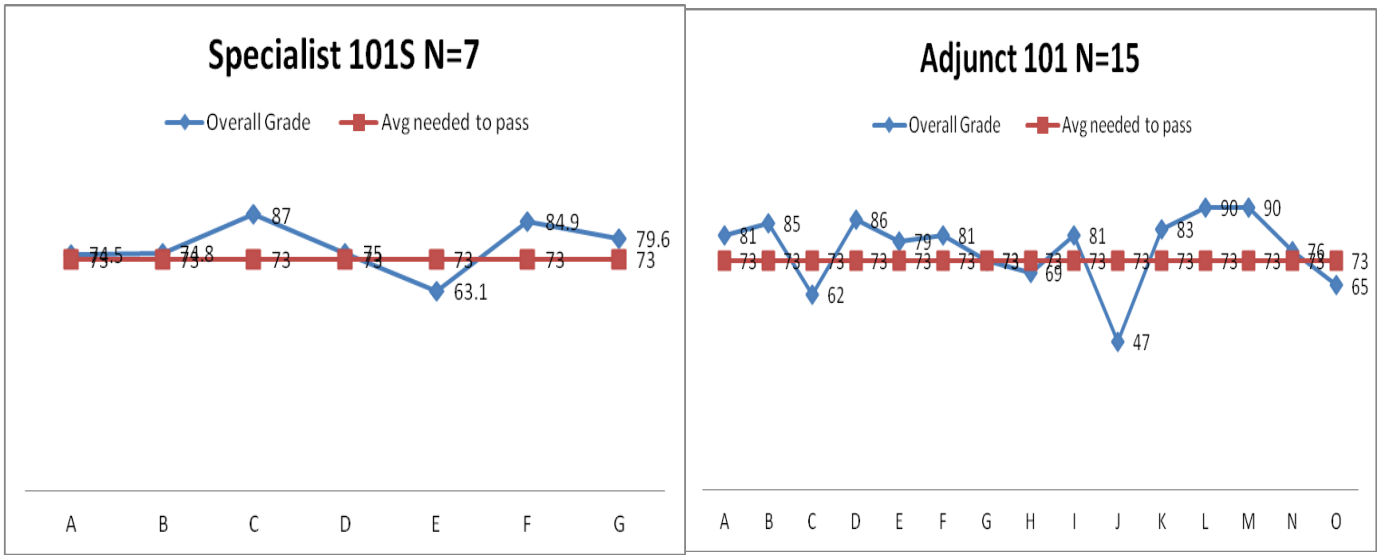
Figure 19: Fall 2011 Math 101/101S overall grade distribution parsed out by section



In the 101S class the majority of the grades were B's and C's while in the 101 class the majority of the grades were B's.

Below are the distributions of overall grade averages by student who finished the course for each section of Math 101 and 101S.

Figure 20: Fall 2011 Math 101/101S overall grade distribution by student parsed out by section

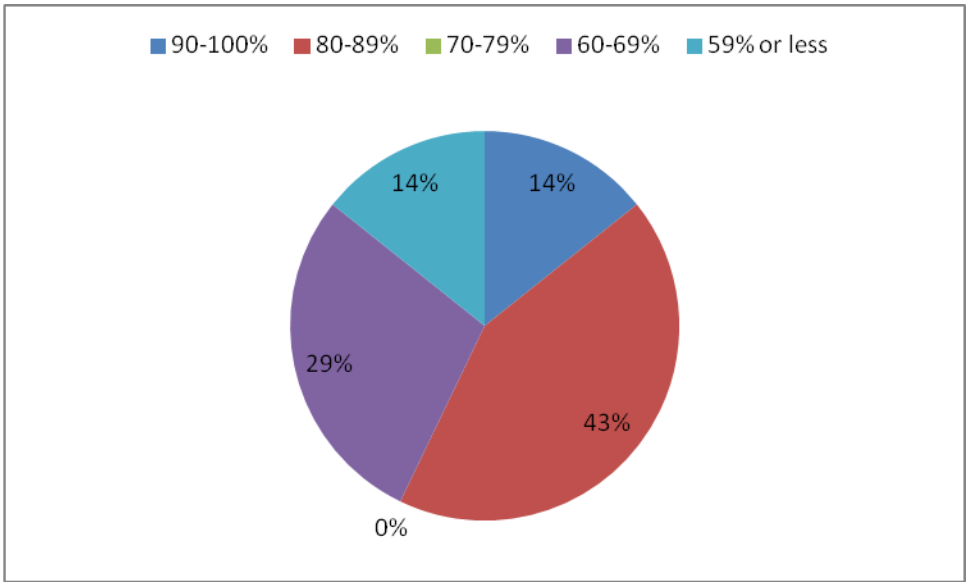


If anything, what the data shows is that across both classes there seems to be a range of skill levels. As calculated by MML, the overall class average for 101S was 77% and the class median was 75%. For the 101S class, the overall class average was 67% and the class median was 77.7%

Math 101S Attendance-specialist section

Attendance (including lab days) ranged from 30-100%. Not surprisingly student E, who had an attendance rate of 30% also failed the course. One of the seven students (14% of the class) had attendance percentage within 90% - 100% range. Three students (43% of the class) were within the 80-89% range and 2 students (29% of the class) were between the 60-69% ranges. Data for the adjunct section was not available. The attendance rates for this class are illustrated below.

Figure 21: Math 101S attendance rates



Attendance was average. Attendance rates might have been better if the 2 hour lab did not fall within 1 hour of the 3 hour lecture (it is hard to say this conclusively, but I suspect that having it on a different day would have been more fruitful).

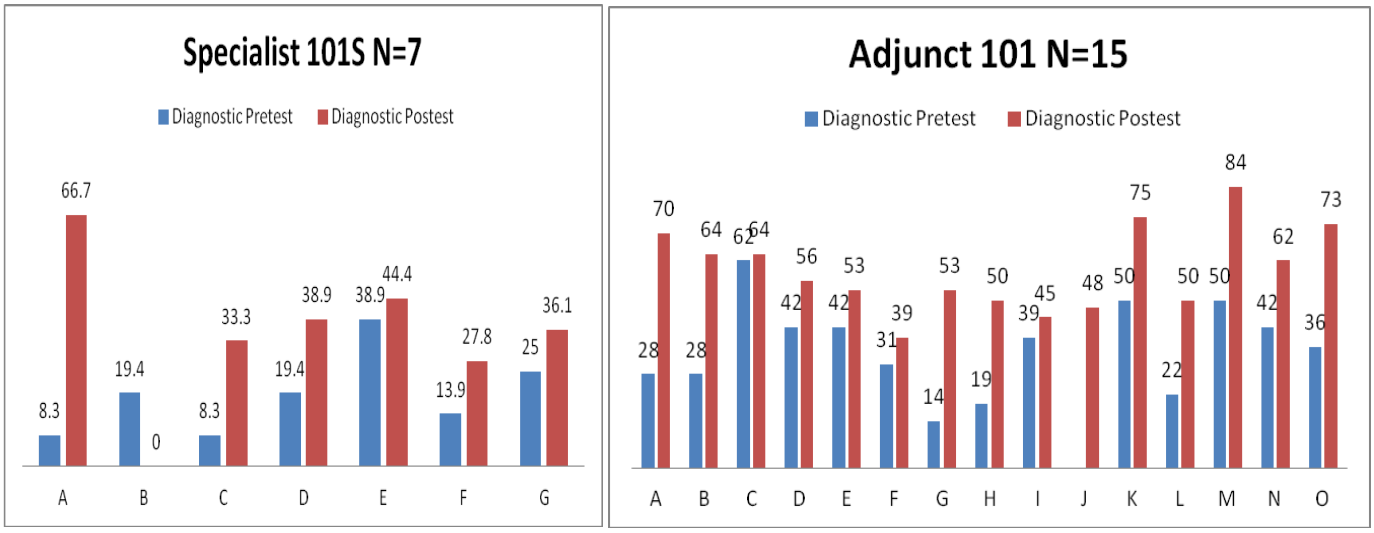
Repeaters- all sections

Of the 29 students who enrolled in these courses, 6 (21%) were repeating. Two of the six did not finish the course, two passed the course, and two failed. 67% of these repeaters will have to re-take the course.

Results of diagnostic pre and post tests – both sections

Below are the results of the students' percentage scores on the diagnostic tests for each section.

Figure 22: Diagnostic test results parsed out by section

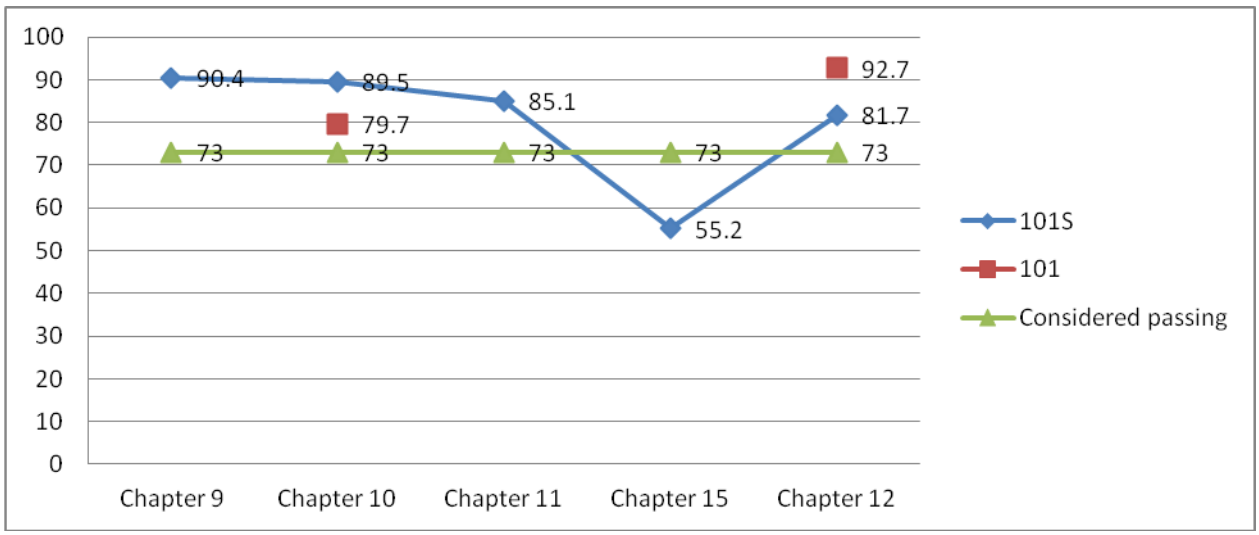


All students who finished the course and took book the pre and post diagnostic made gains. The gains in the specialist section did not seem as high when compared to gains of students who took 101S in the Spring of 2012.

Performance by chapter

Below is an illustration of how all three classes performed on each chapter. Data was not available for the adjunct section for certain chapters.

Figure 23: Math 101 and 101S performance by chapter



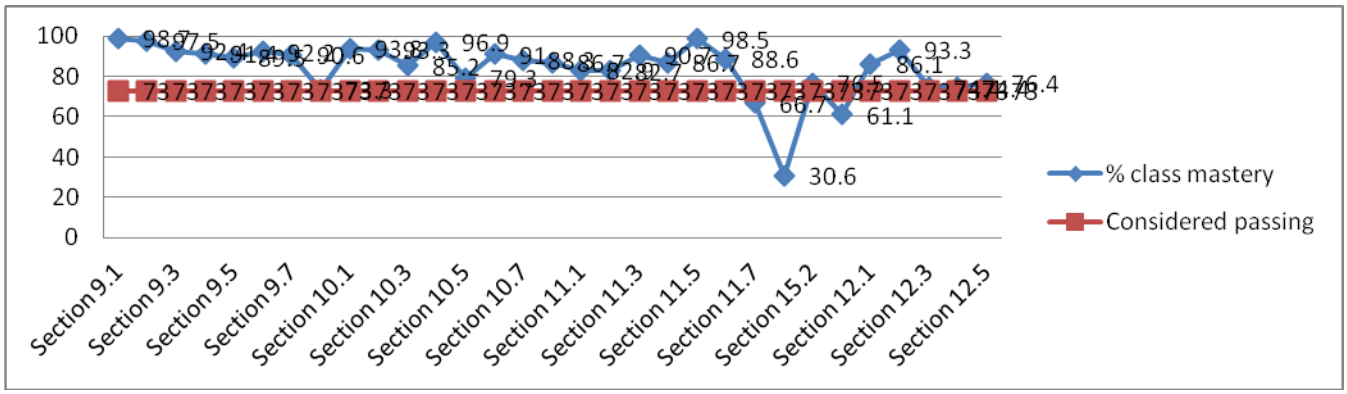
Scores for the 101S class remained above average in every chapter except 15, systems of equations. Chapter 15 is probably the hardest chapter in Math 101S/101. Despite spending many hours in lab working on this material, students still had great difficulty. For the data that could be

obtained for 101, performance remained above the minimum standards for passing in all chapters.

Performance by homework section-specialist section

The illustration below conveys more detailed information about sections within chapters that had variation in performance. Data was not available for the adjunct section.

Figure 24: Fall 2011 Math 101S class performance by section



The sharpest declines in class performance occurred in sections 15.1 and 15.3. These sections covered solving systems of equations by graphing and solving systems of equations by elimination. These dips make sense as these topics tend to be some of the most challenging topics for algebra learners because of the abstract nature of equations and expressions.

Summary

Figure 25: All Fall 2011 Math 101/101S enrollment

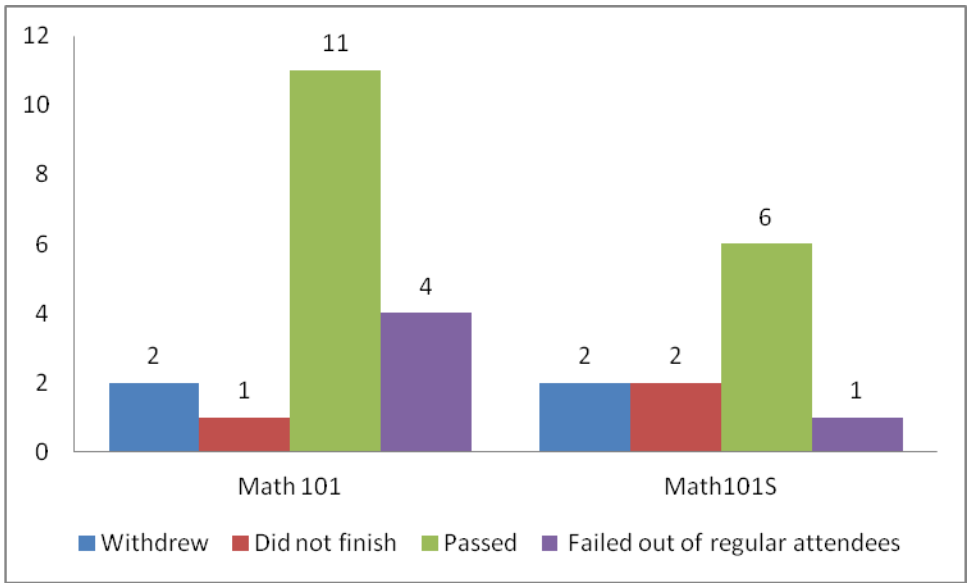


Figure 26: All Fall 2011 Math 101/101S Grade distribution

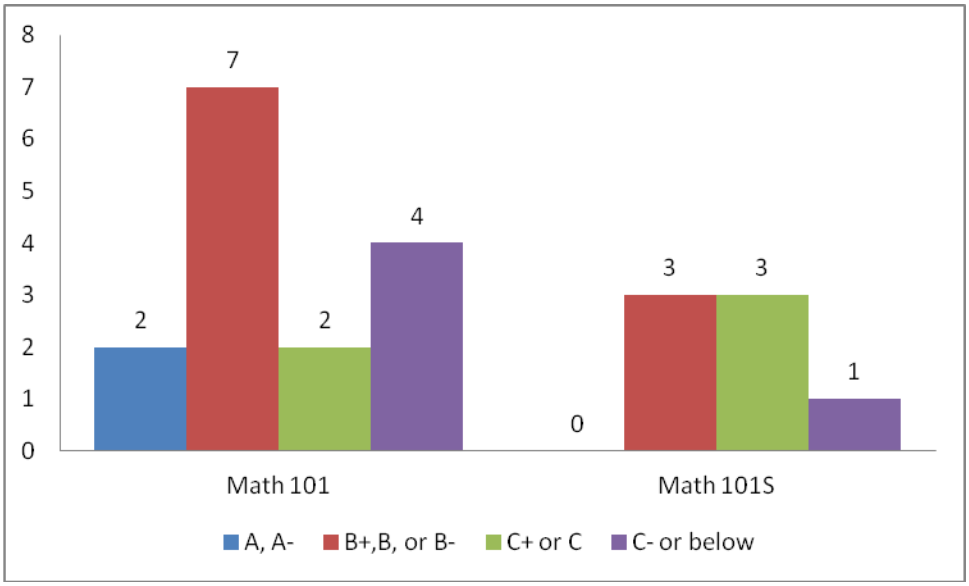


Figure 27: All Fall 2011 Math 101/101S overall grade averages for students who finished

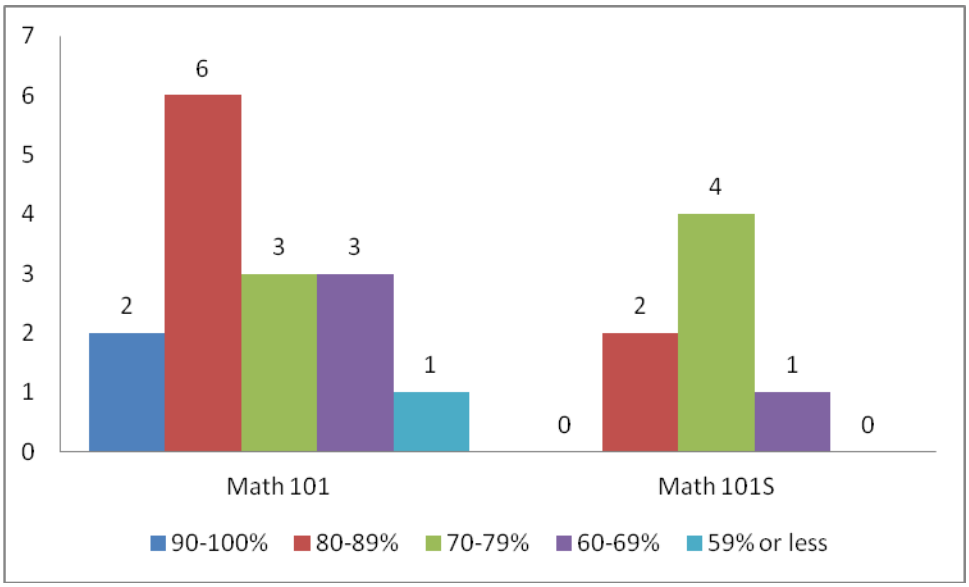


Figure 28: All Fall 2011 Math 101/101S test averages for students who finished

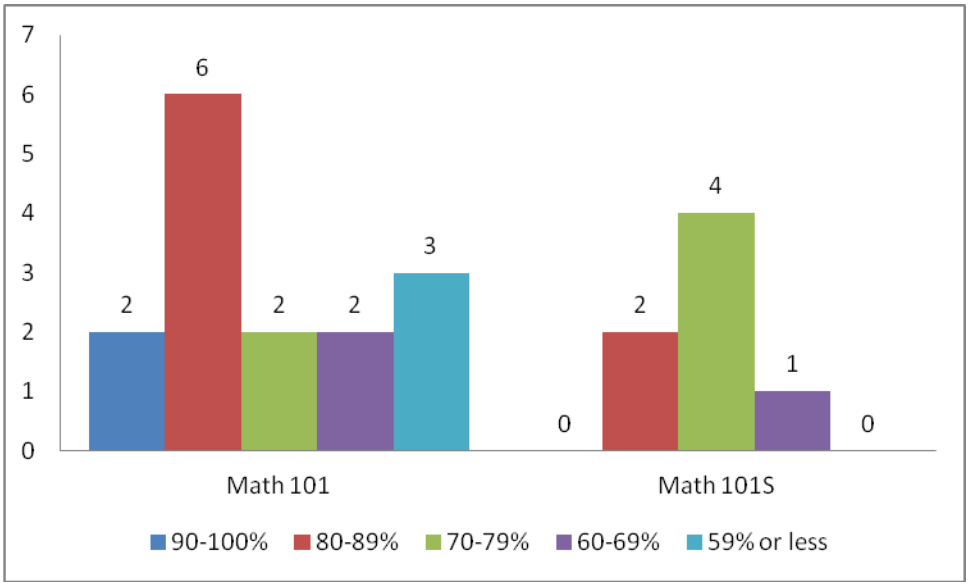


Figure 29: All Fall 2011 Math 101/101S pass rates of students for all enrolled

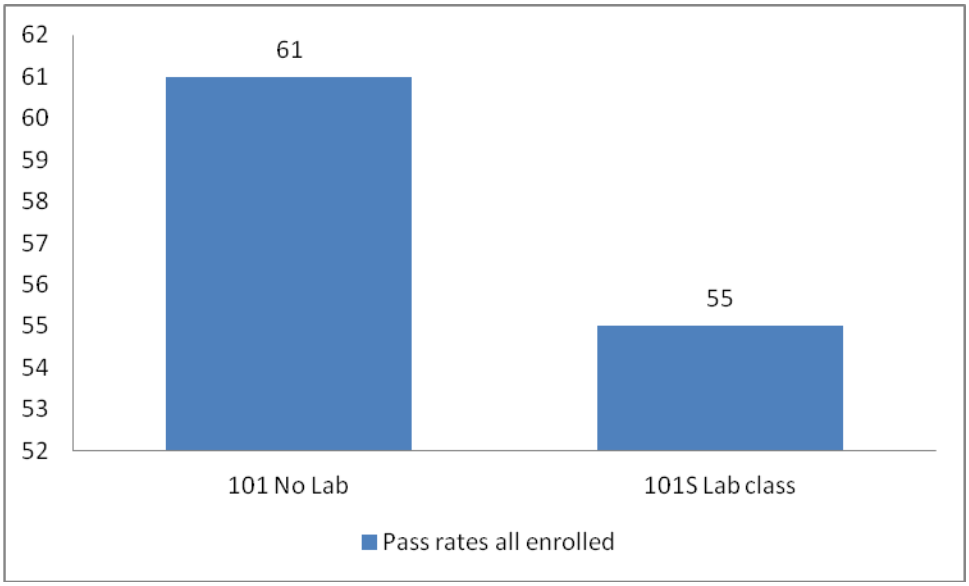
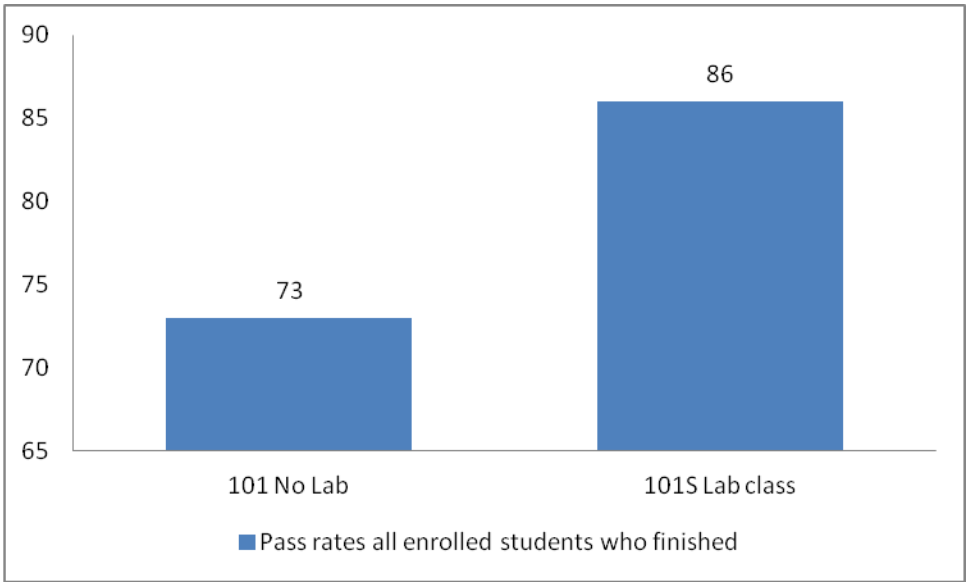


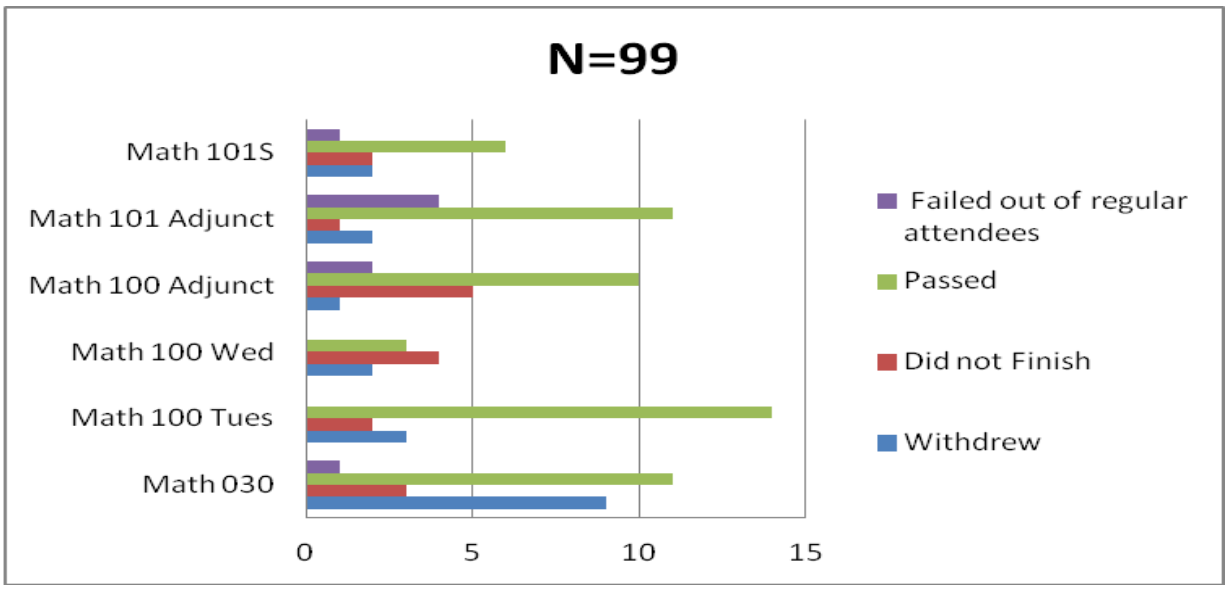
Figure 30: All Fall 2011 Math 101/101S pass rates for students who finished the course

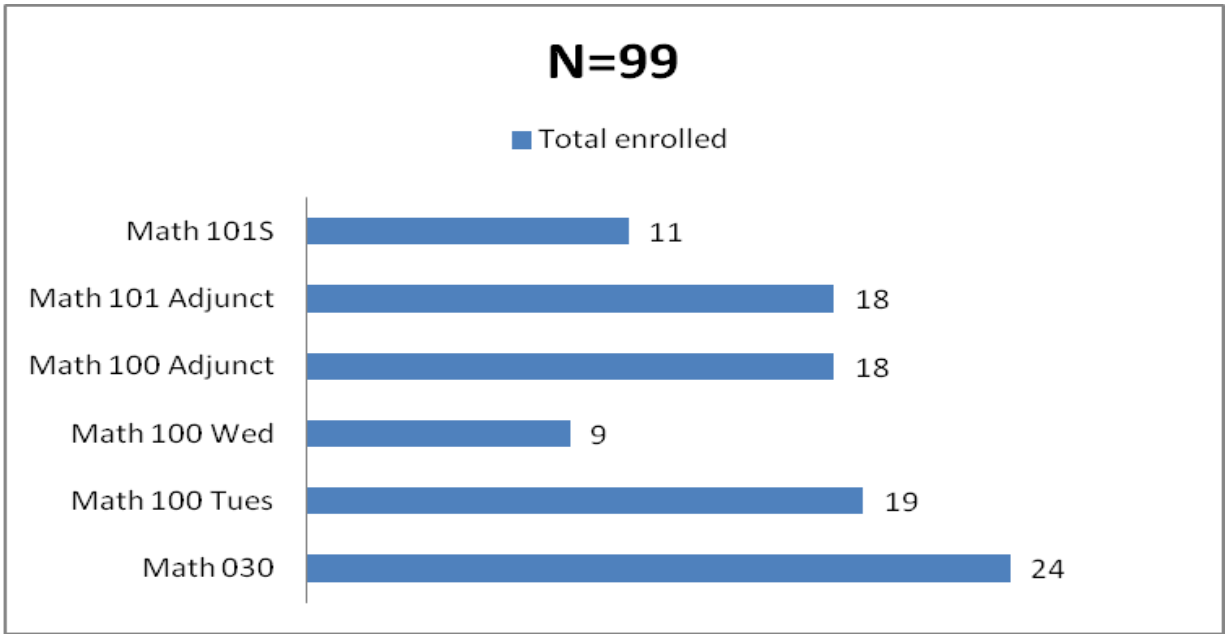


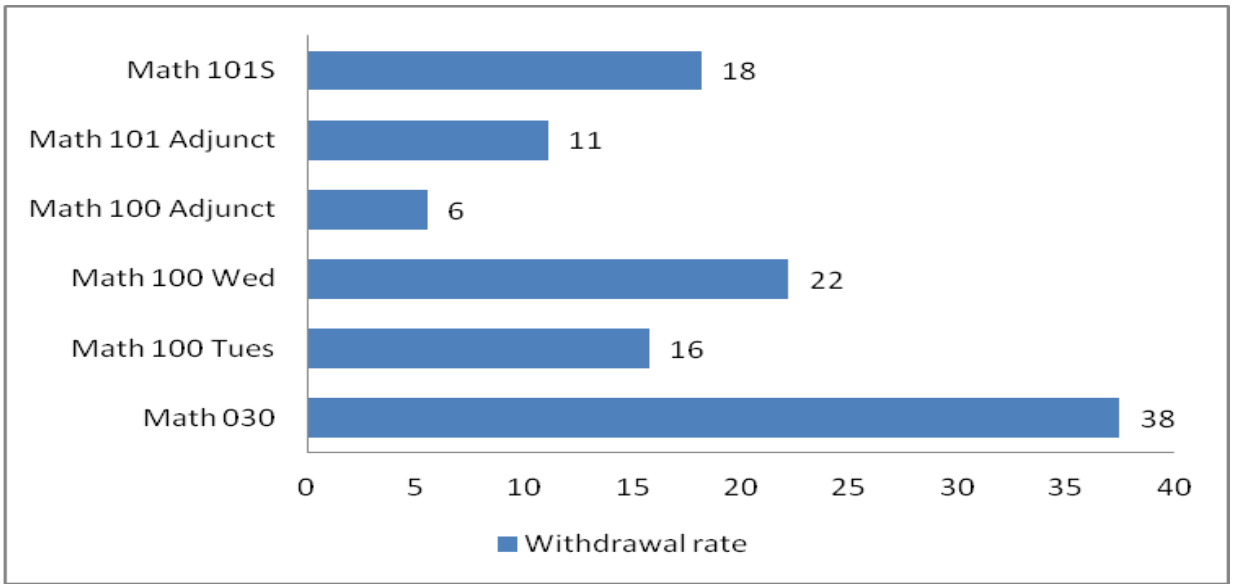
41% of students will need to re-take the 101 or 101S course. On average, students who finished earned some variation of a B across both courses. Approximately one quarter of the students taking one of these courses were repeating. The adjunct non lab class had higher pass rates for all enrolled. The specialist taught lab class had higher pass rates for students who finished.

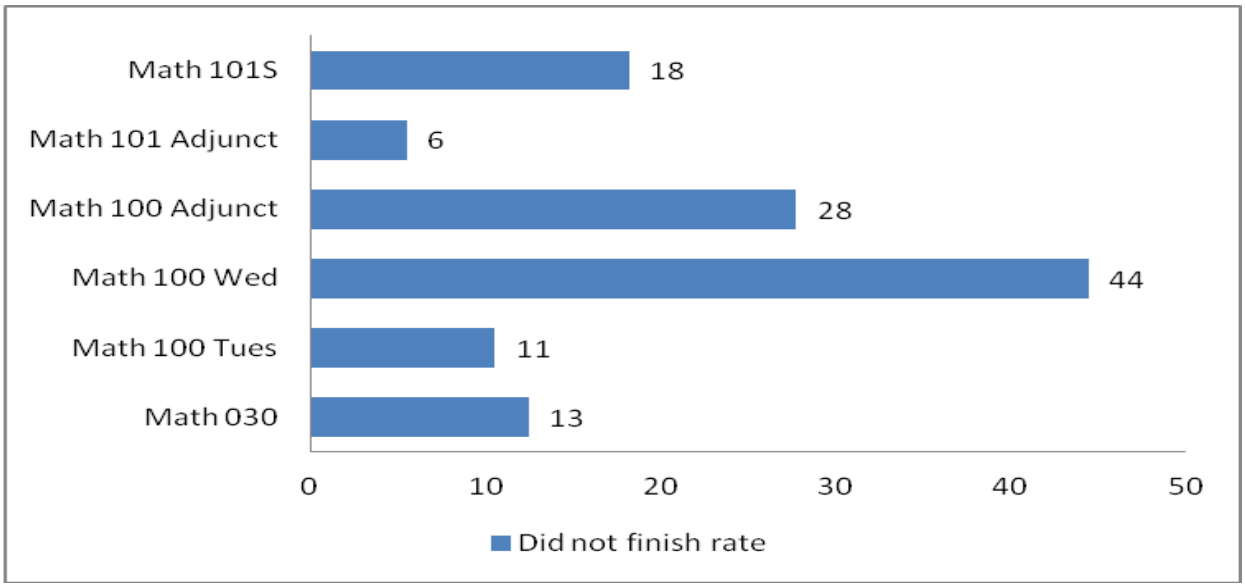
Fall Data for Math 109 was not readily available

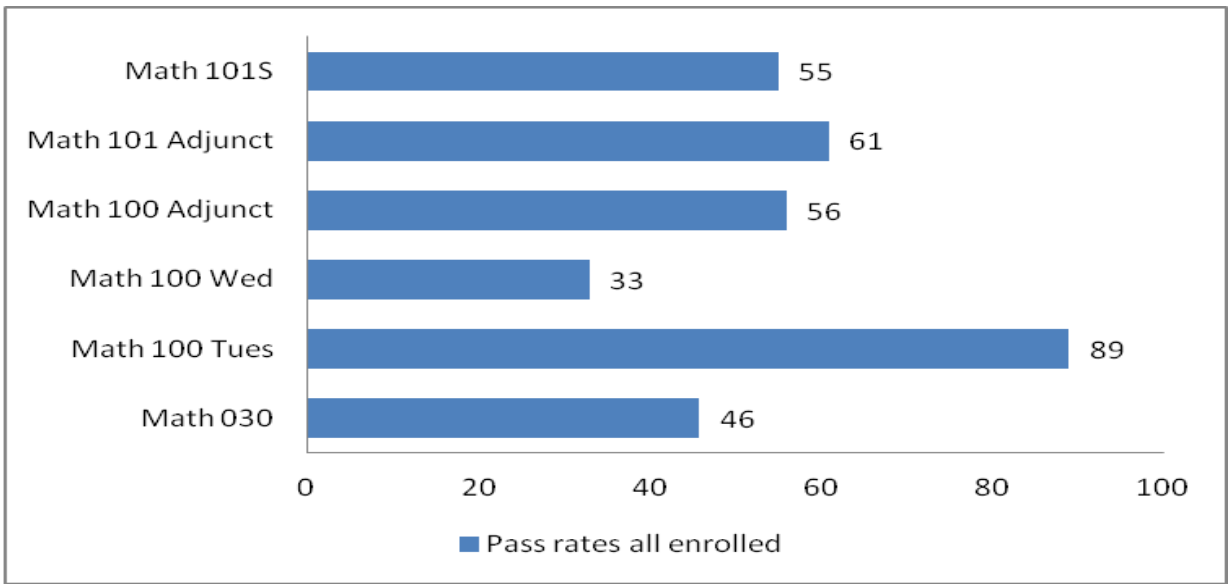
Figure 31: Snapshots of All Fall 2011 Data (Math 030-101S)

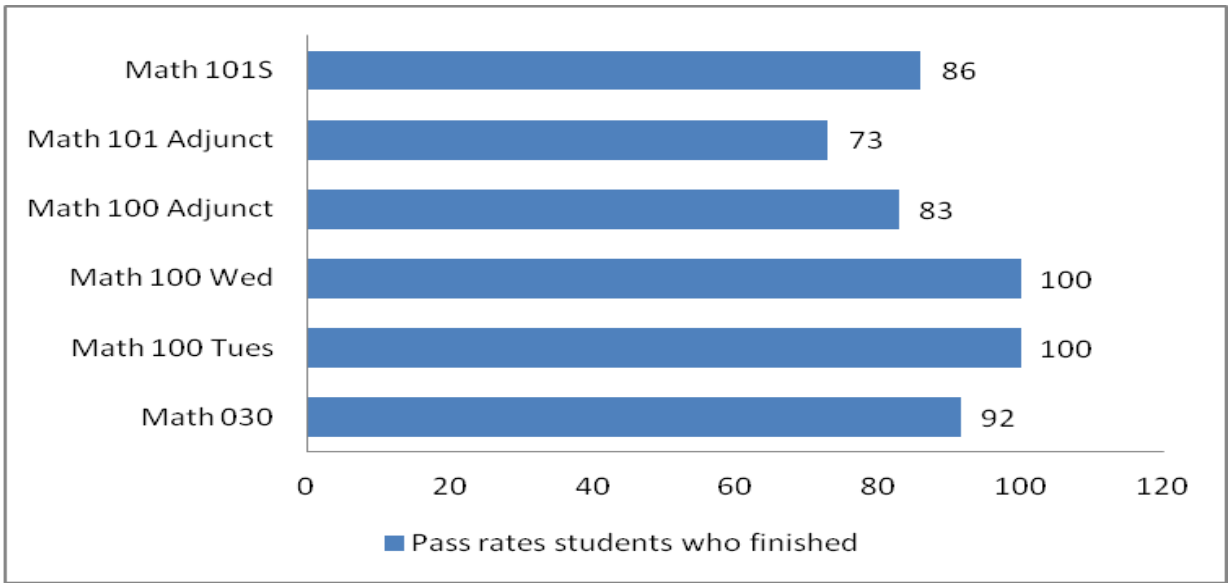


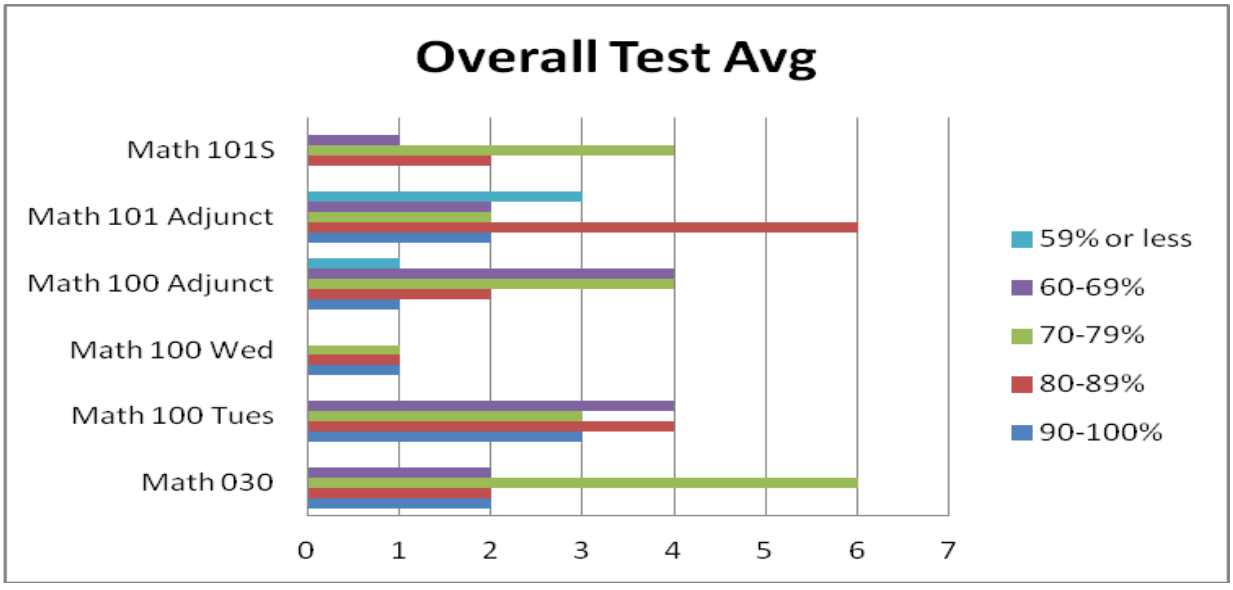

N=99
Total enrolled
Math 101S
11
Math 101 Adjunct
18
Math 100 Adjunct
18
Math 100 Wed
9
Math 100 Tues
19
Math 030
24

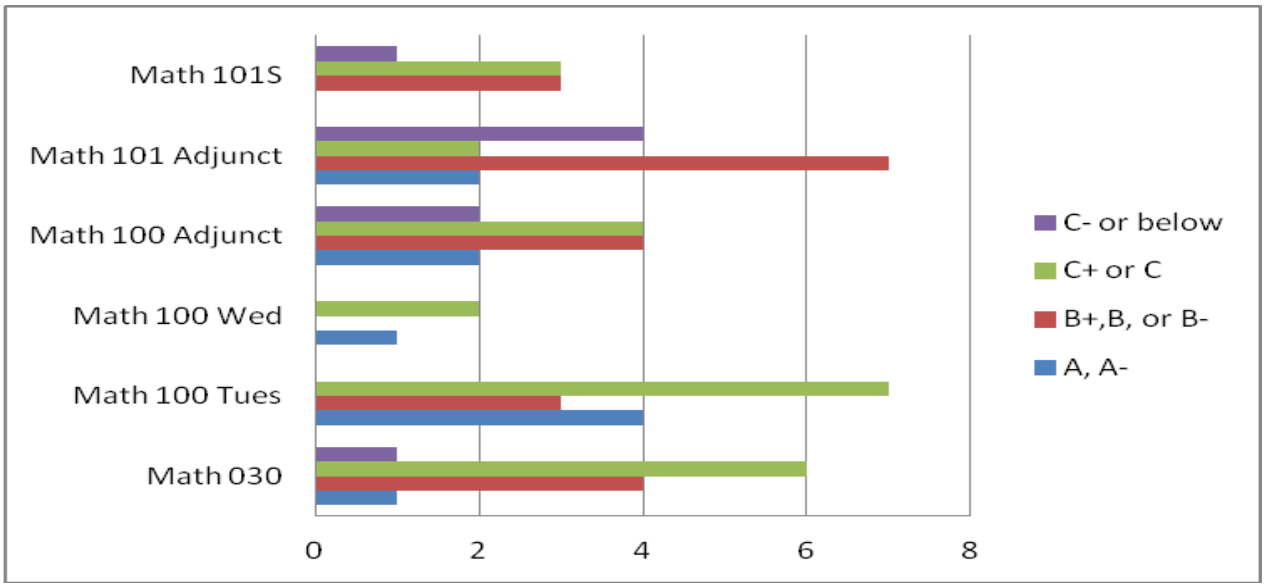

Math 101S
18
Math 101 Adjunct
11
Math 100 Adjunct
6
Math 100 Wed
22
Math 100 Tues
16
Math 030
38
0
5
10
15
20
25
30
35
40
Withdrawal rate

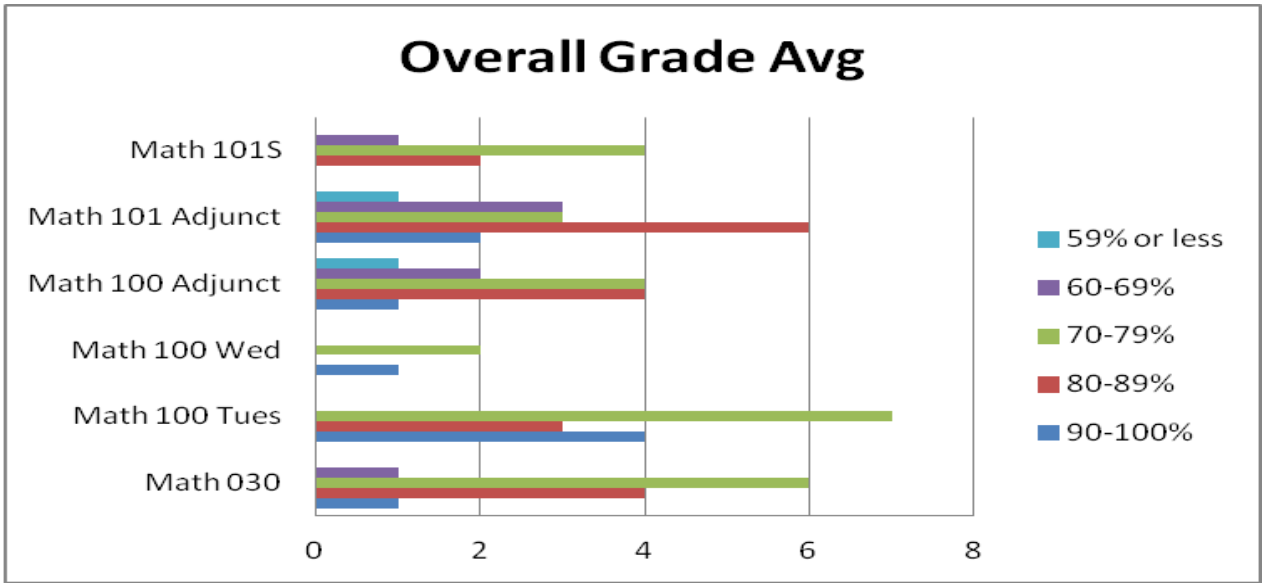

Math 101S
18
Math 101 Adjunct
6
Math 100 Adjunct
28
Math 100 Wed
44
Math 100 Tues
11
Math 030
13
0
10
20
30
40
50
Did not finish rate


Math 101S
55
Math 101 Adjunct
61
Math 100 Adjunct
56
Math 100 Wed
33
Math 100 Tues
89
Math 030
46
0
20
40
60
80
100
Pass rates all enrolled


Math 101S
Math 101 Adjunct
Math 100 Adjunct
Math 100 Wed
Math 100 Tues
Math 030
86
73
83
100
100
92
0
20
40
60
80
100
120
Pass rates students who finished


Overall Test Avg
Math 101S
Math 101 Adjunct
Math 100 Adjunct
Math 100 Wed
Math 100 Tues
Math 030
0
1
2
3
4
5
6
7
59% or less
60-69%
70-79%
80-89%
90-100%


Math 101S
Math 101 Adjunct
Math 100 Adjunct
Math 100 Wed
Math 100 Tues
Math 030
0
2
4
6
8
C- or below
C+ or C
B+,B, or B-
A, A-


Overall Grade Avg
Math 101S
Math 101 Adjunct
Math 100 Adjunct
Math 100 Wed
Math 100 Tues
Math 030
0
2
4
6
8
59% or less
60-69%
70-79%
80-89%
90-100%

Spring 2012 Data

Math 100 (Spring 2012)

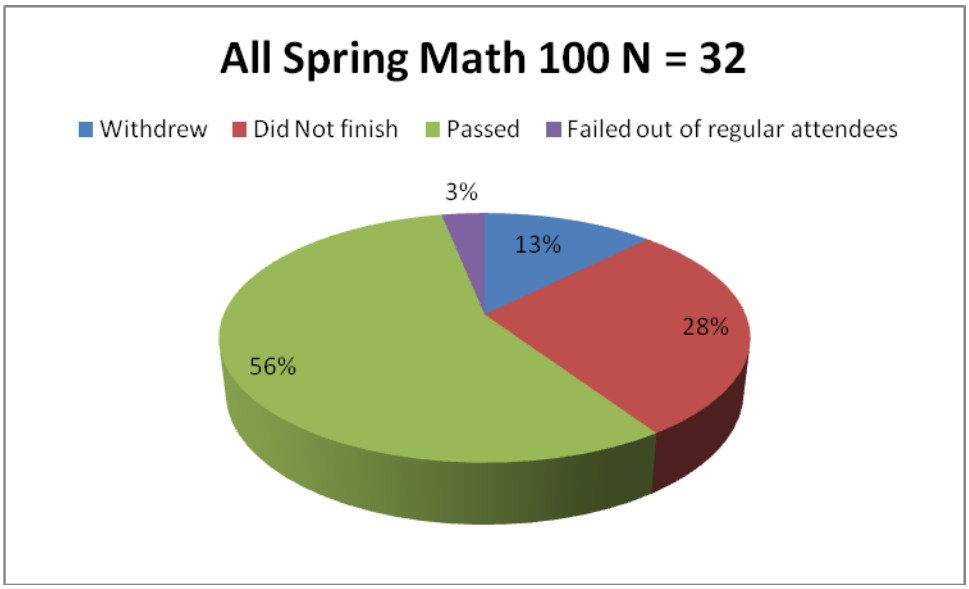
*Data from Math 030 was not readily available. Findings from 2 adjunct taught sections of Math 100 are presented in the next section.

Findings

Pass rates – 2 sections

A total of 32 students enrolled in these courses. Four students (13% of the total) withdrew, nine did not finish the course (28%), leaving a total of nineteen students (59%) who actually finished the course. Of the students that finished, only 1 failed. Findings are illustrated below.

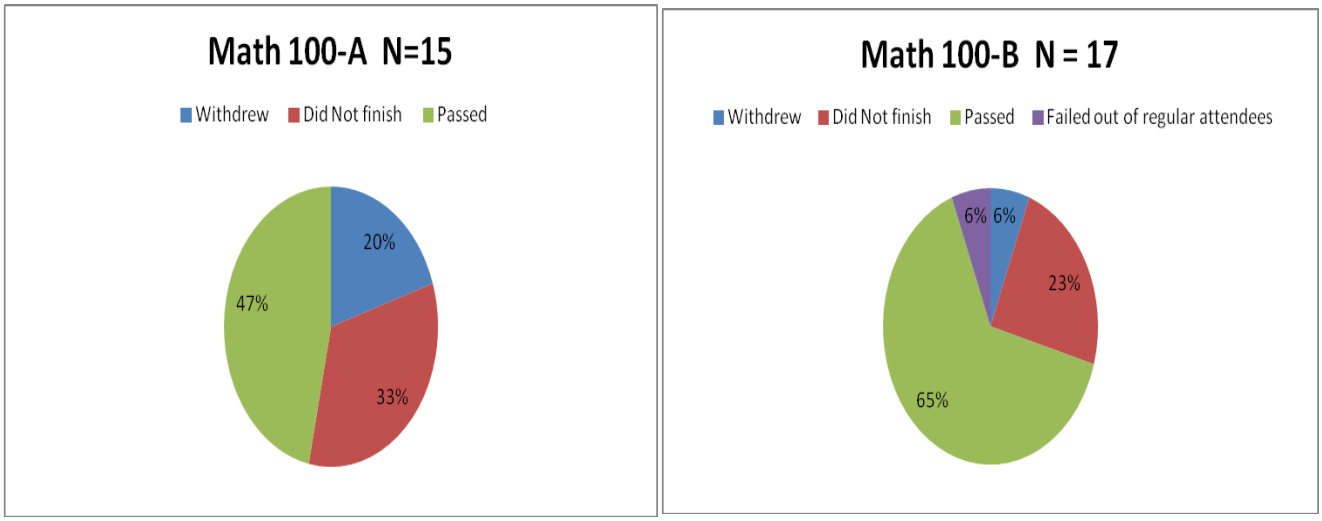
Figure 32: Enrollment status for all Spring 2012 sections of Math 100



Withdrawals and students who do not finish account for 41 % of Spring 2012 Math 100 enrollment status. This is very high, almost half of these students across both sections. 31% of students failed (regular attendees and students who did not finish). Students who do not finish account for a little over a quarter of students. More than half of students enrolled passed.

The pass rate across both sections for all students enrolled was 56% while the pass rate for all students who finished the course was 95%. Below are the enrollment figures for each individual section.

Figure 33: Spring 2012 Math 100 enrollment status parsed out by section

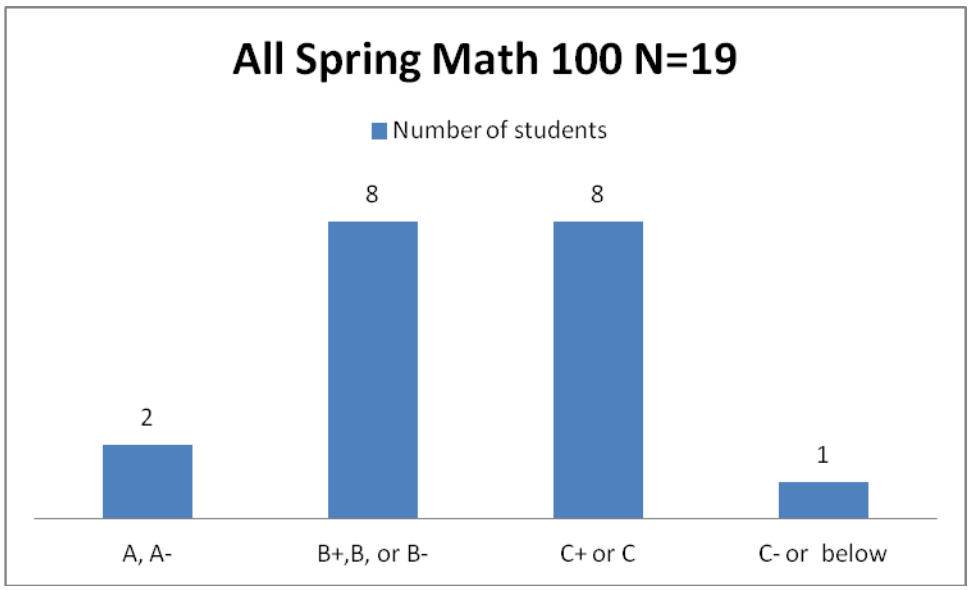


Adjunct A's class had a higher withdraw rate and rate of students who did not finish. Adjunct B's students had a higher pass rate.

The pass rates for Adjunct A were 47% for all enrolled and 100% for students who finished the course. The pass rates for Adjunct B were 65% for all enrolled and 92% for students who finished the course.

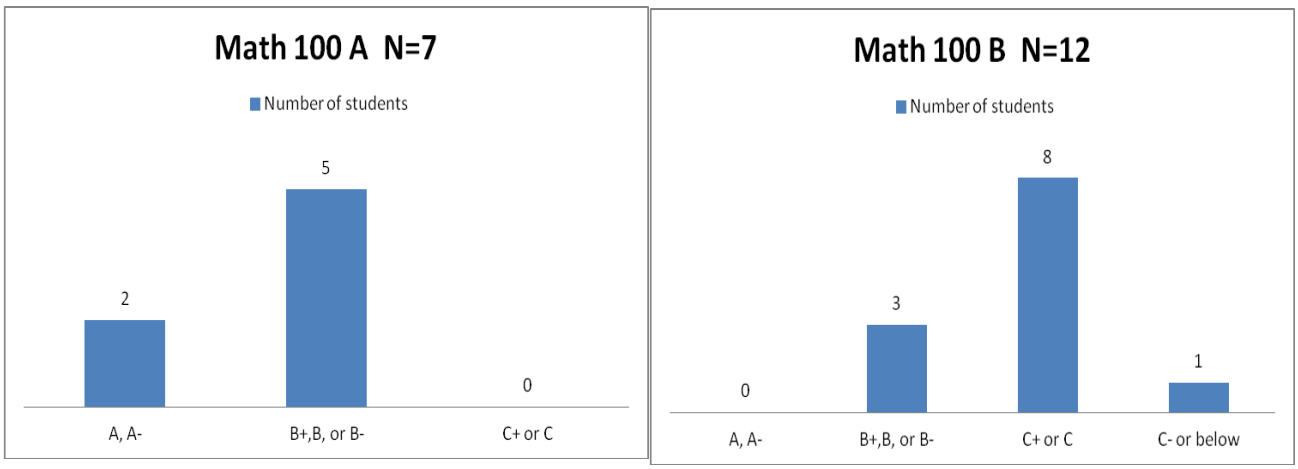
Below is an illustration of how grades were distributed across both sections for students who finished the course.

Figure 34: Overall grade distribution for all Spring sections of Math 100



Of the nineteen students who finished the course, two students earned grades of A or A-, eight students earned grades of B+, B or B-, eight students earned grades of C+ or C, and one student earned a C- or lower. In other words, 11% earned some variation of an A, 42% earned some variation of a B, 42% of the classes earned C or C+, and 5% earned a failing grade. Failing was defined as attaining an overall average of less than a C. Below are the grade distributions for each individual section.

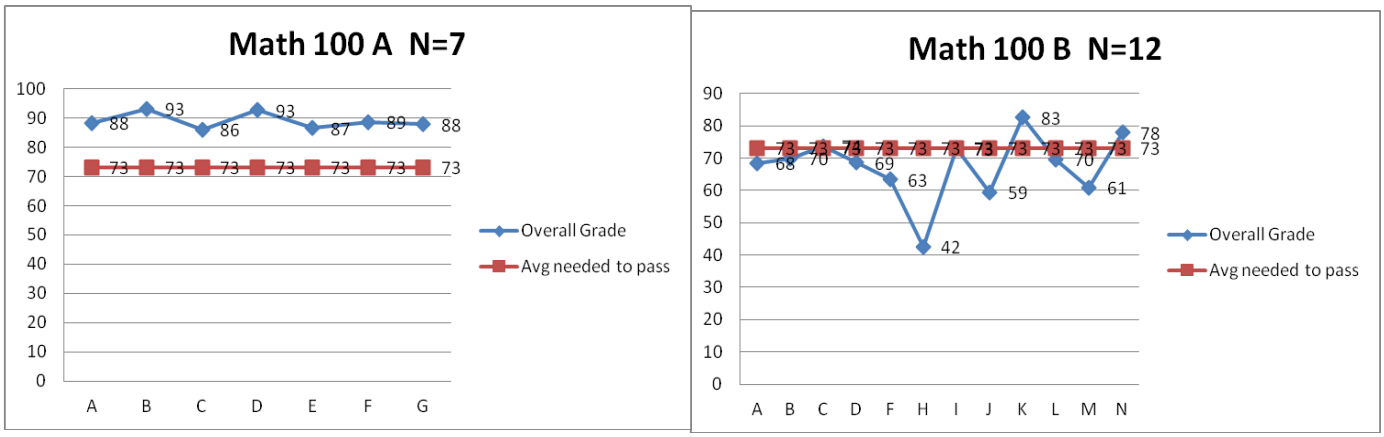
Figure 35: Spring 2012 Math 100 overall grade distribution parsed out by section



Adjunct B's grades seem more normally distributed while Adjunct A's grades were skewed to the higher ends.

Below are the distributions of overall grade averages by student for each section of Math 030 and 100.

Figure 36: Spring 2012 Math 100 overall grade average distribution by student parsed out by section



What is clear from these graphs, is that Adjunct B's class had a variety of performance levels, ranging from poor-good, while Ajdunct A's class had performance levels that seemed to stay within the 80%-90% range.

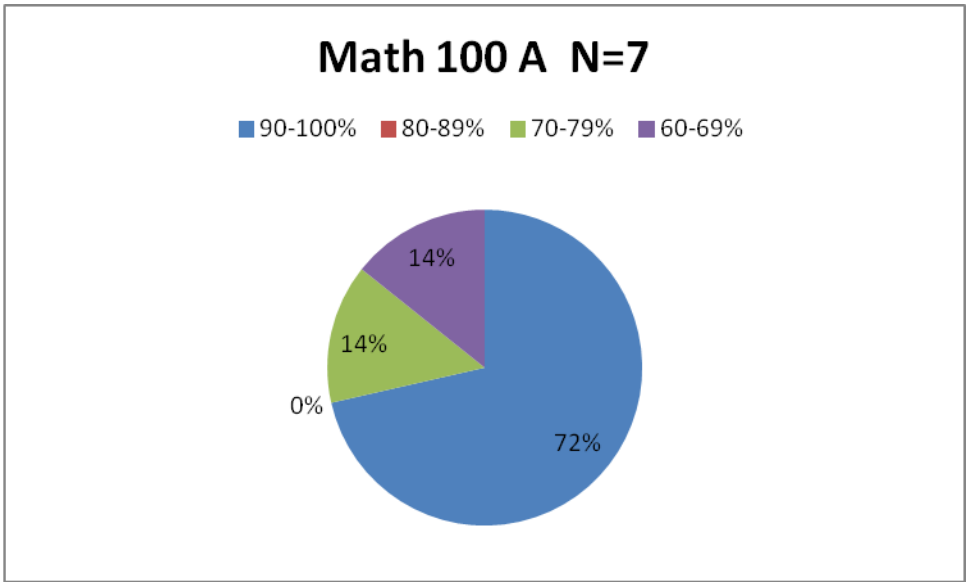
The class average for Adjunct B was 54.6%. This average was not available for Adjunct A.

Math 100 Attendance- Adjunct A

*Note: This data was not available for Adjunct B

Five (72%) of the 7 students who finished Adjunct A's course, had an attendance rate of 90% or higher. One (14%) had an attendance rate of 70%-79% and one student (14 %) had a rate of 60%-69%. The attendance rate is illustrated below.

Figure 37: Math 100 attendance rates



Attendance was relatively good.

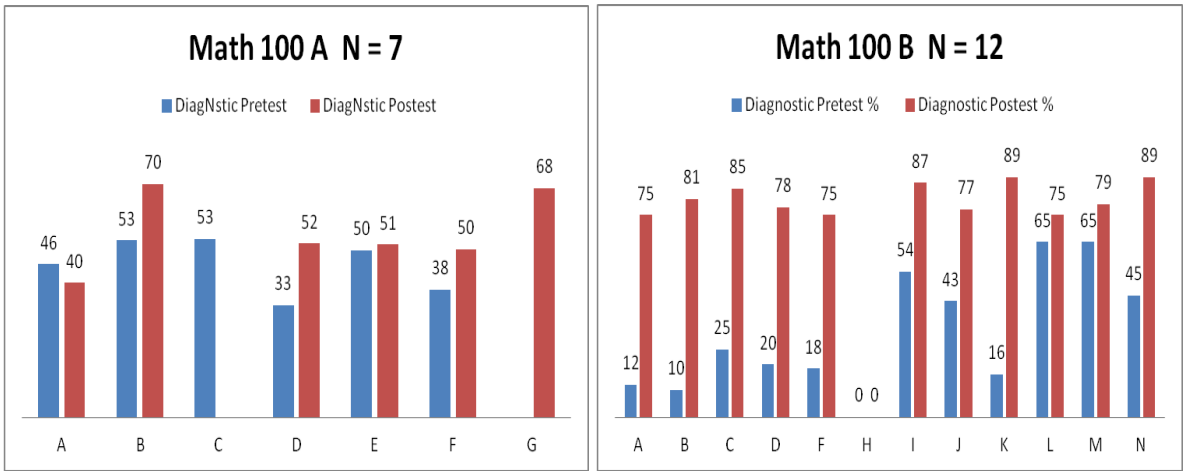
Repeaters- both sections

Of the 31 students enrolled in the course, 8 (26%) were repeating. Of these 8 repeaters, 1 (12.5%) withdrew from the courses, and 4 (50%) did not finish the course, and 3 (37.5%) passed the course.

Results of diagnostic pre and post tests- both sections

Below are the results of the students' percentage scores on the diagnostic tests for each section.

Figure 38: Spring 2012 Math 100 diagnostic test results parsed out by section



With the exception of 1 student, all students who took both tests made gains. Students in Adjunct B's course seem to make monumental gains.

Performances by chapter and section data were not available for these courses.

Summary

Figure 39: All Spring 2012 Math 100 enrollment

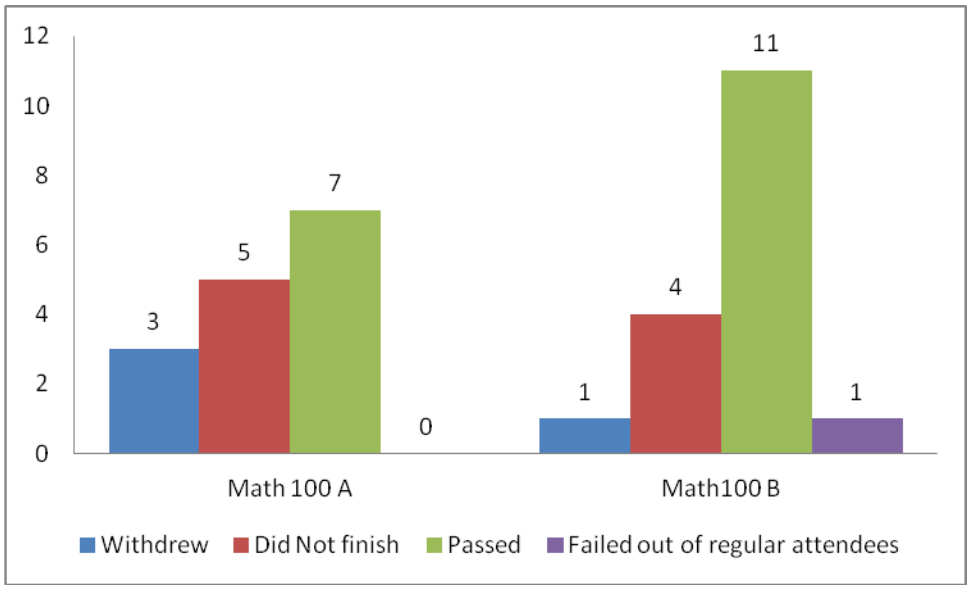


Figure 40: All Spring 2012 Math 100 Grade distribution

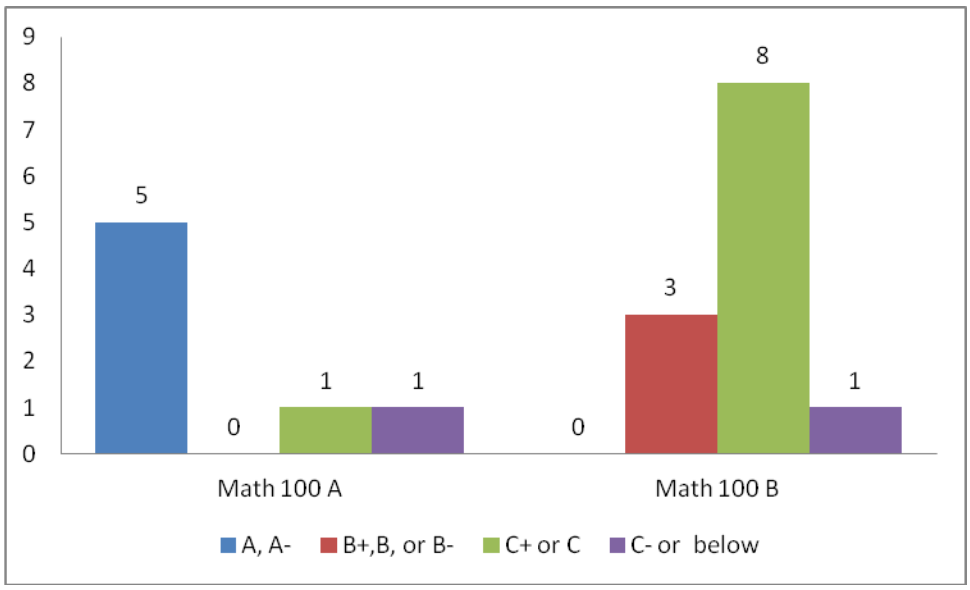


Figure 41: All Spring 2012 Math 100 overall grade averages of students who finished

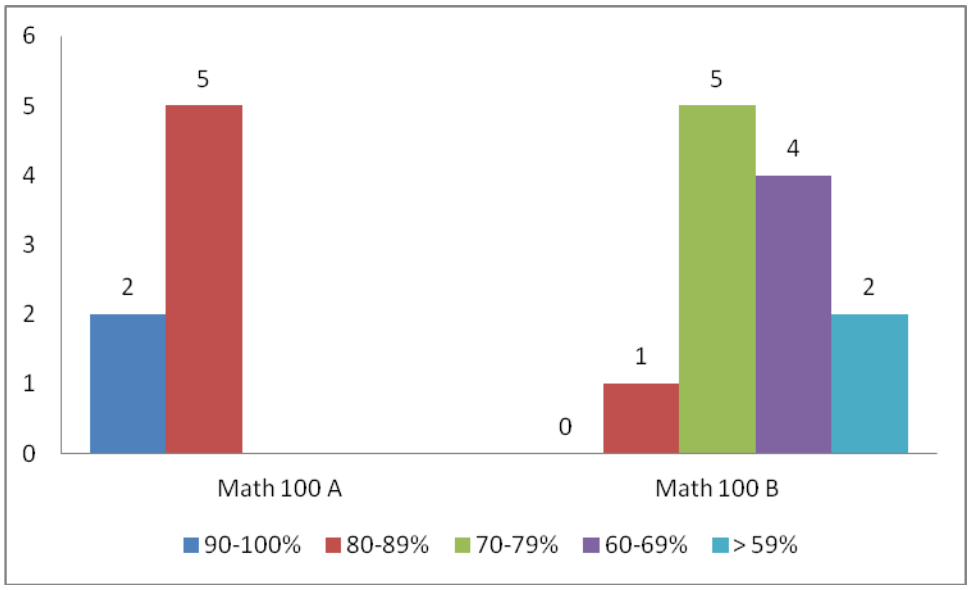


Figure 42: All Spring 2012 Math 100 test averages of students who finished

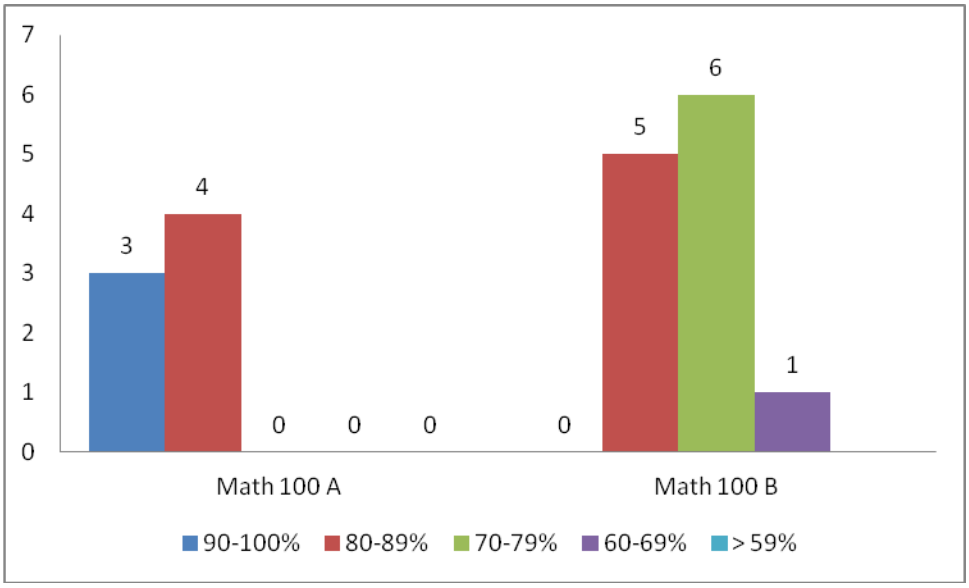


Figure 43: All Spring 2012 Math 100 pass rates of students for all enrolled

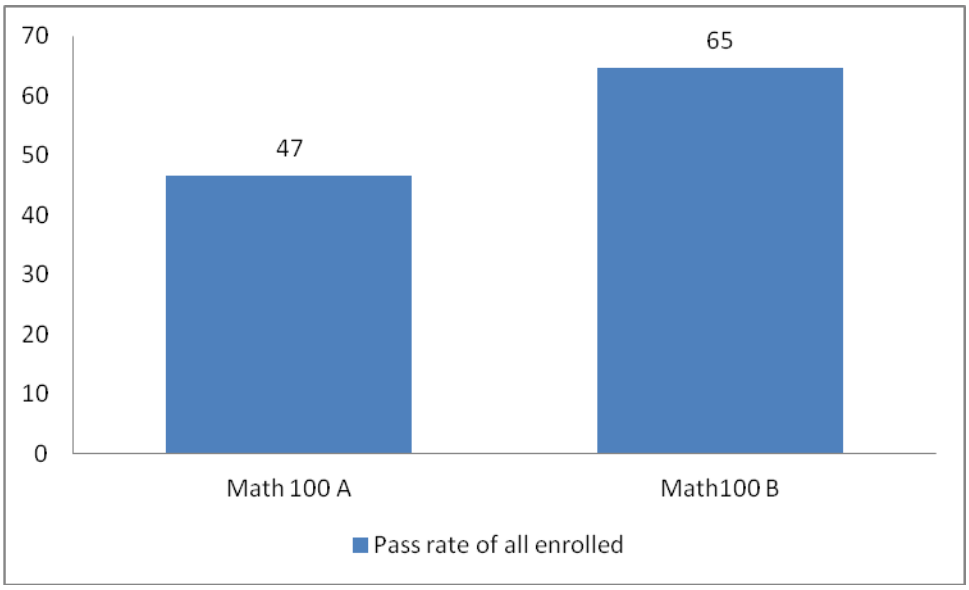
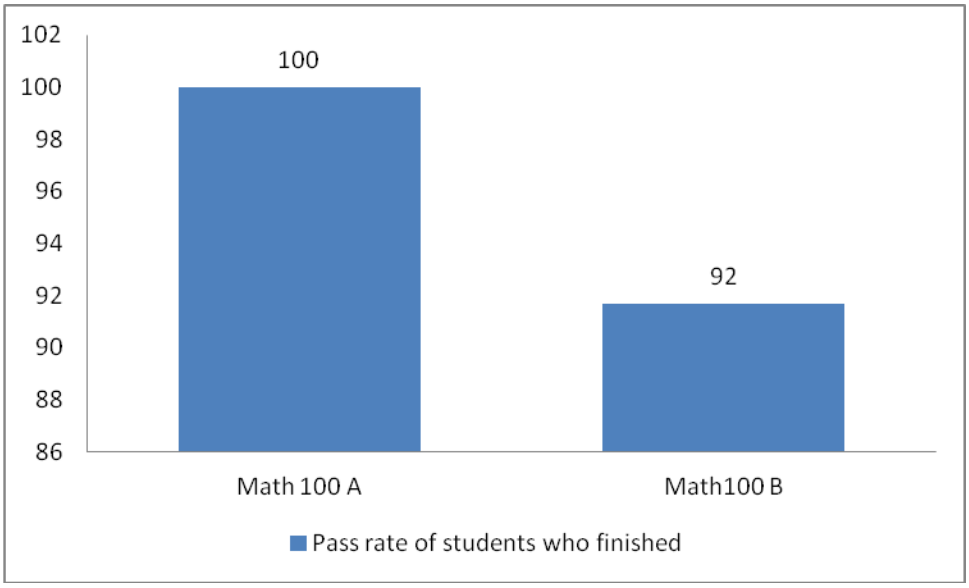


Figure 44: All Spring 2012 Math 100 pass rates of students who finished the course



This course had a fair number of students who did not finish. One quarter of students who took this course was repeating. Grades were average across both sections. Adjunct B's class had higher pass rates for all enrolled while Adjunct A's class had higher pass rates for students who finished.

Math 060, 101, and 101S (Spring 2012)

Course descriptions

Math 060, or Elementary algebra, is intended to provide students at THEARC with an intensive review of high school algebra. Topics include a review of basic arithmetic operations, the real number system, algebraic expression and exponents with basic rules of algebra, linear equations and inequalities with applications, and graphs of equations and inequalities. Content matches that of the 101 and 101S courses on the Main campus.

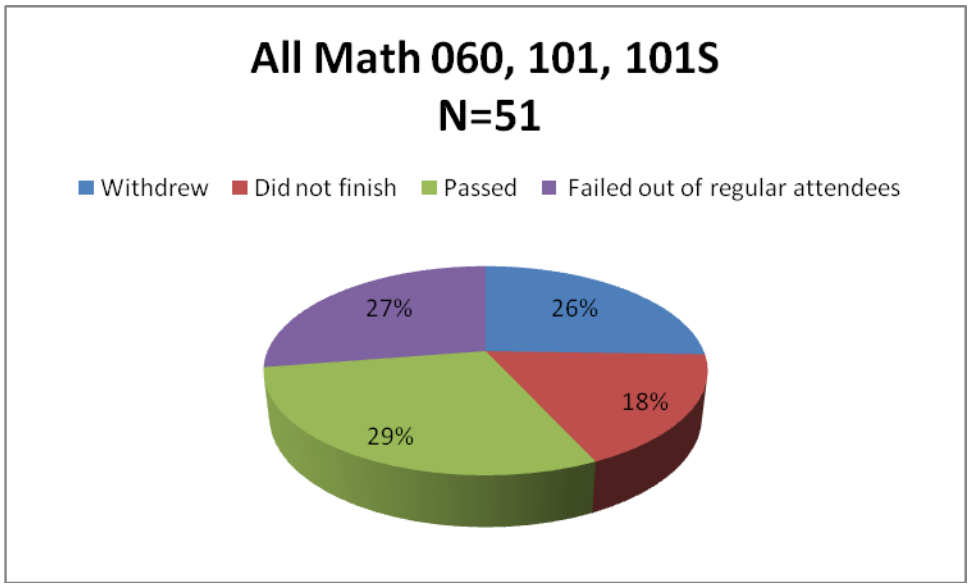
Findings for one adjunct taught section and two specialist taught sections are presented in the next section.

Findings

Pass rates-all three sections

Fifty-one students enrolled in these three courses. Thirteen students (26% of the class) withdrew, nine (18%) did not finish the course, leaving a total of twenty-nine students (56%). Of the 29 that remained, 14 failed the course. Findings are illustrated below.

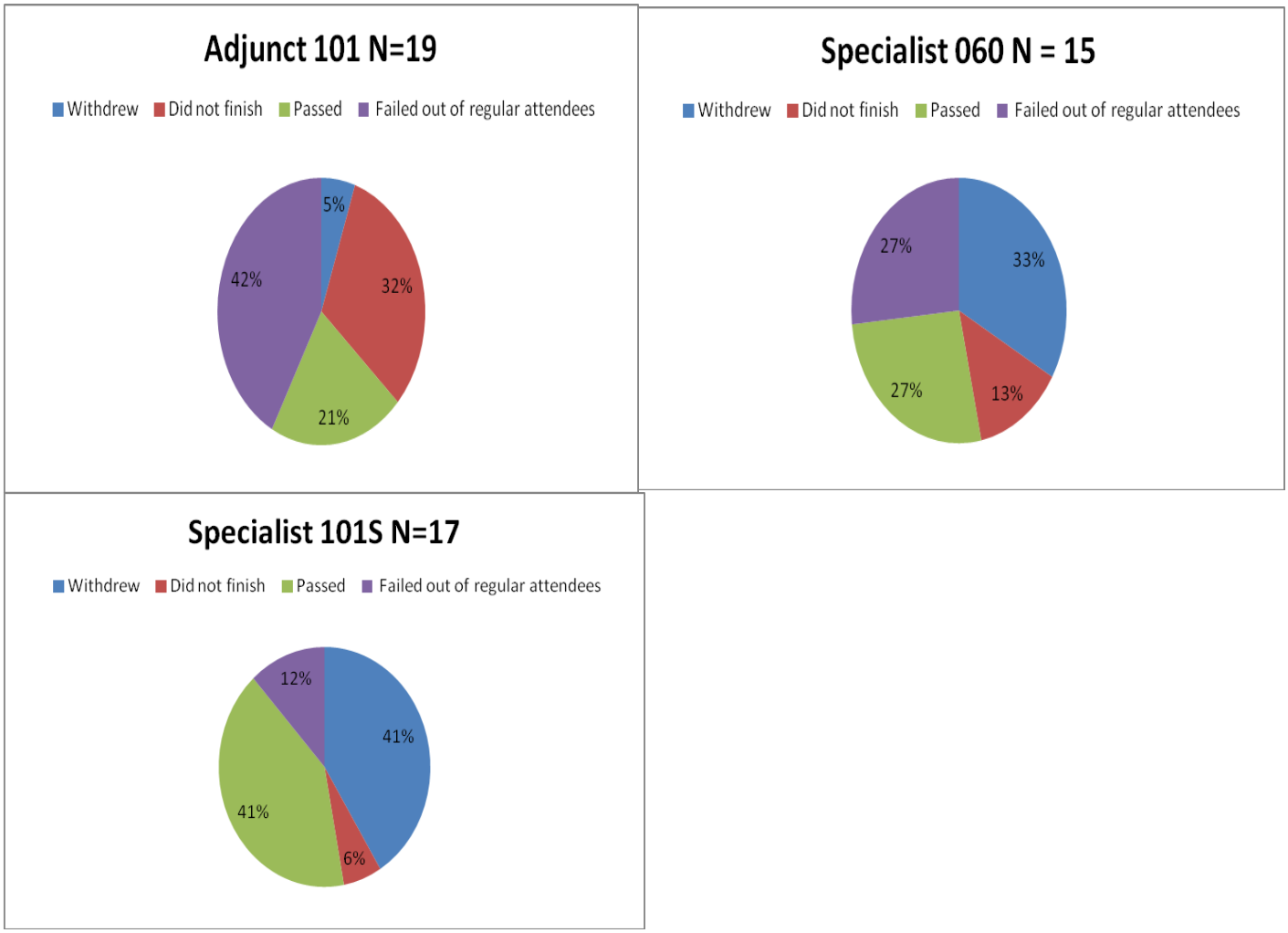
Figure 45: Enrollment status for all Spring 2012 sections of Math 060, 101, and 101S



Withdrawals and students who did not finish account for 44% of all enrolled. Students who failed (regular attendees and students who did not finish) account for 45% of all enrolled. Less than one-third of students passed these courses.

The pass rate was 29% for the all enrolled. Of the 56% who finished the course, 52% passed. Below are the enrollment figures for each individual section.

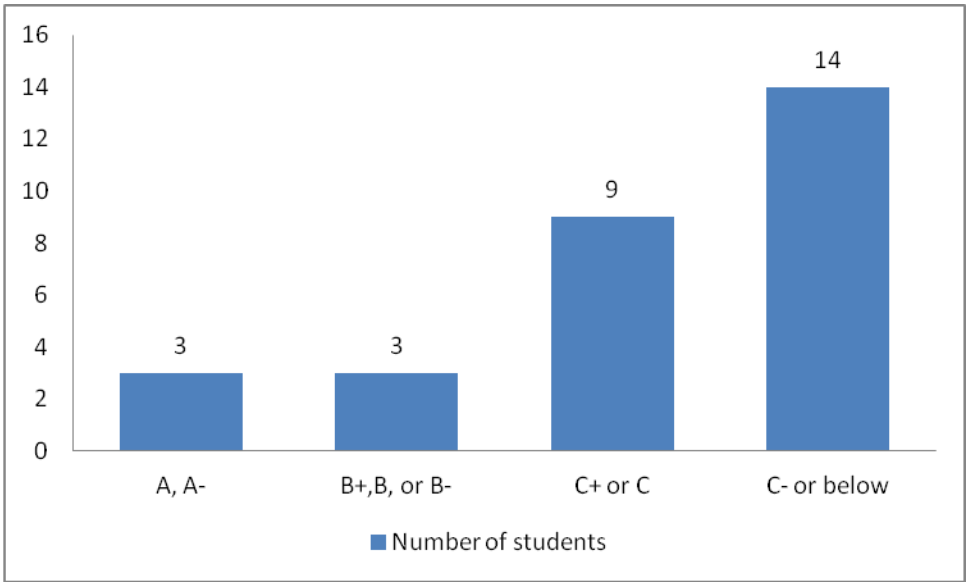
Figure 46: Spring 2012 Math 060-101S enrollment status parsed out by section



When parsed out by respective sections, the majority of withdrawals come from students in the 101S course with the fewest coming from the 101 course. The 101 course had the highest rate of students who did not finish and regular attendees who failed the course. The 101S course had the highest rate of students who passed with the lowest coming from the 101 course.

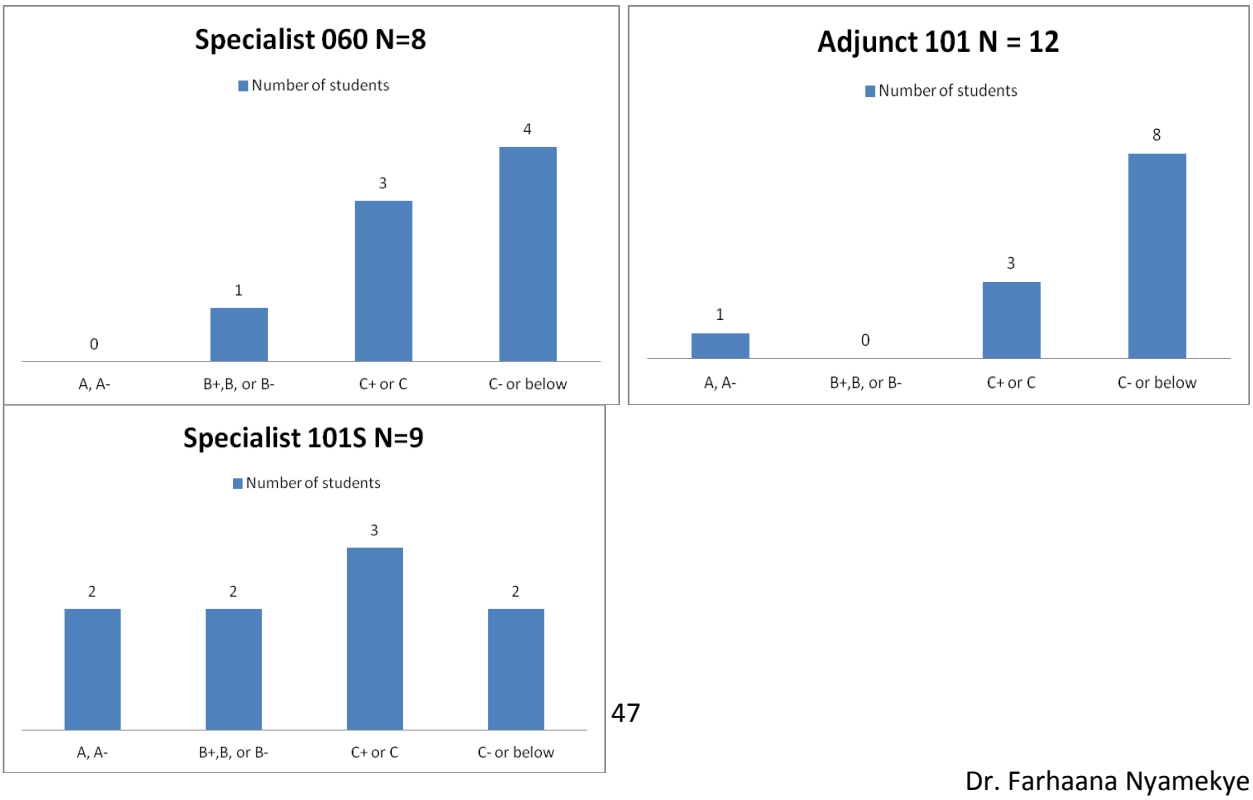
The pass rates for Math 101 were 21% for all enrolled and 50% for students who finished the course. The pass rates for Math 060 were 27 % for all enrolled and 50% for students who finished the course. For Math 101S, they were 41% for all enrolled and 78% for students who finished the course. Below is an illustration of how grades were distributed across all three sections for students who finished the course.

Figure 47: Spring 2012 Math 060-101S overall grade distribution



Of the twenty-nine students who finished the course, three students earned grades of A or A-, three students earned grades of B+, B or B-, nine students earned grades of C+ or C, and fourteen students earned a C- or lower. In other words, 10% earned some variation of an A, 10% earned some variation of a B, 31% of the classes earned C or C+, and 49% earned a failing grade. Failing was defined as attaining an overall average of less than a C. Below are the grade distributions for each individual section.

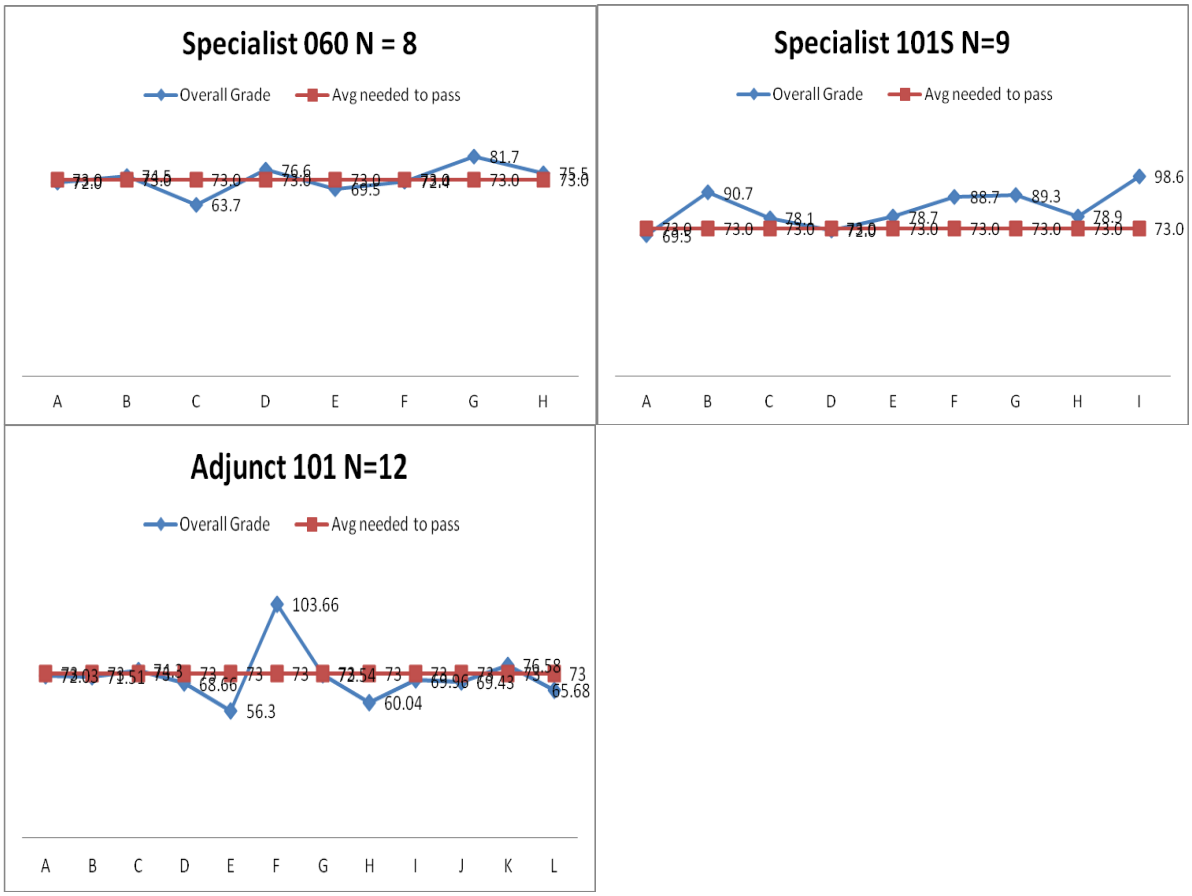
Figure 48: Spring 2012 Math 060-101S overall grade distribution parsed out by section



In the 060 and 101 classes, the majority of grades were failing (C- or below). For both of these classes, grades seemed skewed towards the lower end. The 101S lab had a more even distribution of grades.

Below are the distributions of grades by student who finished the course for each section of Math 060, 101, and 101S as it would be difficult to show all students across all three classes in one graph.

Figure 49: Spring 2012 Math 060-101S grade distribution by student parsed out by section

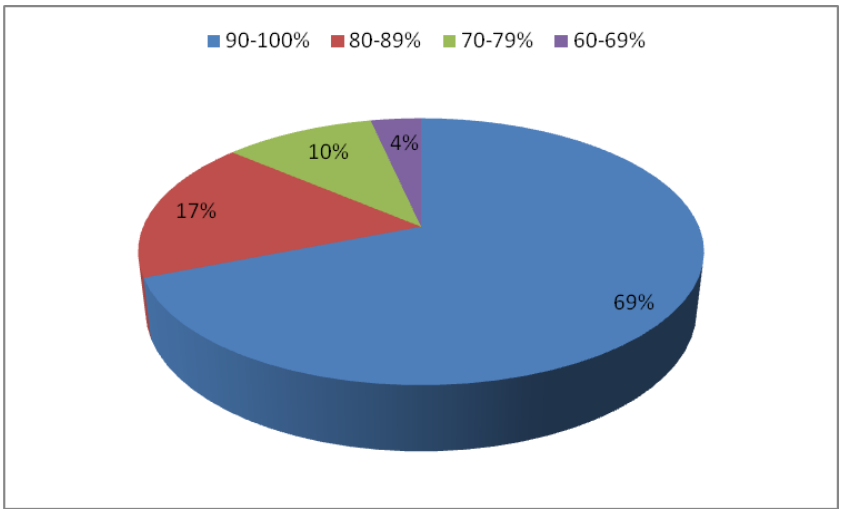


What is striking here is that more students in the 060 and 101S seemed to have similar ranges of performance, whereas in the 101 course there was an outlier of 103.66 and students' performance was less constant. The 101S students seemed to be able to stay above the 73% with greater ease than in the other two courses.

Attendance- all three sections

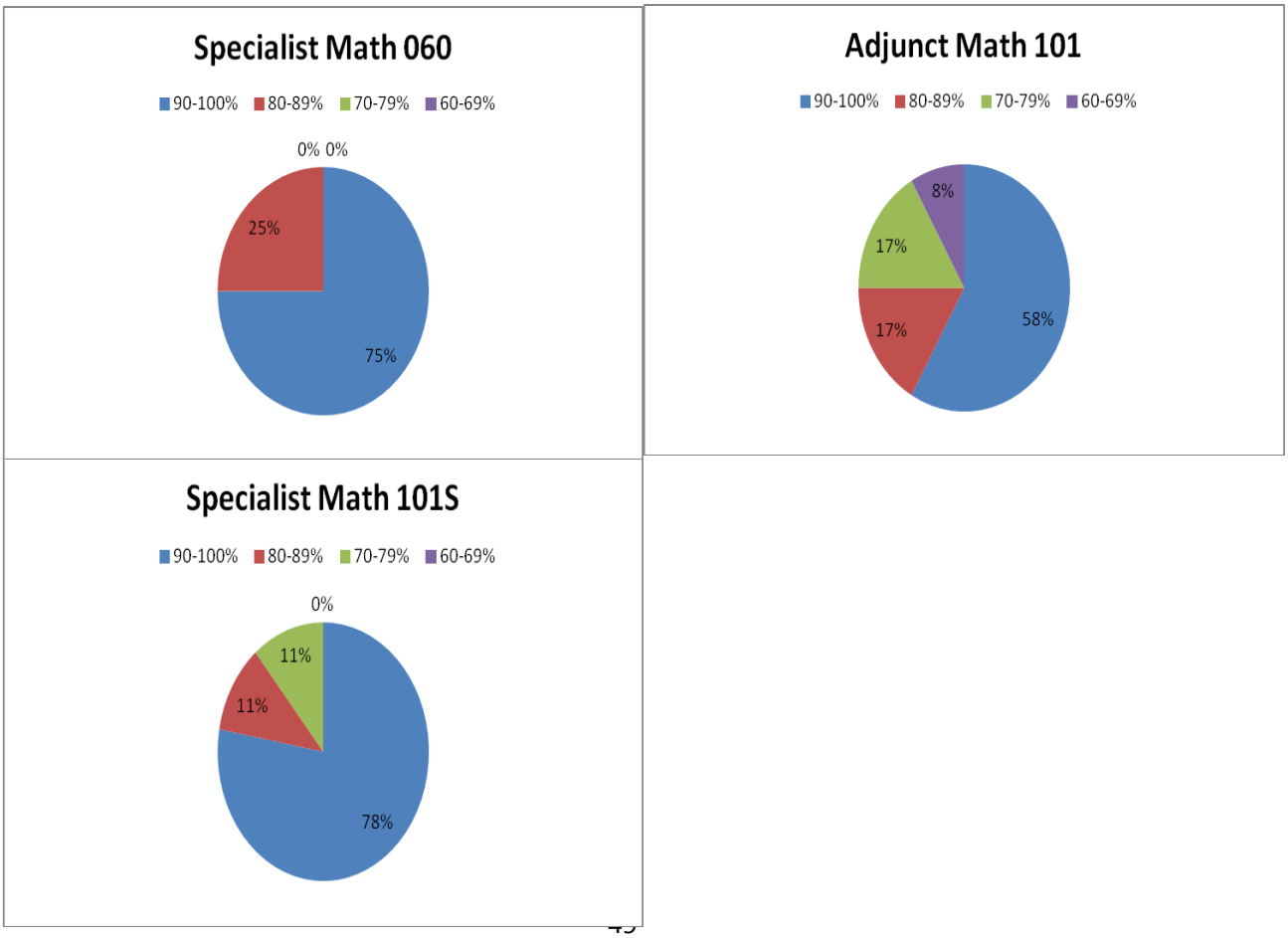
20 of the 29 students who finished (69%) across both sections had an attendance rate of 90% or higher. The attendance rates are illustrated below.

Figure 50: Spring 2012 Math 060-101S attendance rates



Attendance was fairly good across all sections. Below are the attendance rates for each individual course.

Figure 51: Attendance rates parsed out by section



Attendance rates for students who finished the course, were highest for the 060 and 101S courses. No students in 060 and 101S had attendance rates between 60% and 69%.

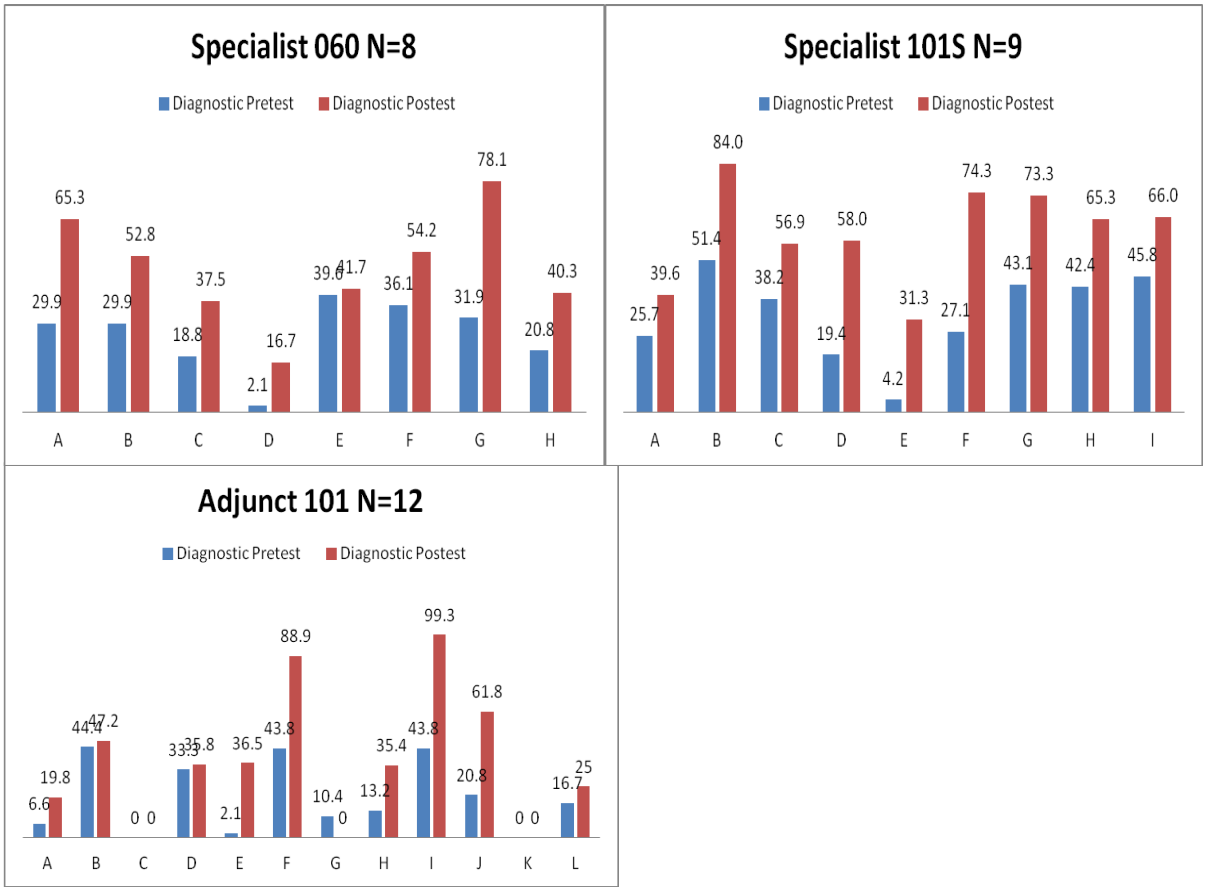
Repeaters- all three sections

Of the 51 students who enrolled in the course, 12 were repeating. 10 (83%) did not finish or failed, and two passed with a C and C+.

Results of diagnostic pre and post tests- 060 and 101S

Below are the results of the students' percentage scores on the diagnostic tests.

Figure 52: Spring 2012 Math 060-101S diagnostic test results parsed out by section

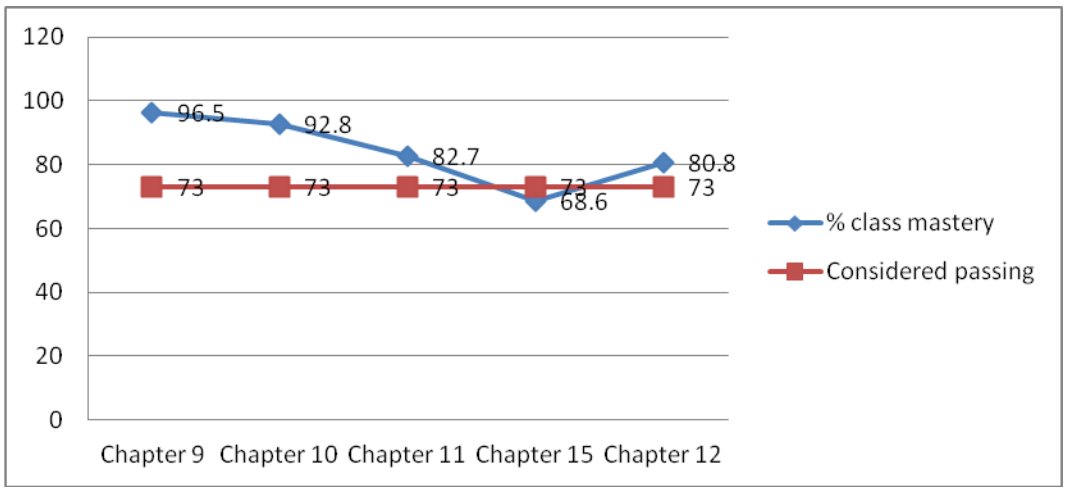


All students who took both pre and post tests made gains.

Performance by chapter- 060 and 101S section

Below is an illustration of how the 060 and 101S combined (they were listed as one class in MML for ease) performed on each chapter. This data was not available for the adjunct section.

Figure 53: Spring 2012 Math 060 and 101S class performance by chapter

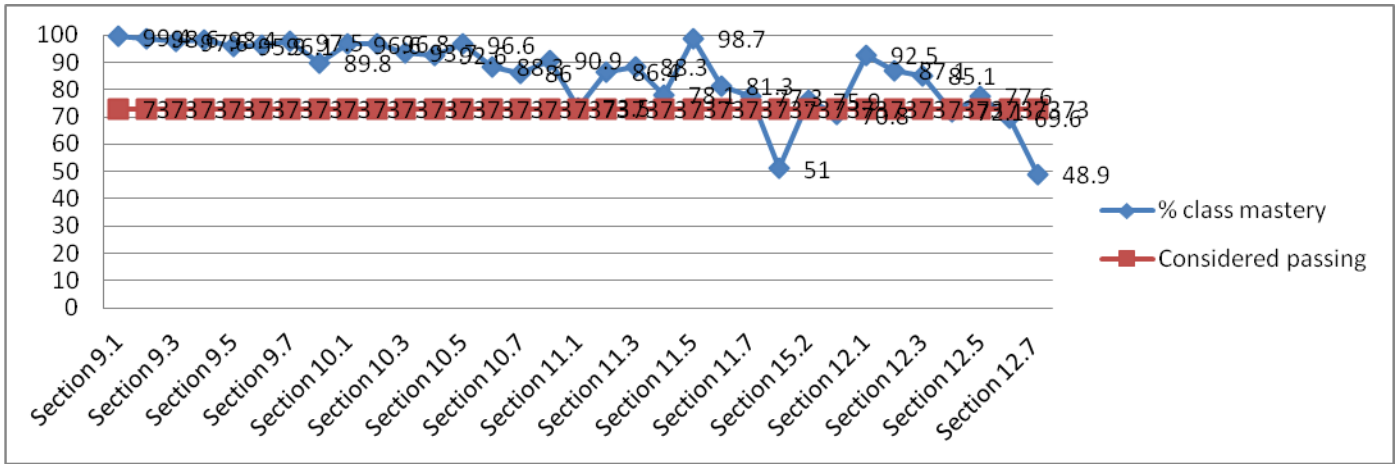


The classes average (060 and 101S combined) started in the 90's (the maximum), then steadily declines with each chapter (which increases in difficulty), yet still manages to remain above 73, until Chapter 15. This is the chapter on systems of equations, the most challenging of all material. The class average rises again in Chapter 12.

Performance by homework section- 060 and 101S

The illustration below conveys more detailed information about sections within chapters that had variation in performance. Data was not available for the adjunct section.

Figure 54: Spring 2012 Math 060 and 101S Class performance by section



The sharpest declines in class performance occurred in sections 15.1 and 12.7. 15.1 covered solving systems by graphing. This can be a tough section to complete in general and especially on the computer because accuracy with the mouse is essential. 12.7 covered multiplying polynomials, I suspect scores went down here because students were in preparation for the Final. Otherwise, scores for the other sections were excellent.

Summary

Figure 55: All Spring 2012 Math 060-101S enrollment

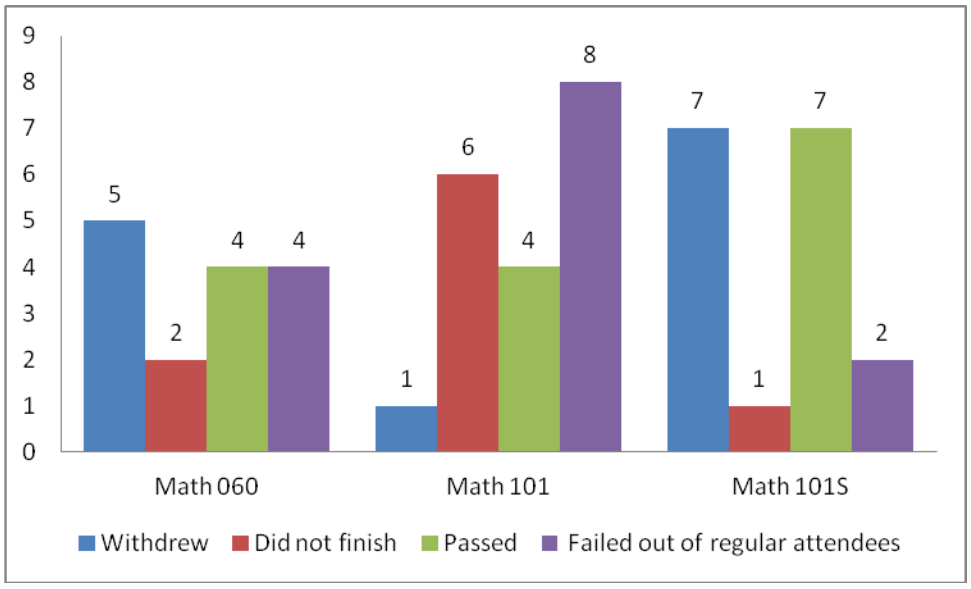


Figure 56: All Spring 2012 Math 060-101S grade distribution

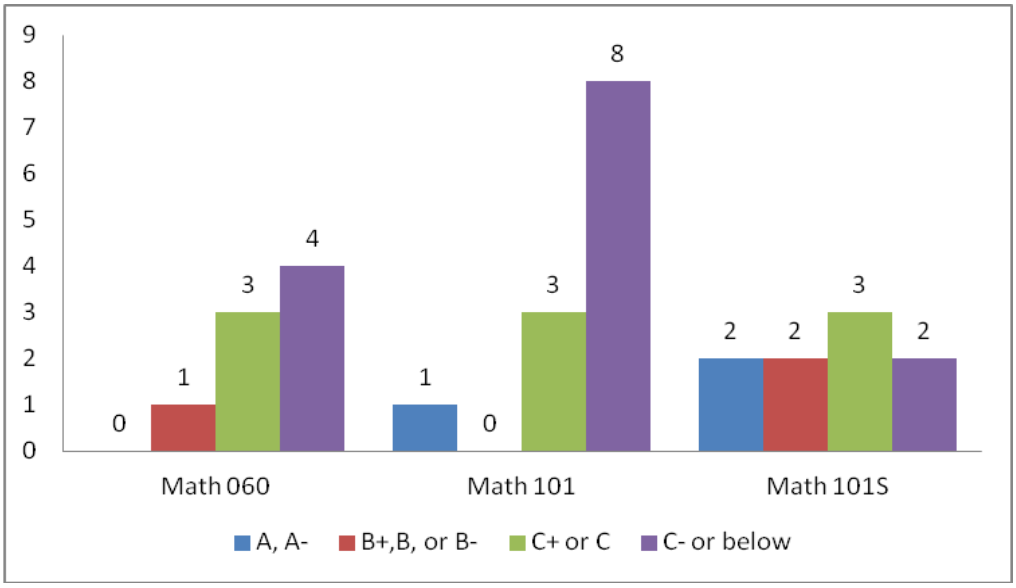


Figure 57: All Spring 2012 Math 060-101S overall grade averages of students who finished

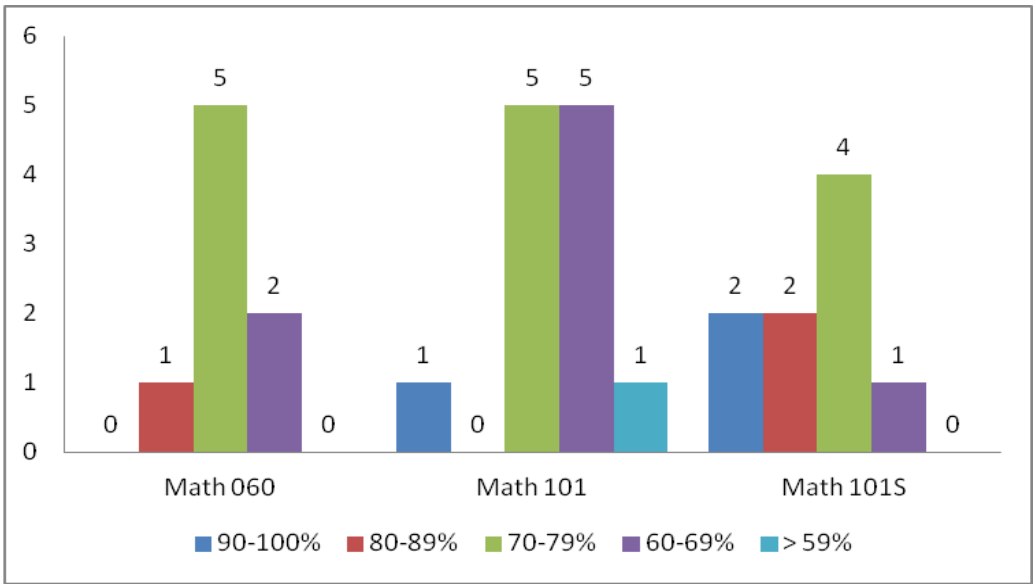


Figure 58: All Spring 2012 Math 060-101S test averages of students who finished

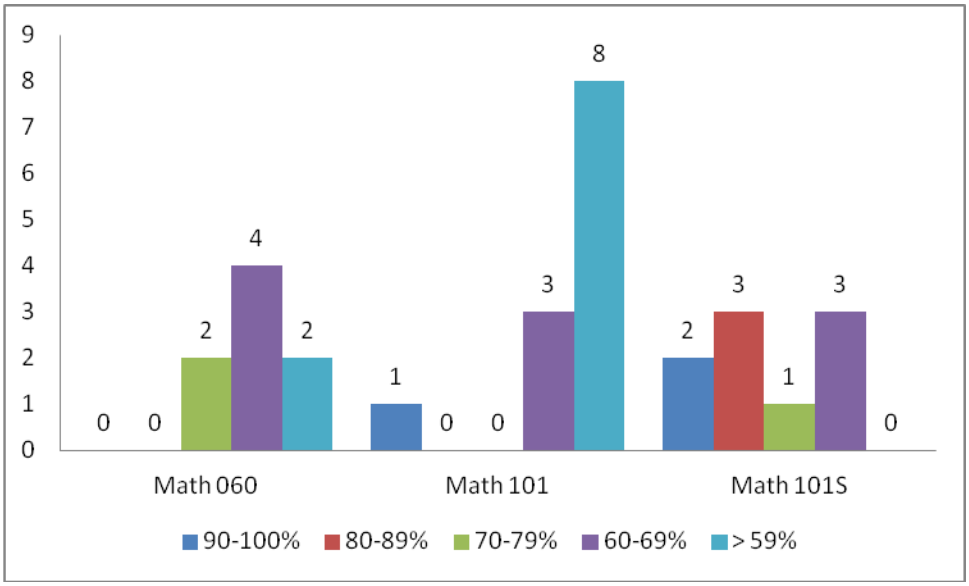


Figure 59: All Spring 2012 Math 060-101S pass rates of students for all enrolled

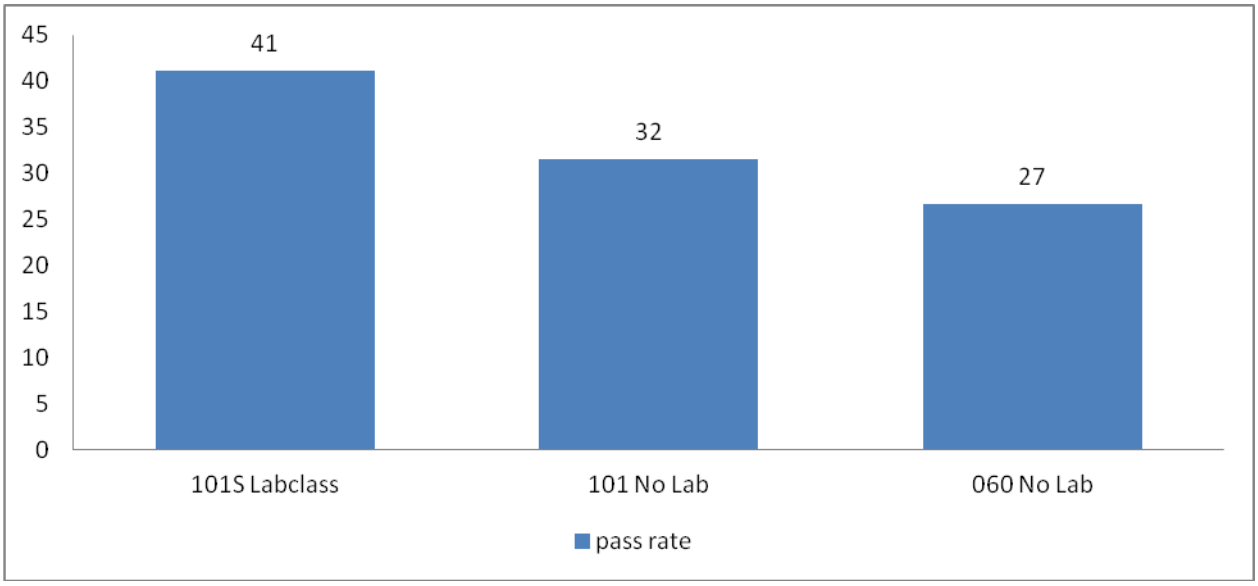
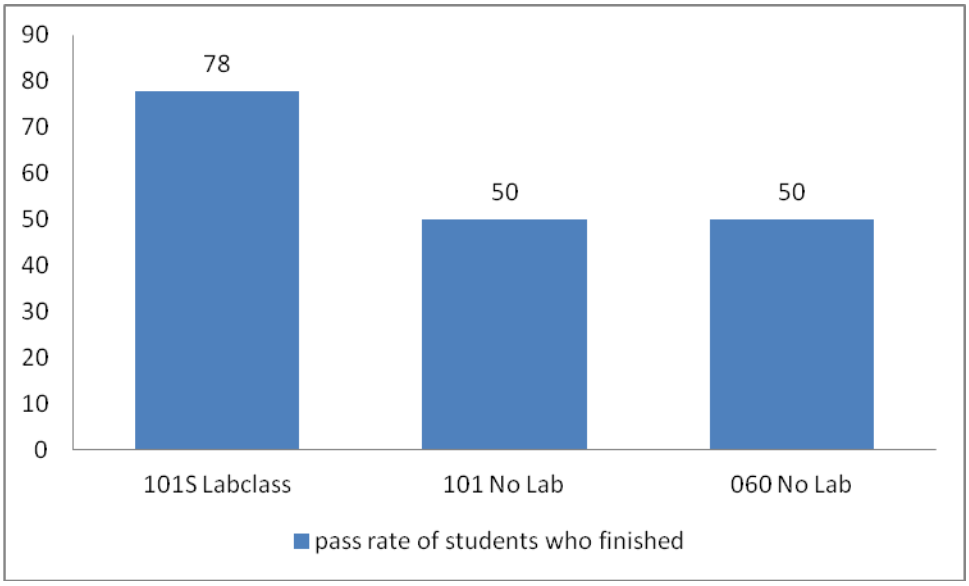


Figure 60: All Spring 2012 Math 060-101S pass rates for students who finished the course



Math 101 had the highest number of failures and students who did not finish the course. Math 101S had the highest number of withdraws. The class paired with a lab had the highest pass rate for students who finished the course. Test averages for Math 101 were strikingly low. These courses present challenges for students.

Math 108 (Spring 2012)

Course description

Math 108, Foundations of Mathematics, is a non-traditional, application-driven course that focuses on teaching pre-nursing students how to think critically with numerical or mathematical information. The course is designed to teach quantitative reasoning by emphasizing topics, both useful and relevant to a liberal arts program and to the TEAS, and that enable students to become quantitatively literate. These mathematical topics include the concepts of logic, set theory, reasoning, real numbers, the metric system, linear equations and inequalities, and systems of equation.

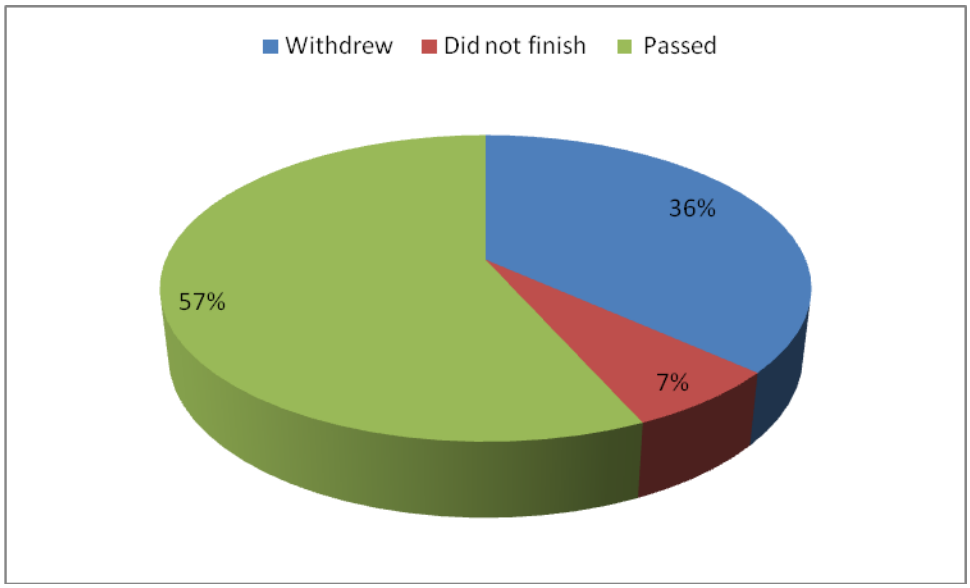
This course was taught (as a pilot) by a specialist. Findings of two specialist taught sections are presented in the next section.

Findings

Pass rates- both sections

30 students enrolled in the two sections of this course. 11 students (36% of the sections) withdrew while 2 (7%) did not finish the course. 17 students (57%) finished the course. This is illustrated below. No student that finished the course failed.

Figure 61: Spring 2012 Math 108 total enrollment status

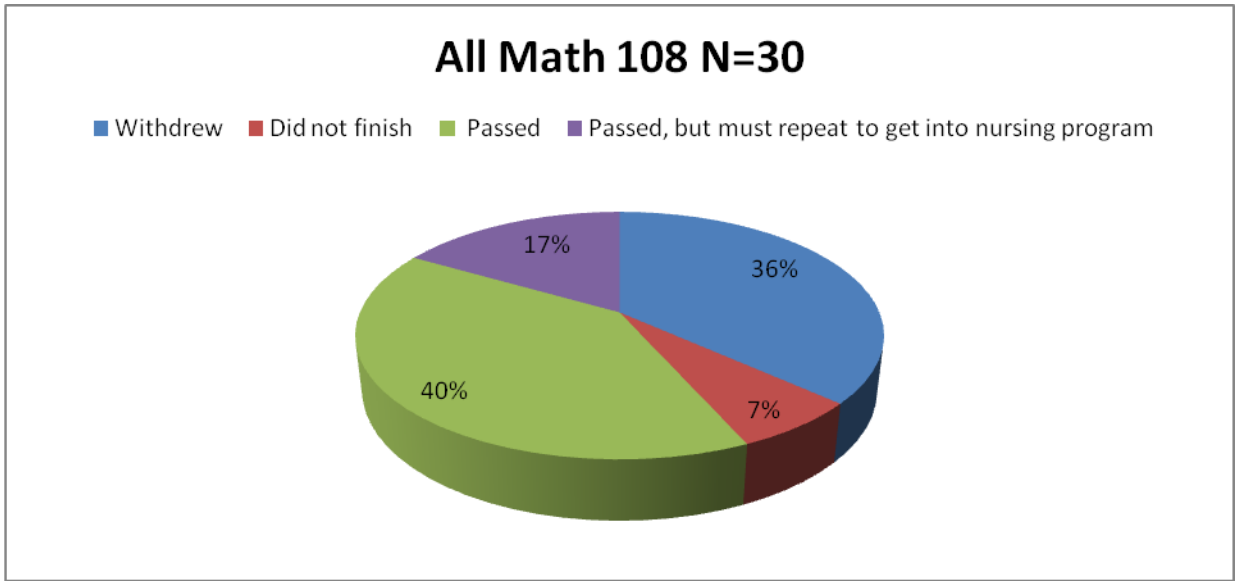


Withdrawals and not finishing the course, account for 42%, close to half, of enrollment across both sections.

The pass rate was 57% for the all enrolled. Of the 57% who finished across both sections, 100% passed according to the criteria of attaining an overall average of 63% (D or higher).

Because not all students who passed the course could apply for the nursing program (they need a C or higher). Below is a special figure illustrating the percentage of students who have to repeat the course because they failed to attain a C average.

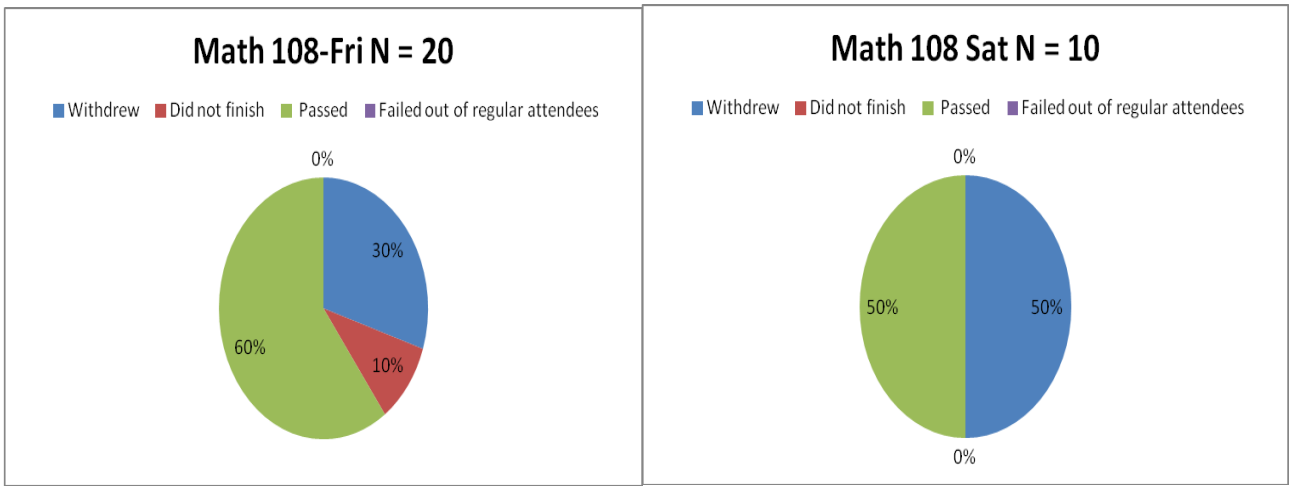
Figure 62: Spring 2012 Math 108 total enrollment status (nursing program requirements)



When broken down this way, slightly less than half the students who finished the course, were "successful" with regard to meeting requirements for the University in general *and* for admission into the nursing program. 60% of all students enrolled will have to retake the course, the main reasons being because they withdrew and/or had not taken mathematics in years, and were concurrently enrolled in patho-physiology.

Below are the enrollments by individual class section.

Figure 63: Spring 2012 Math 108 enrollment parsed out by section

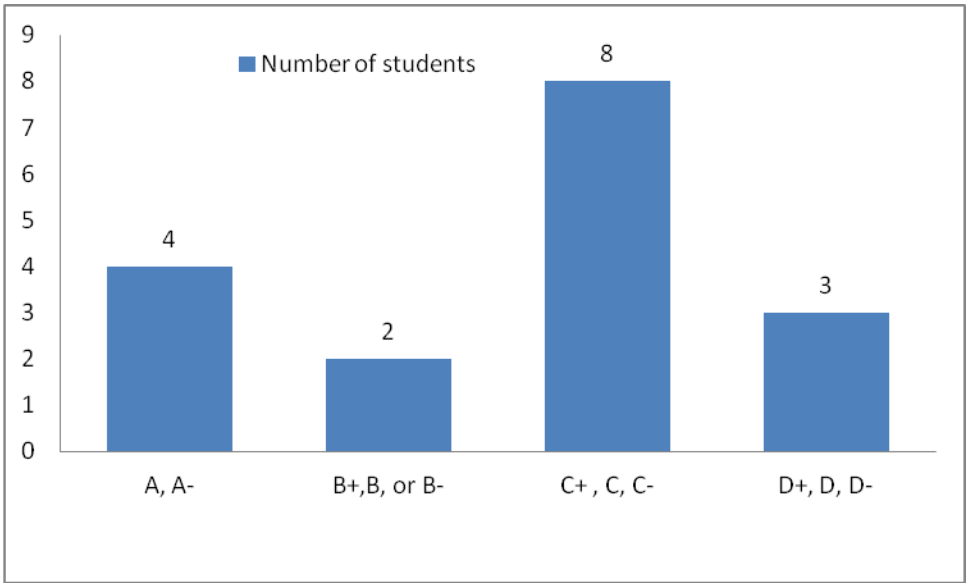


When parsed out by respective sections, the majority of withdrawals and students who did not finish the course come from students in the Friday night class. The Friday night class had a slightly higher pass rate. No regular attendees failed the course.

The pass rates for the Friday night section were 60% for all enrolled and 100% for students who finished the course. The pass rates for the Saturday section were 50% for all enrolled and 100% for students who finished the course.

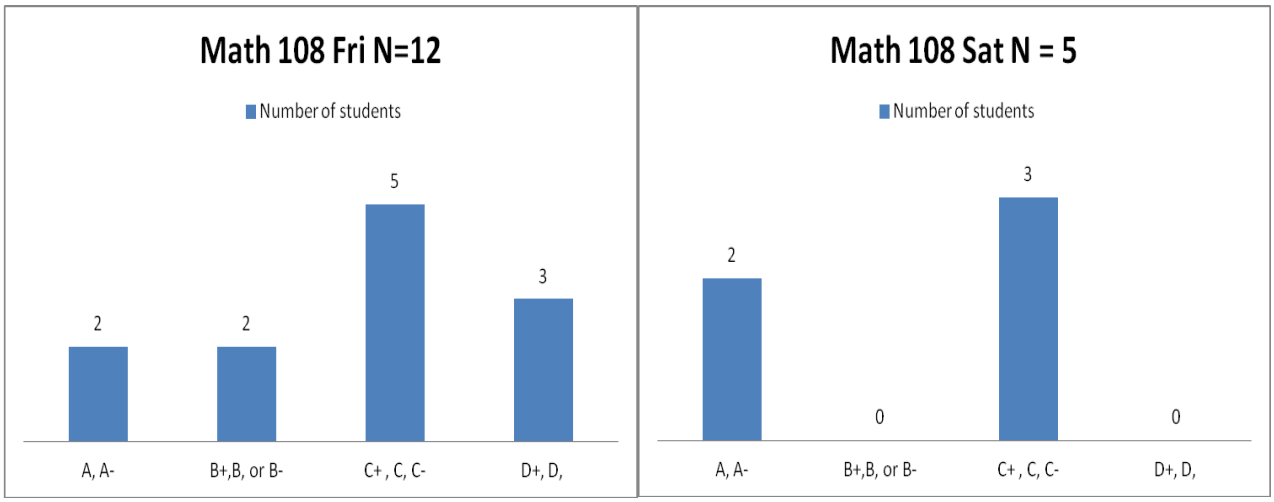
Below is an illustration of the grade distribution for the 17 students (across 2 sections) who finished the course.

Figure 64: Spring 2012 Math 108 total overall grade distribution (students who finished)



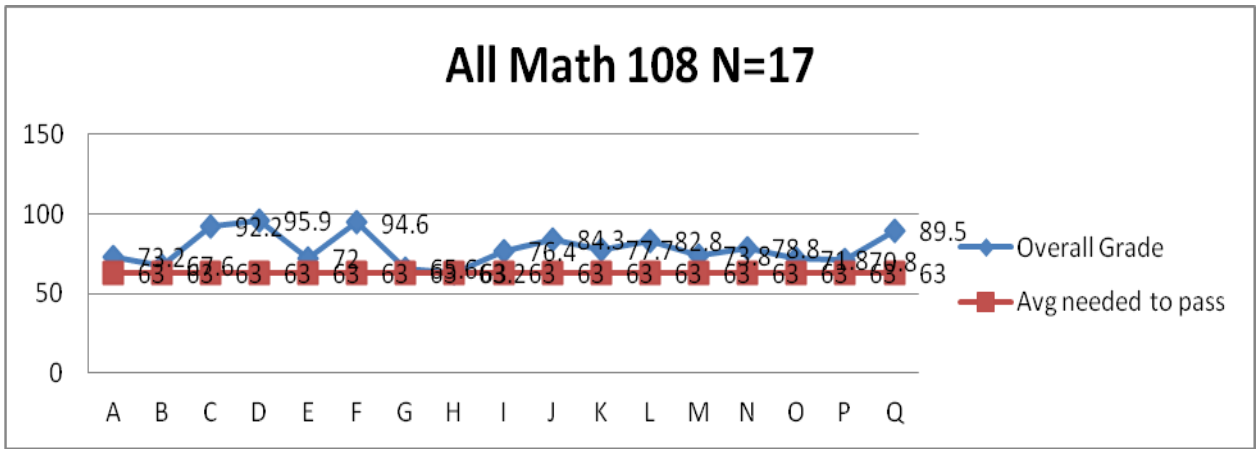
Of the 17 students who finished the course, four earned grades of A's or A-s. 2 students earned B+, B, or B-, 8 earned C+, C, or C-, and three students earned a D+ or D. In other words, 23% earned some variation of an A. 12% earned some variation of a B. 47% earned C+,C, or C- , and 18 % of the classes earned a D+ or D. Below is an illustration of how the grades of each of these 17 students were distributed.

Figure 65: Spring 2012 Math 108 overall grade distribution parsed out by section



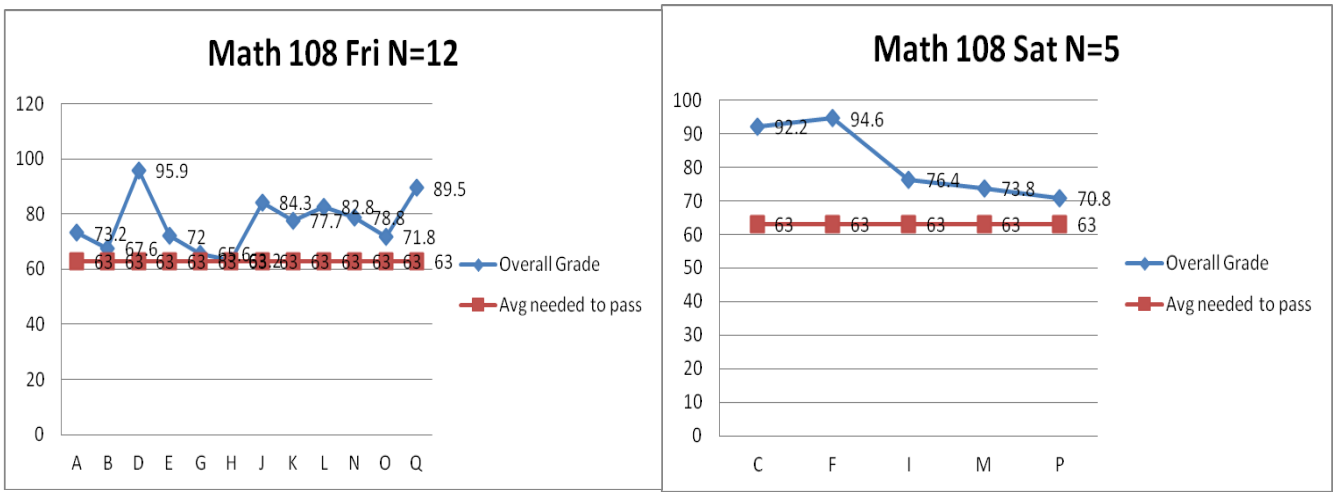
Grades in the Friday night section seemed normally distributed. Looking across all classes, C's seemed to be the most frequent grade. Below are the distributions of overall grade averages by student across both sections.

Figure 66: Spring 2012 Math 108 overall grade average distribution by student



The majority of students performed within a 70-79% range. The overall class average was 78.2 % and the overall class median was 76.4%.

Figure 67: Spring 2012 Math 108 overall grade average distribution by student parsed out by section

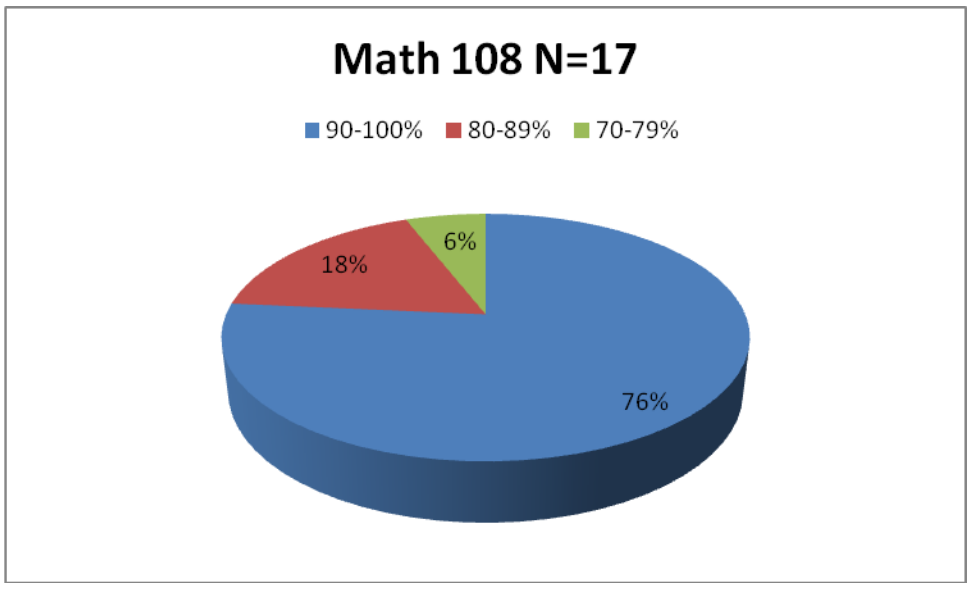


The main difference between the Fri and Sat night class was that students in the Friday night section were able to perform within the 80-90% ranges.

Attendance

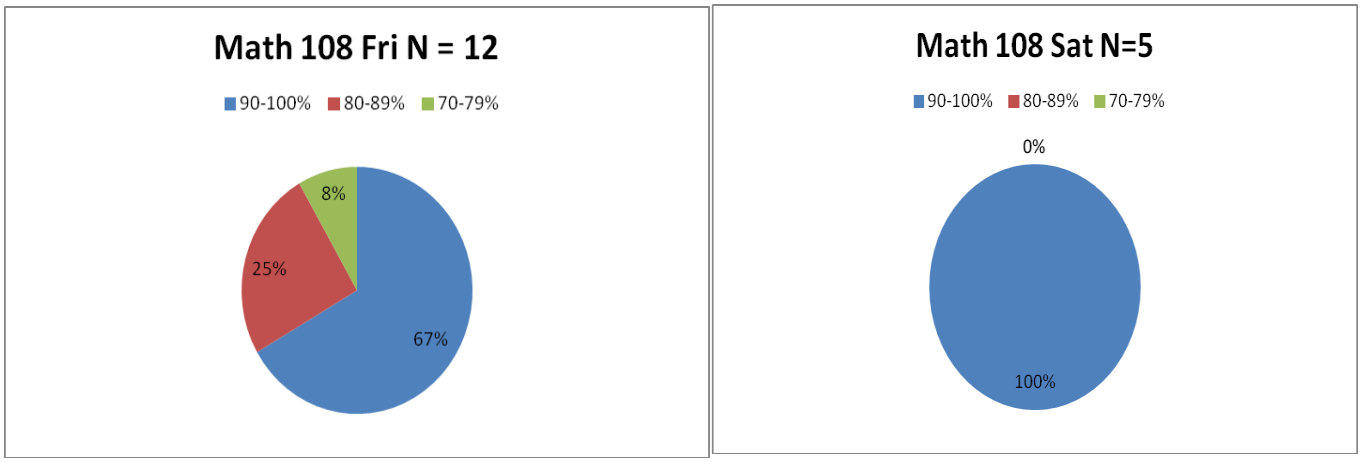
13 of the 17 students who finished (76%) across both sections had an attendance rate of 90% or higher. The attendance rates are illustrated below.

Figure 68: Spring 2012 Math 108 total attendance rates



Overall, attendance was excellent.

Figure 69: Spring 2012 Math 108 Attendance parsed out by section

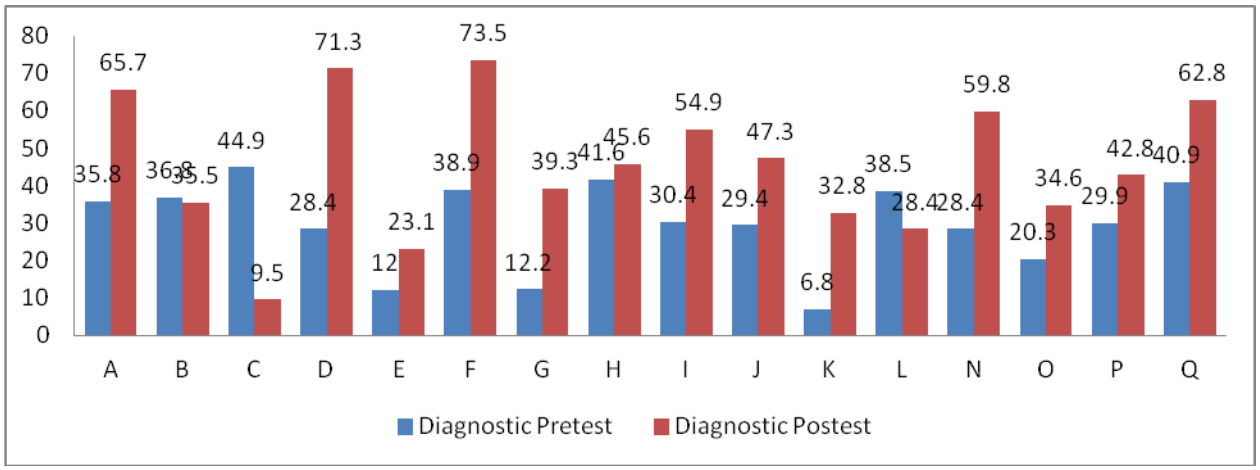


The Sat section had the best attendance. Even still, the Friday class had relatively good attendance.

Results of diagnostic pre and post tests

Below are the results of all Math 108 students' percentage scores on the diagnostic tests.

Figure 70: Spring 2012 Math 108 diagnostic test results

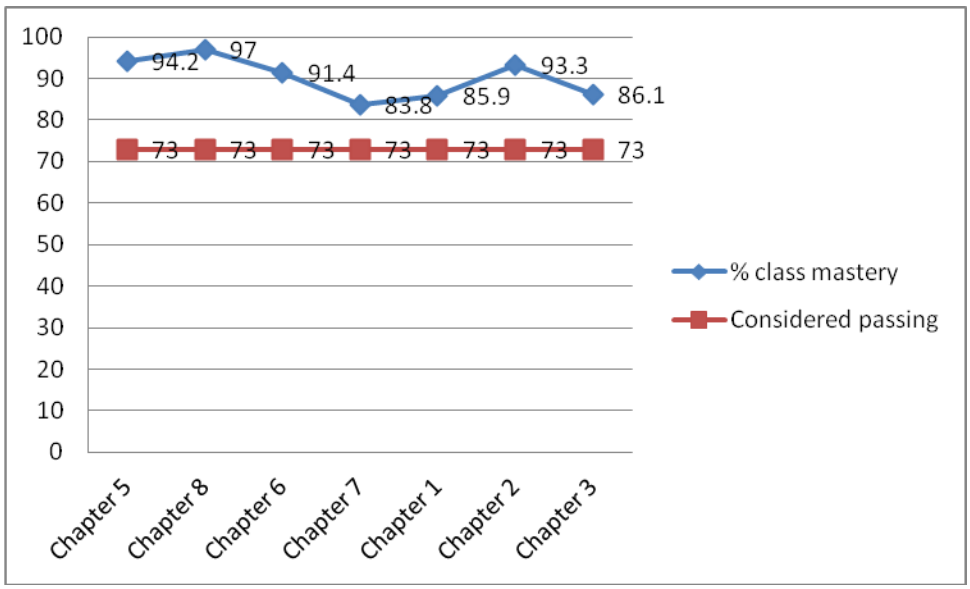


With the exceptions of students B ,C, and L, all students made gains. Student C who passed the course with an A-, admitted that the diagnostic was not a priority for her in the wake of preparing for Final. Students D, G, K, and N more than doubled their initial percentage score. The most fascinating finding was for Student D, whose initial score increased by 42.9 percentage points. Student K had the highest relative change in diagnostic, 382.4%, which means she essentially almost quintupled her initial percentage score. Student K was also a former student of mine from the previous semester in Math 101S. In sum, these students left the pilot course knowing a little bit more than they did coming in.

Performance by chapter

Below is an illustration of how the classes performed on each chapter (for ease, both classes were combined as one in MyMathLab).

Figure 71: Spring 2012 Math 108 class performance by chapter

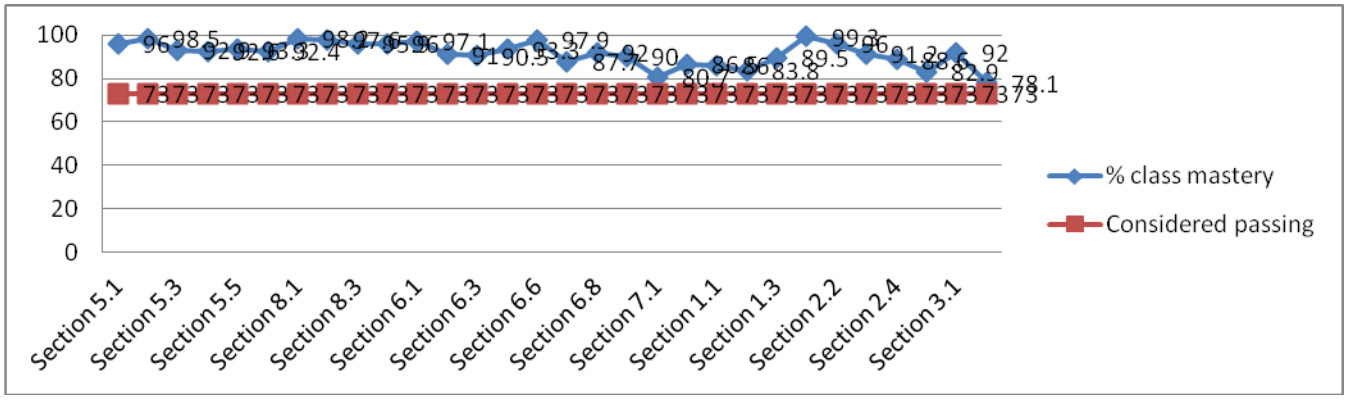


The class average was consistently above the minimum standards for comprehension throughout all Chapters. Class averages were excellent, ranging from an 83.8%- 97%. After Chapter 8, there is a steady decrease in Chapters 6 and 7, which covered algebraic topics of problem solving, graphing lines, and solving systems of equations, topics which technically are covered in pre-requisite courses (Math 101/101S at Trinity). The lowest average occurred during Chapter 7. Chapter 7 covers solving systems of equations by graphing, substitution and elimination/addition methods. These topics tend to pose some of the most challenges for Math 101 students, and thus it was not surprising that it posed some challenge here. The class average peaks again in Chapter 2 on set relationships and Venn diagrams, and then declines in Chapter 3, the chapter on logic. In particular, students struggled with truth tables.

Performance by homework section

The illustration below conveys more detailed information about sections within chapters.

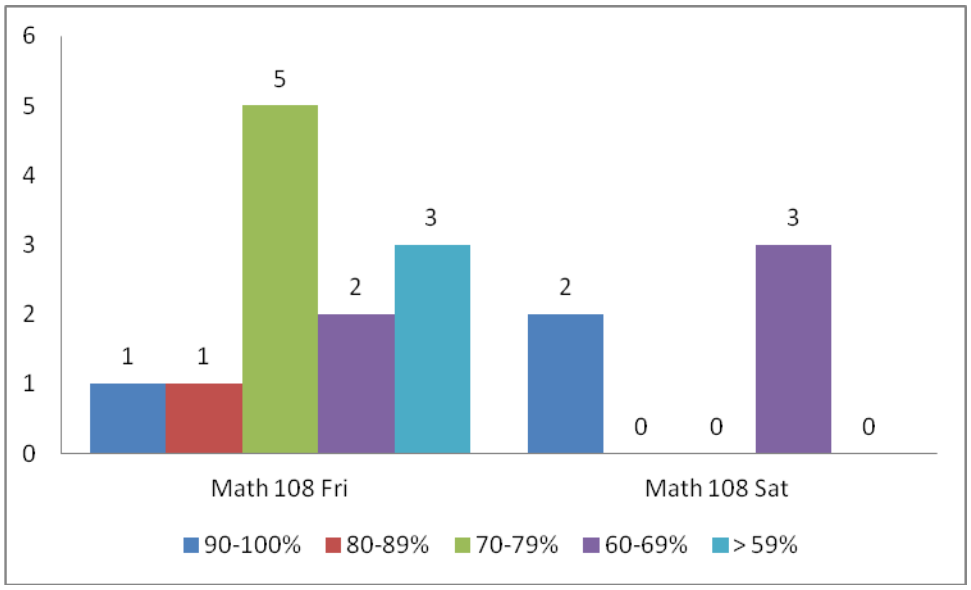
Figure 72: Spring 2012 Math 108 class performance by section



Class performance is consistently above the minimum standards for comprehension in each section. The lowest average of 78.1% occurs in section 3.2 on construction of truth tables for negations, conjunctions, and disjunctions. The high nature of the scores may be due in part to the fact that these students were all trying to get into the nursing program and thus intrinsic and extrinsic motivations were likely higher. The other interesting thing to note was that approximately 95% of the students across both sections were transfer students. Conversely, it may be that scores were high because of abuse of MyMathLab learning aids.

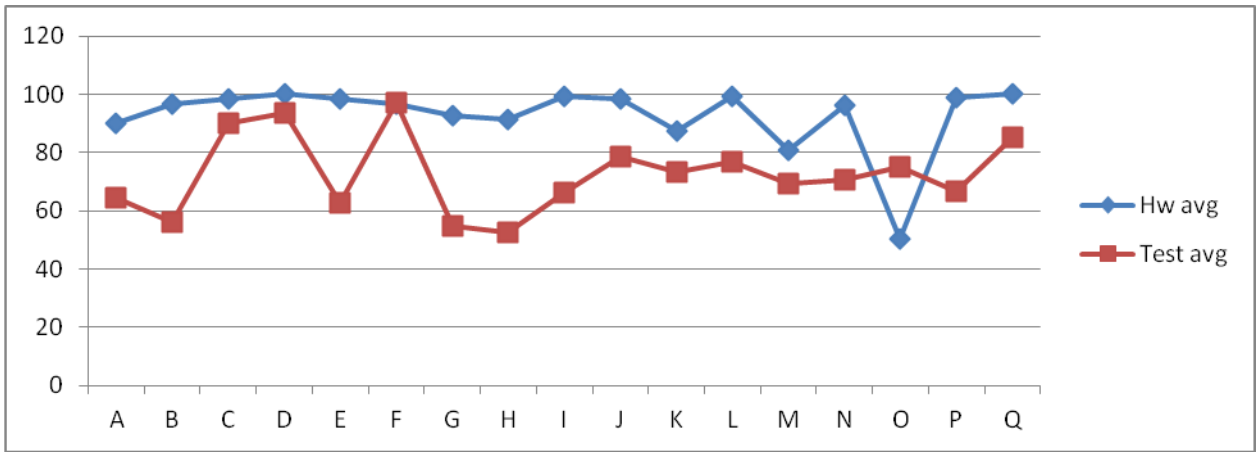
This can be better understood by looking at their test score averages. This is illustrated in the figure below.

Figure 73: Spring 2012 Math 108 total test score averages



Here we see that more students scored in the lower ranges on tests. Below is an illustration of the relationships between students' homework averages and test averages.

Figure 74: Homework and Test Average relationships



Findings show with the exception of student F, for about half of the students, test averages fell significantly below homework averages. Tests were designed so that if students could do the homework, then they could surely pass the test, however, these figures lend support to the theory that students were likely using MML in ways that hindered rather than helped them.

Summary

Figure 75: All Spring 2012 Math 108 Enrollment

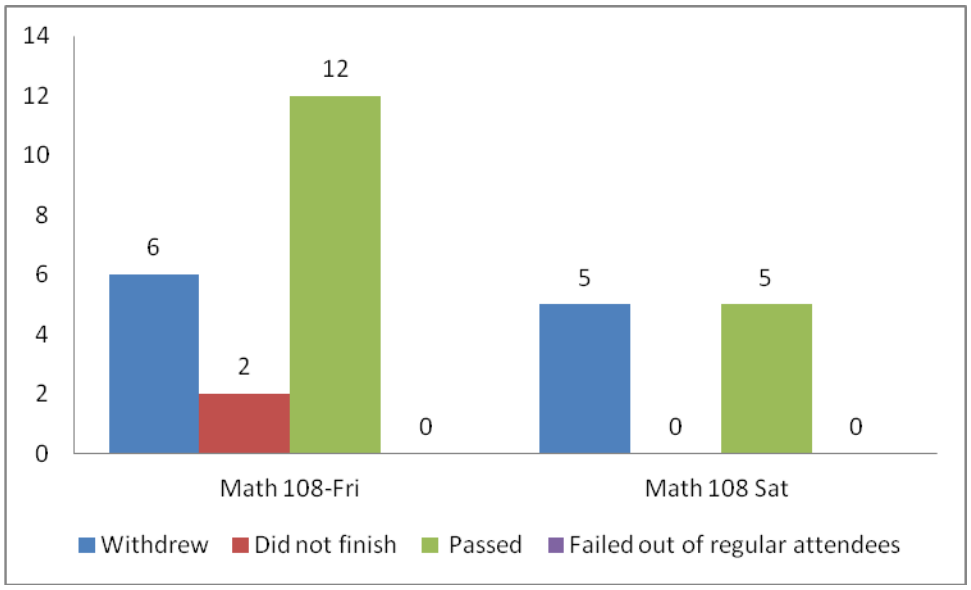


Figure 76: All Spring 2012 Math 108 grade distribution

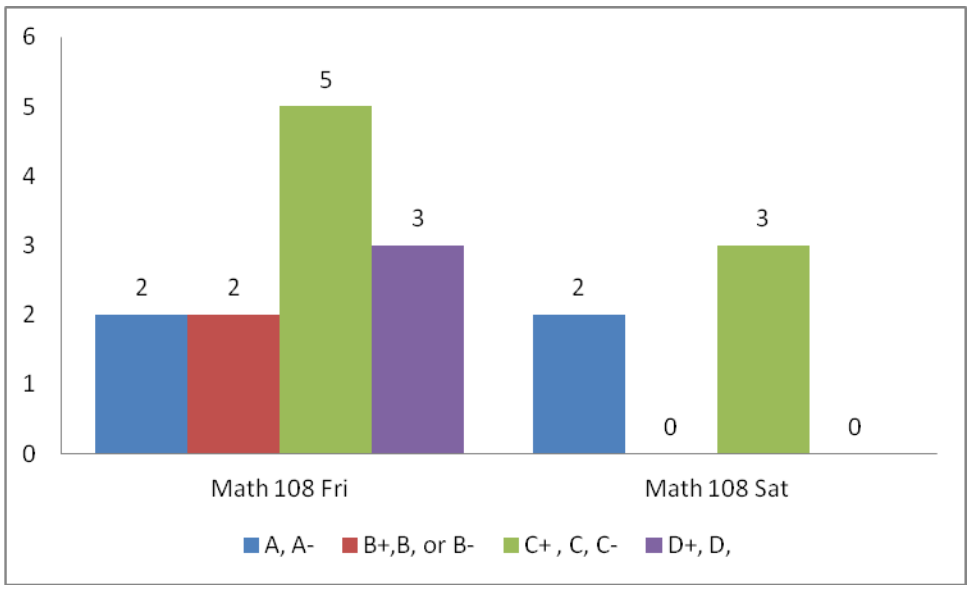


Figure 77: All Spring 2012 Math 108 overall grade averages for students who finished

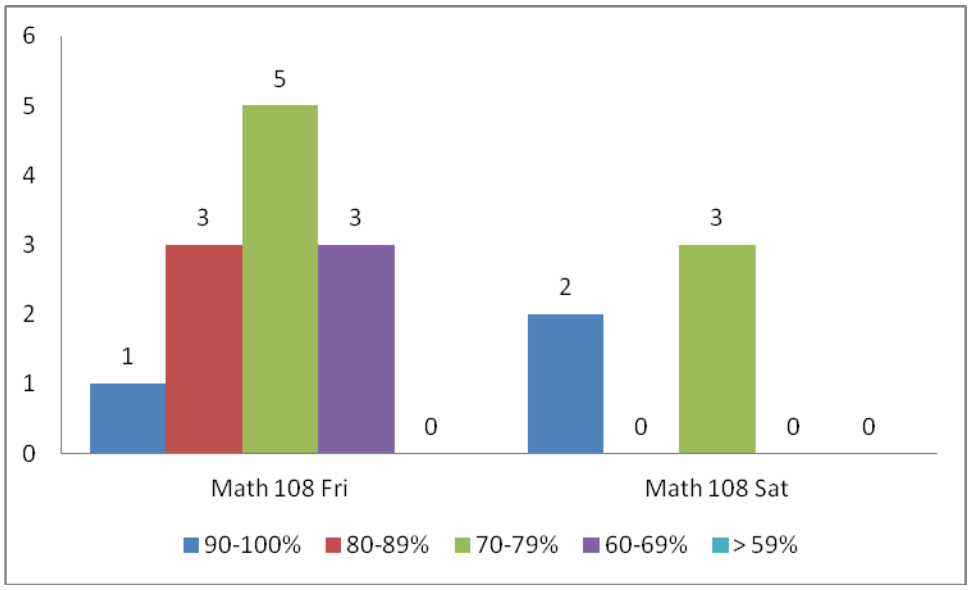


Figure 78: All Spring 2012 Math 108 test averages of students who finished

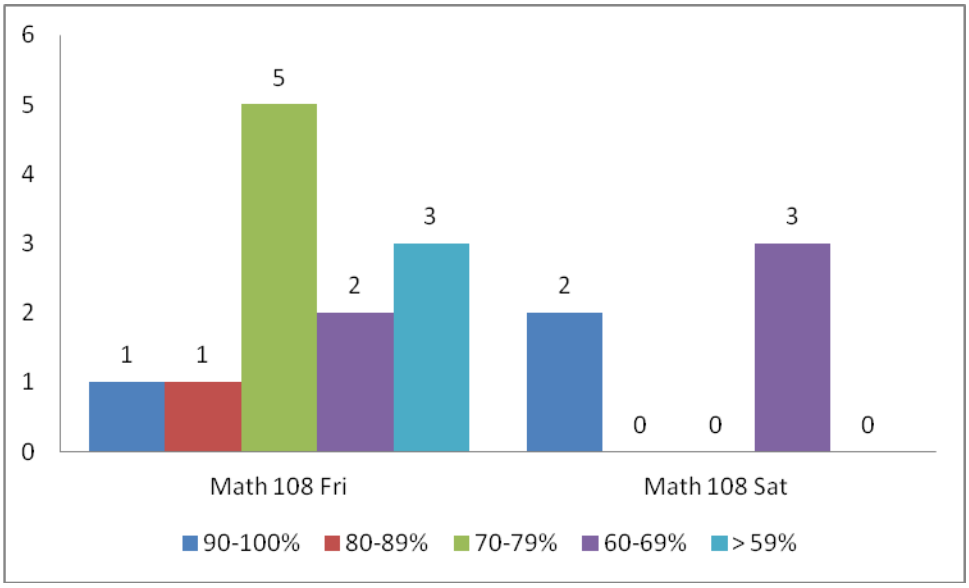


Figure 79: All Spring 2012 Math 108 pass rates of students for all enrolled

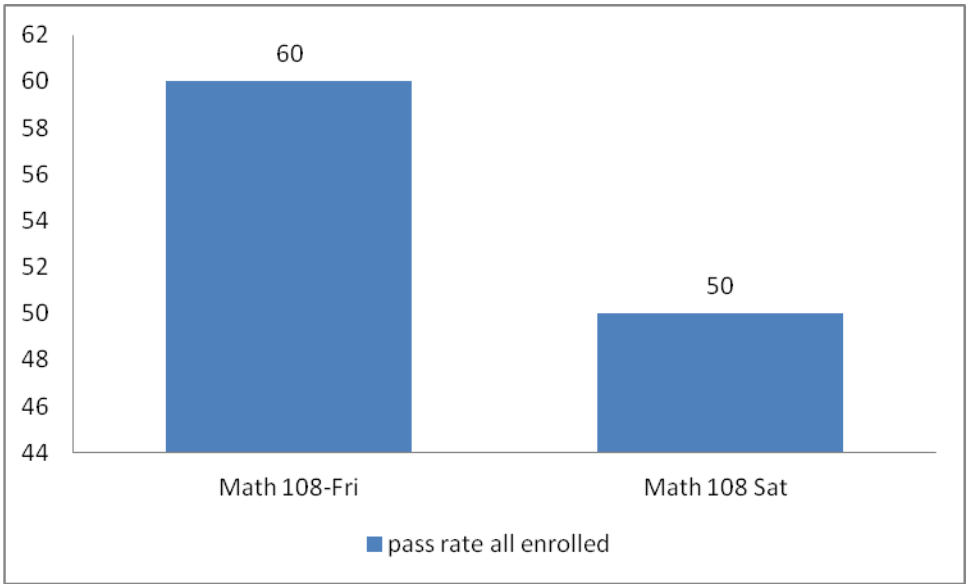


Figure 80: All Spring 2012 Math 108 pass rates for students who finished the course

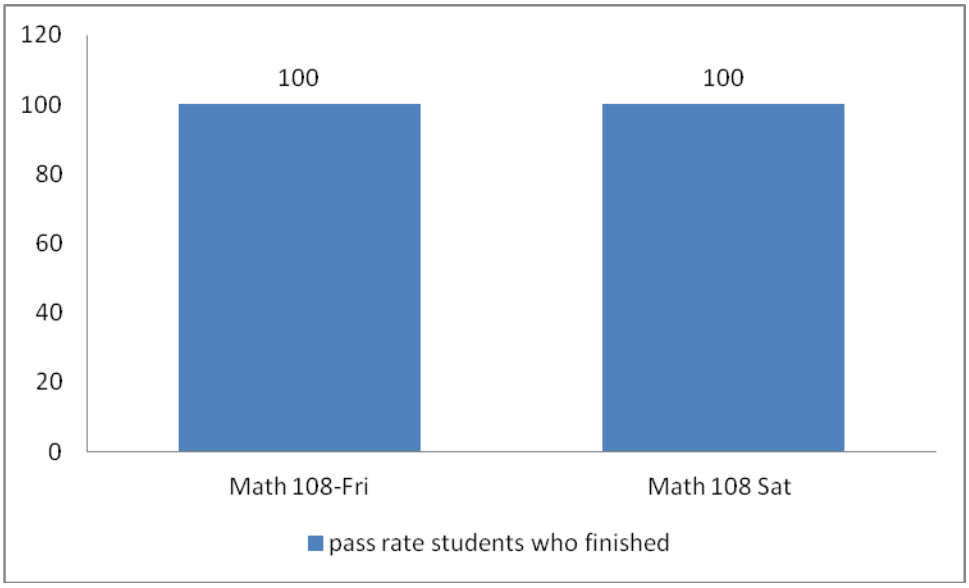


Figure 81: All Spring 2012 Math 108 percentages meeting nursing program requirements for all enrolled

*Note: 3 of the students in the Saturday section, were not pre-nursing majors, thus they were not calculated into the figures below.

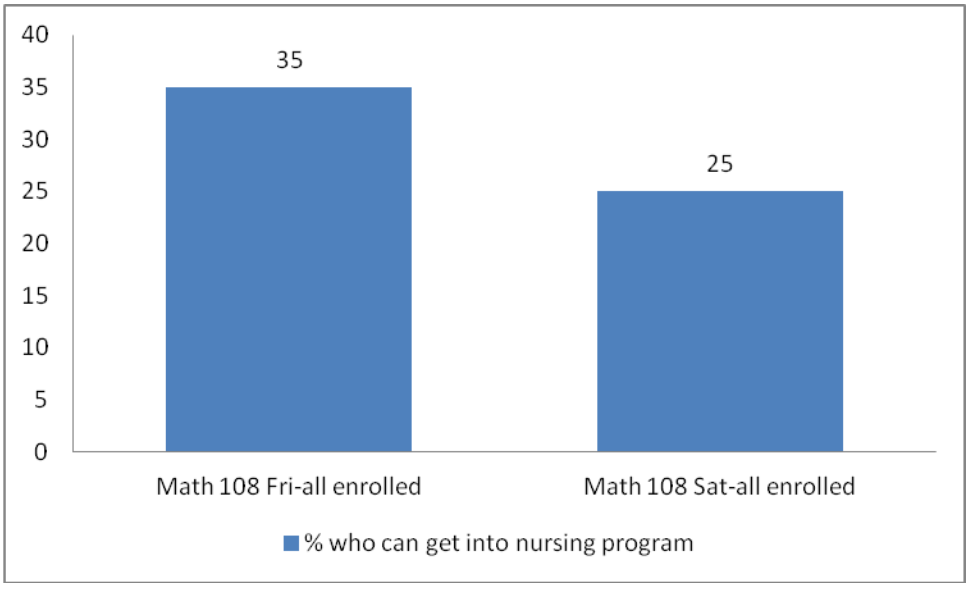
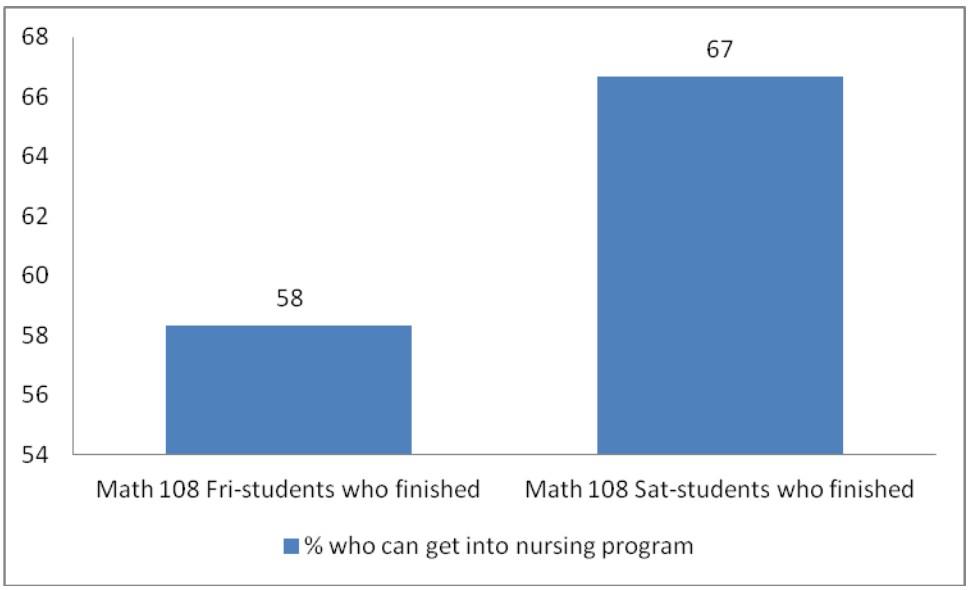


Figure 82: All Spring 2012 Math 108 percentages meeting nursing program requirements for students who finished



The issue is not whether students can pass the course, they do, it is that some are not able to pass with the C necessary for getting into the nursing program. This course requires much reading and studying, studying which many students put off until towards the end of the semester. In addition, many students were also taking a patho-physiology course, and did not seem to be able to effectively manage both that course and this course. Many students had not taken a mathematics course in years, despite being enrolled in the course, and their basic skills were somewhat rusty. These three factors, I suspect contributed to the one-third of students who withdrew.

Math 109 (Spring 2012)

Course description

Math 109, Foundations of Mathematics, is a non-traditional, application-driven course that focuses on teaching students how to think critically with numerical or mathematical information. The course is designed to teach quantitative reasoning by emphasizing topics, both useful and relevant to a liberal arts program, that enable students to become quantitatively literate. These mathematical topics include the concepts of logic, set theory, finance, probability theory, and linear models of growth.

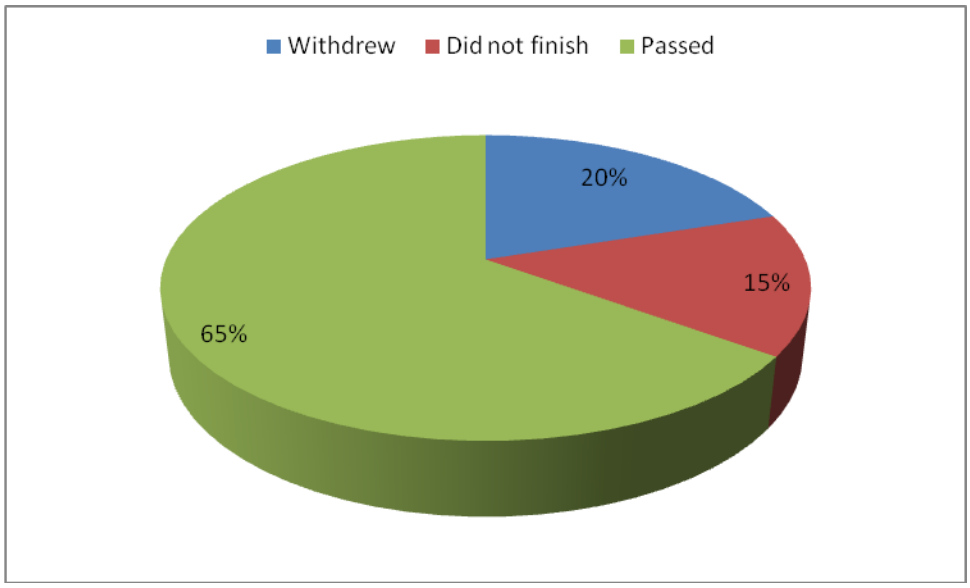
This course was taught by one adjunct. Findings are presented in the next section.

Findings

Pass rates

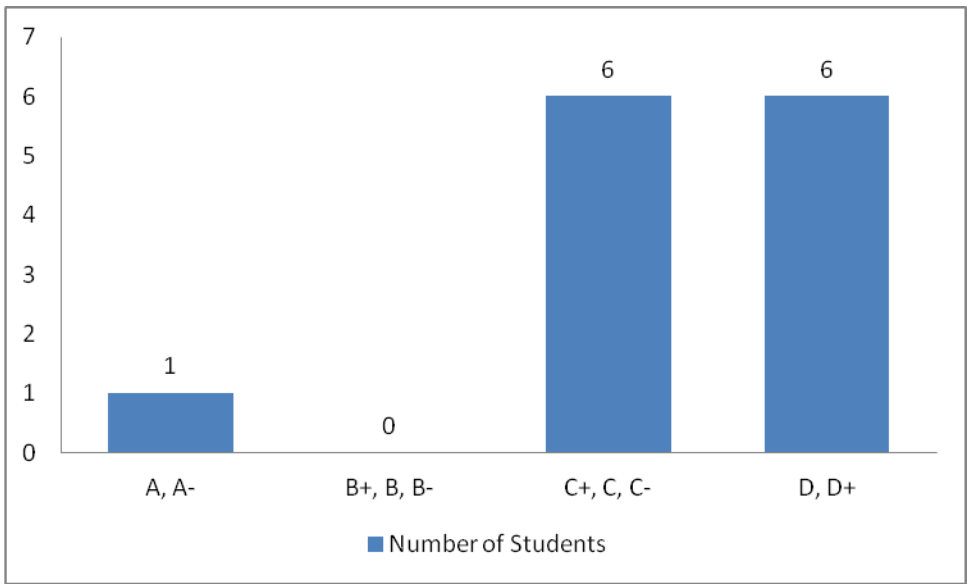
20 students enrolled in the one section of this course. 4 students (20% of the sections) withdrew, 3 (15%) did not finish the course, and 13 (65%) finished the course. None of these 13 failed the course. This is illustrated below.

Figure 83: Spring 2012 Math 109 enrollment status



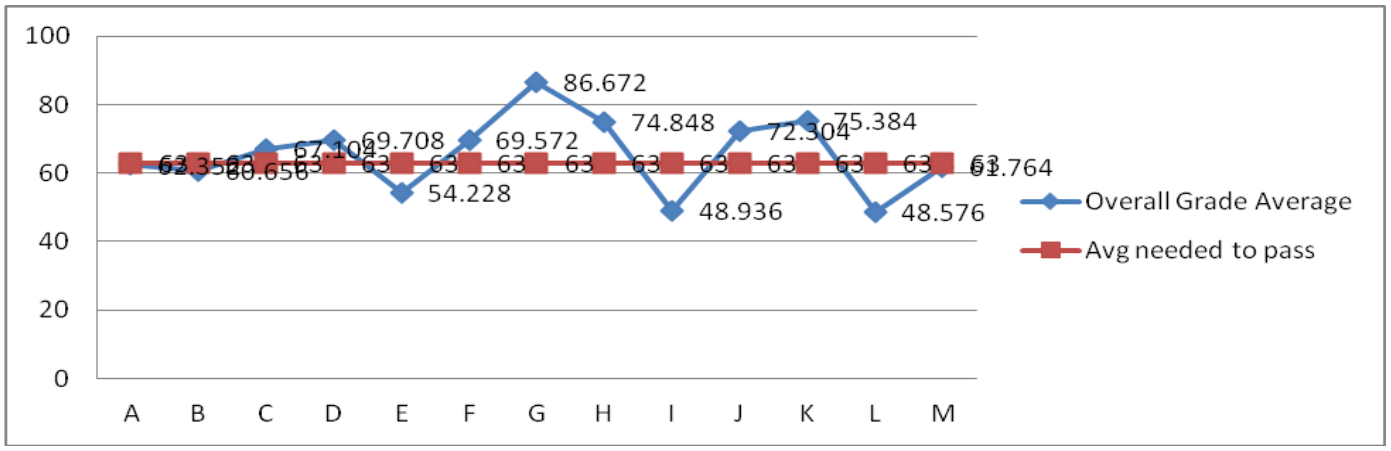
The pass rate was 65% for the all enrolled. Of the 65% who finished across both sections, 100% passed. Below is an illustration of the grade distribution for the 13 students who finished the course.

Figure 84: Spring 2012 Math 109 overall grade distribution



Of the 13 students who finished the course, one earned grades of A's or A-s. No students earned B's. 15 students earned C+, C, or C-, and six students earned a D+ or D. In other words, 8% of these students earned some variation of an A. 46% of the classes earned C+,C, or C- , and 46% of the classes earned a D+ or D. Passing this class was defined by attaining an overall average of 63% or higher. Below is an illustration of how the grades of each of these 13 students were distributed.

Figure 85: Spring 2012Math 109 overall grade average distribution by student

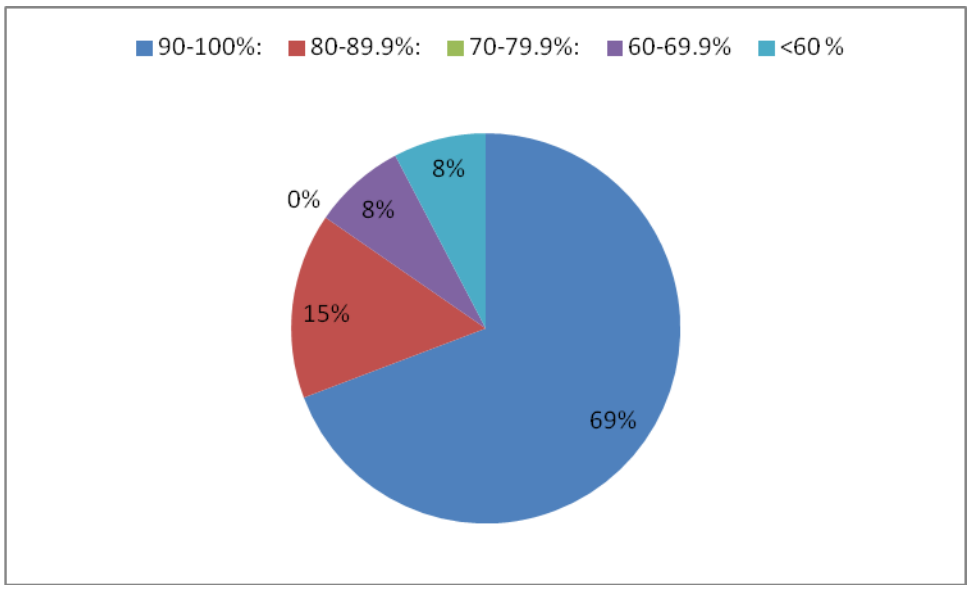


Student performance was quite varied.

Attendance

9 of the 13 students (69%) had an attendance rate of 90% or higher. 2 students (15%) were between 80%-89%, 1 student (8%) had a rate between 60% -69% and 1 student had an attendance rate lower than 60%. The attendance rates are illustrated below.

Figure 86: Spring 2012 Math 109 attendance rates



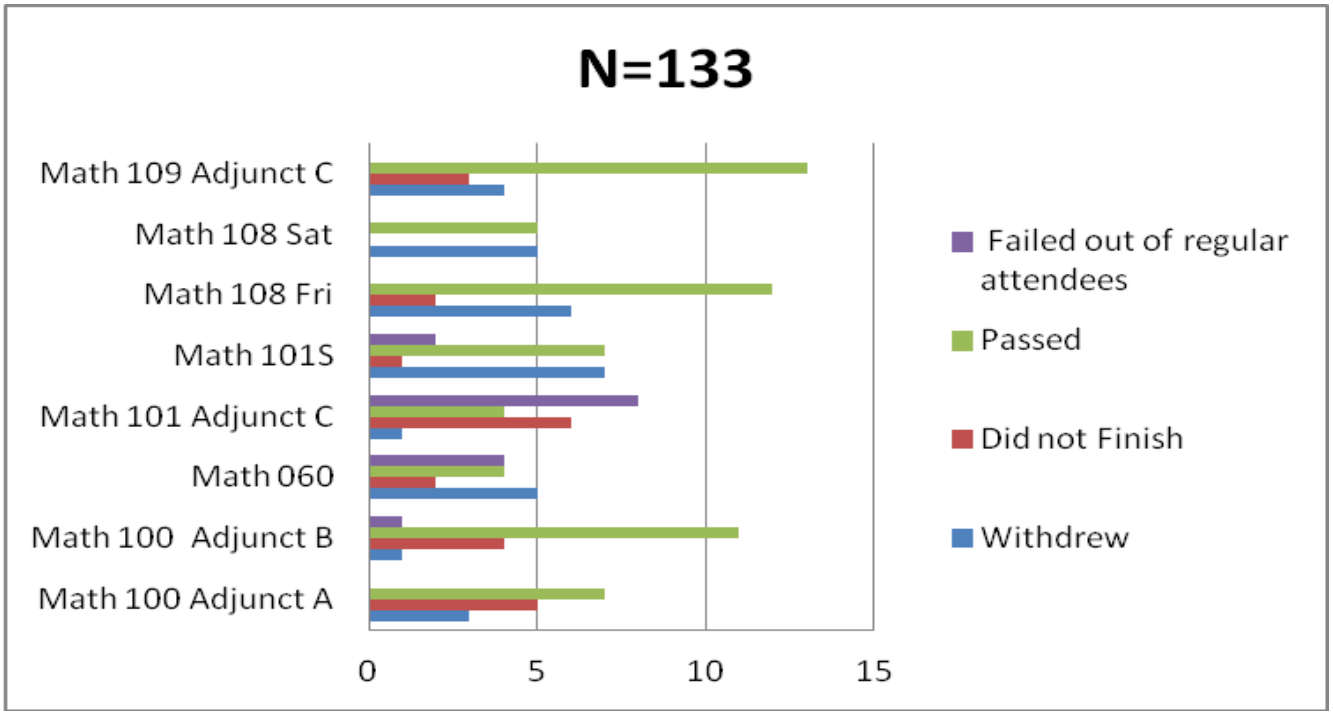
Overall, attendance was excellent with 85% of the students who finished attended at a rate between 80 and 100%.

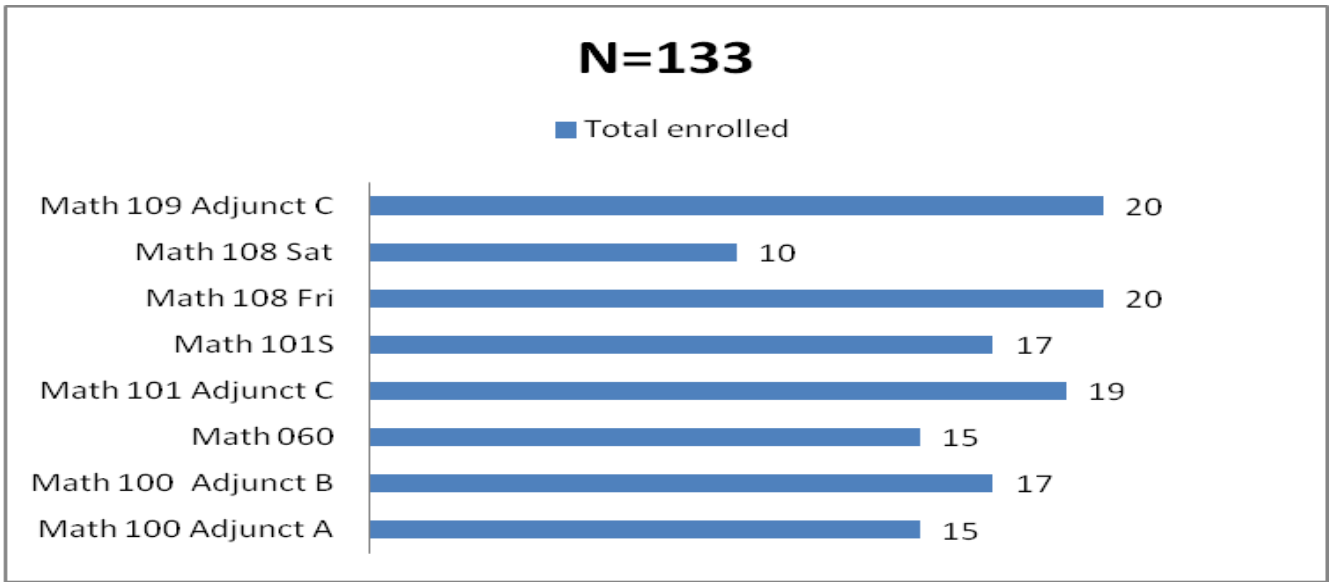
Data on pre and post diagnostic tests and performance by chapter and section was not available.

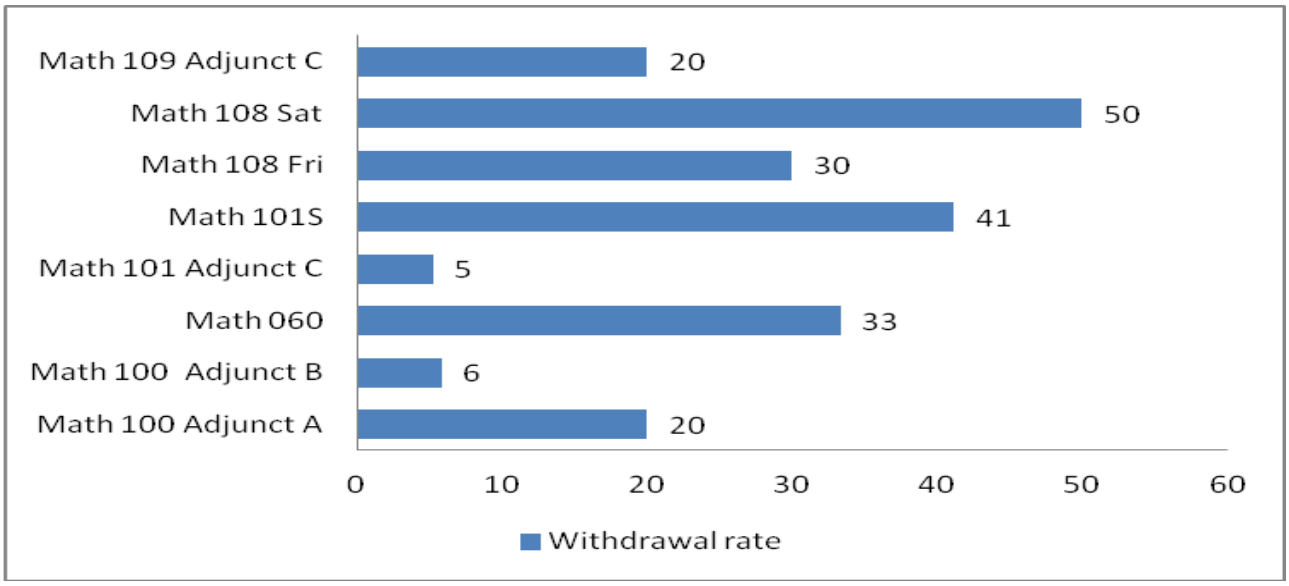
Summary

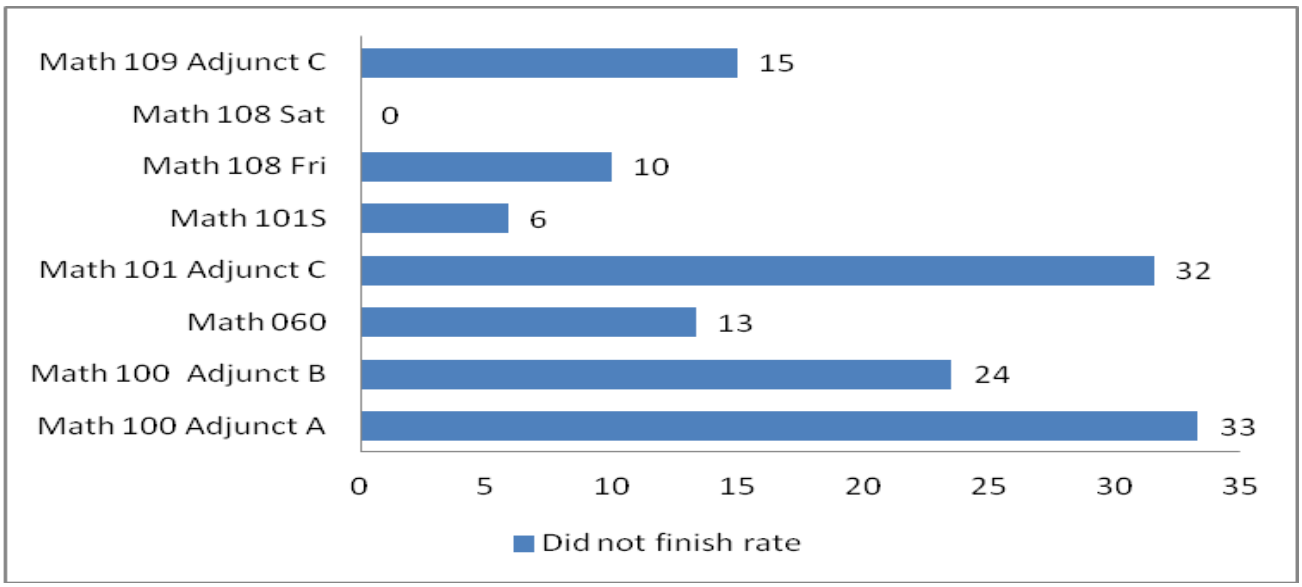
Students who withdraw combined with students who did not finish account for 35% of students enrolled. Grades tended to average- below average in this course. Attendance was relatively good.

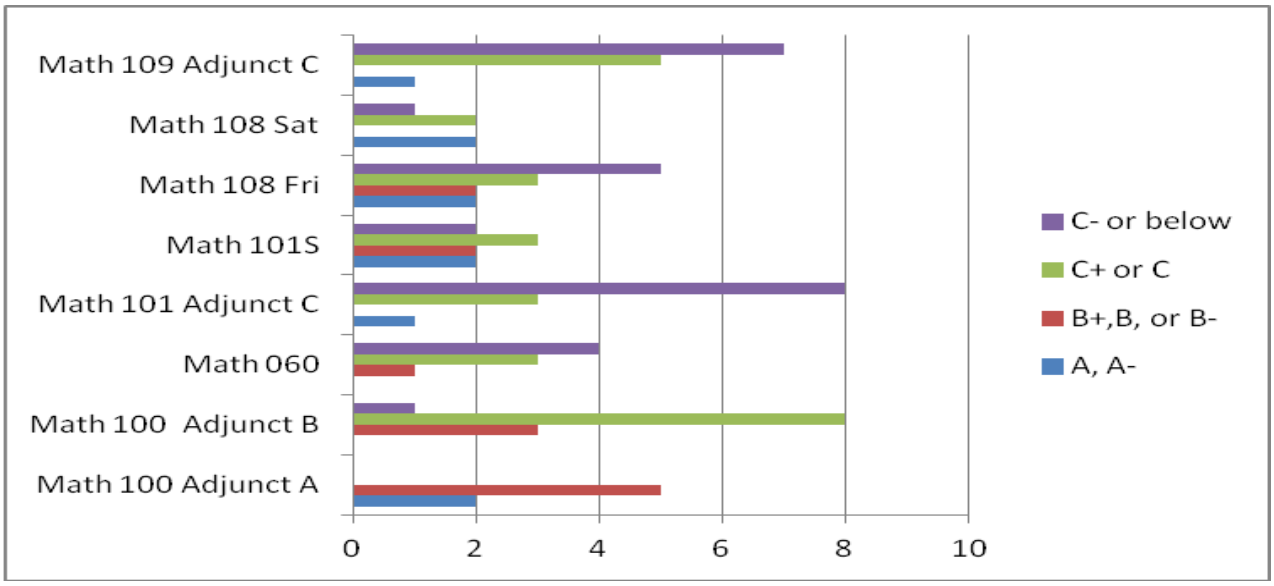
Figure 87: Snapshots of all Spring 2012 Data

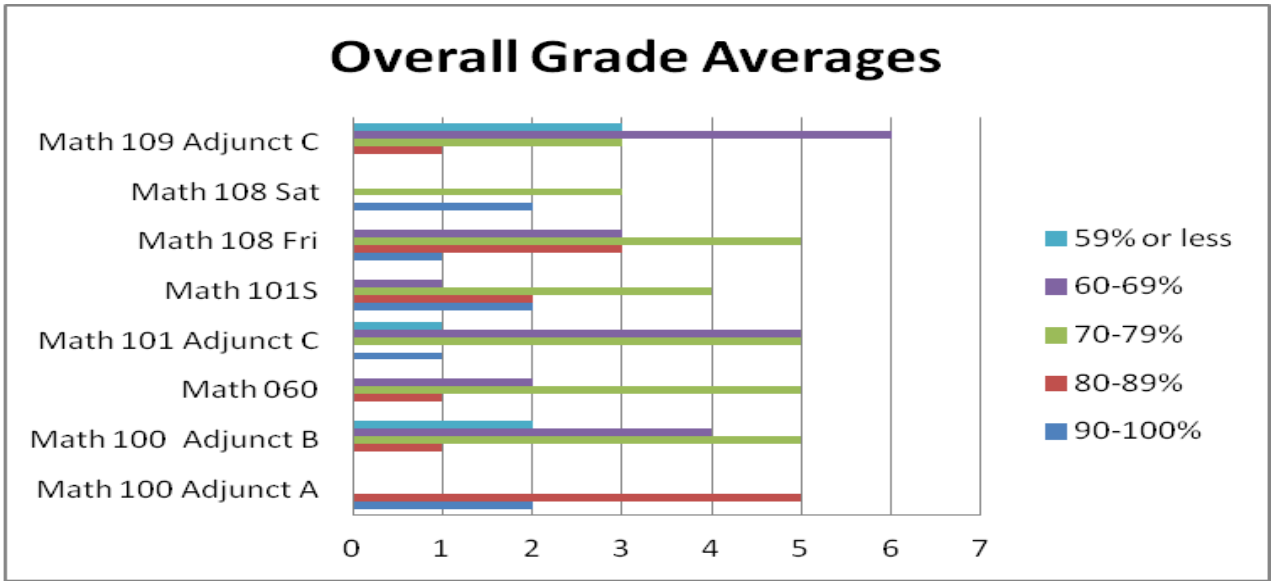


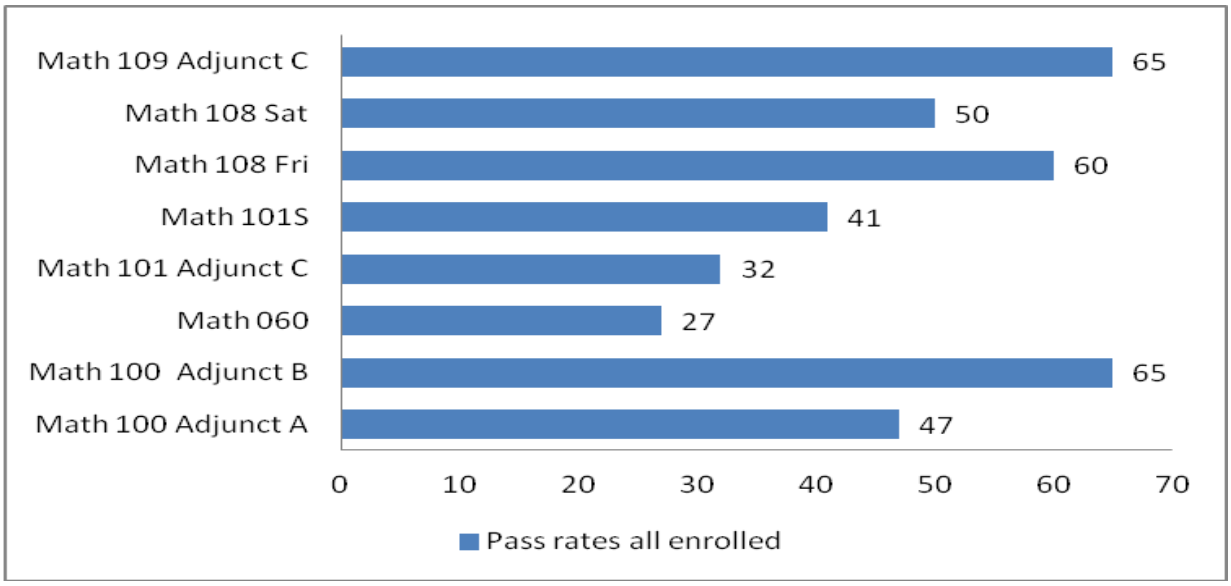


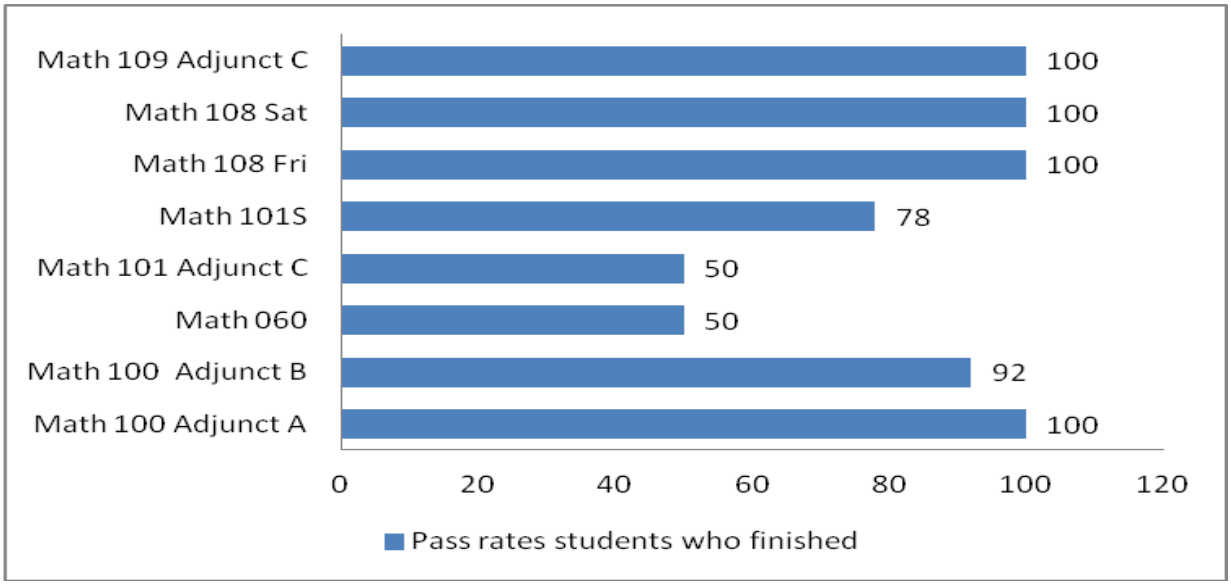

Math 109 Adjunct C
Math 108 Sat
Math 108 Fri
Math 101S
Math 101 Adjunct C
Math 060
Math 100 Adjunct B
Math 100 Adjunct A
20
50
30
41
5
33
6
20
0
10
20
30
40
50
60
Withdrawal rate

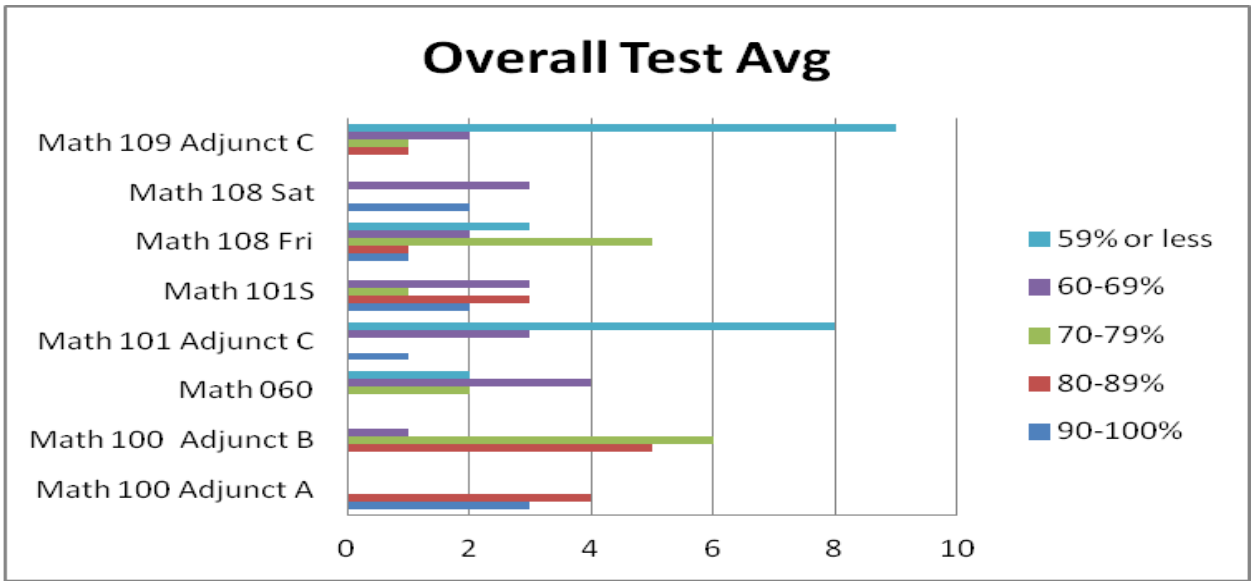

Math 109 Adjunct C
Math 108 Sat
Math 108 Fri
Math 101S
Math 101 Adjunct C
Math 060
Math 100 Adjunct B
Math 100 Adjunct A
15
0
10
6
32
13
24
33
0
5
10
15
20
25
30
35
Did not finish rate


Math 109 Adjunct C
Math 108 Sat
Math 108 Fri
Math 101S
Math 101 Adjunct C
Math 060
Math 100 Adjunct B
Math 100 Adjunct A
0
2
4
6
8
10
C- or below
C+ or C
B+,B, or B-
A, A-


Overall Grade Averages
Math 109 Adjunct C
Math 108 Sat
Math 108 Fri
Math 101S
Math 101 Adjunct C
Math 060
Math 100 Adjunct B
Math 100 Adjunct A
0
1
2
3
4
5
6
7
59% or less
60-69%
70-79%
80-89%
90-100%


Math 109 Adjunct C
Math 108 Sat
Math 108 Fri
Math 101S
Math 101 Adjunct C
Math 060
Math 100 Adjunct B
Math 100 Adjunct A
65
50
60
41
32
27
65
47
0
10
20
30
40
50
60
70
Pass rates all enrolled

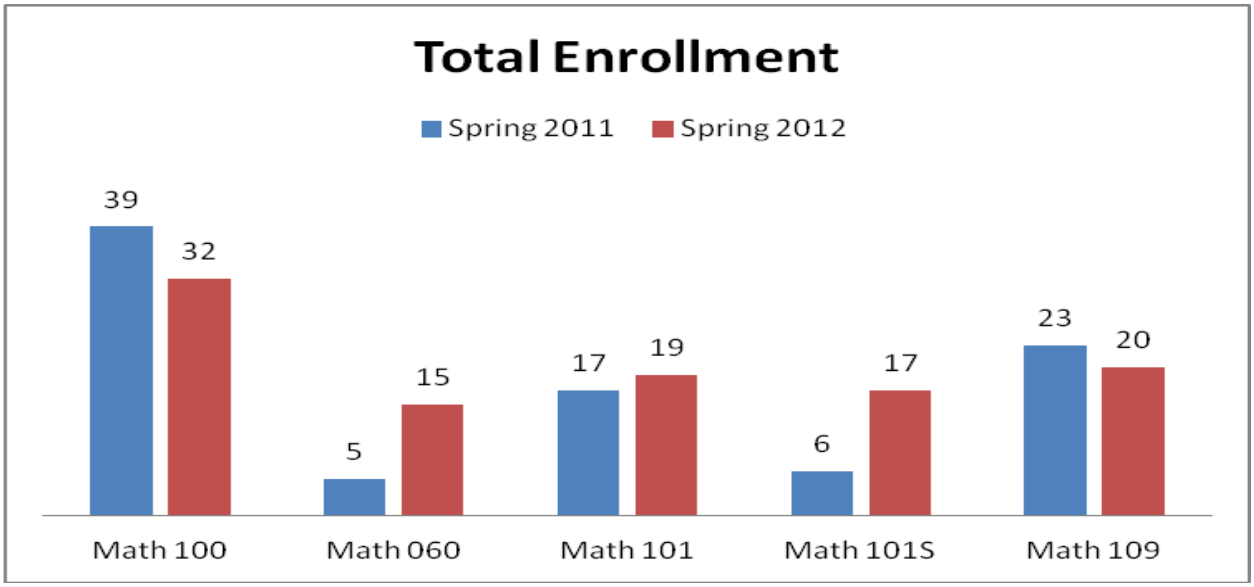

Math 109 Adjunct C
Math 108 Sat
Math 108 Fri
Math 101S
Math 101 Adjunct C
Math 060
Math 100 Adjunct B
Math 100 Adjunct A
100
100
100
78
50
50
92
100
0
20
40
60
80
100
120
Pass rates students who finished

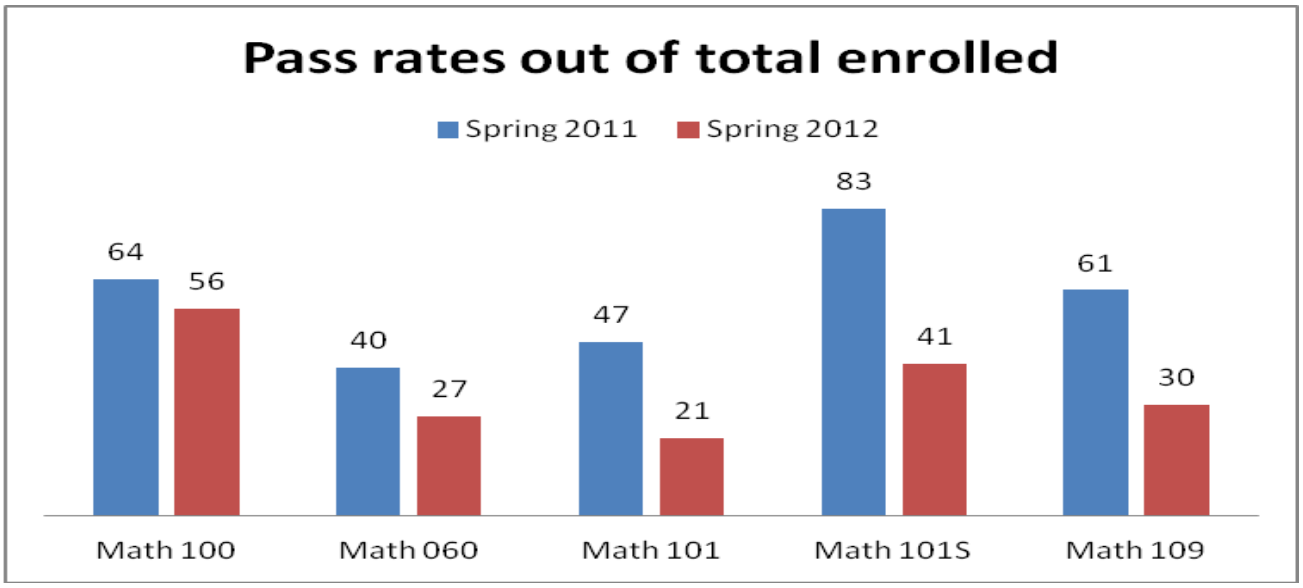


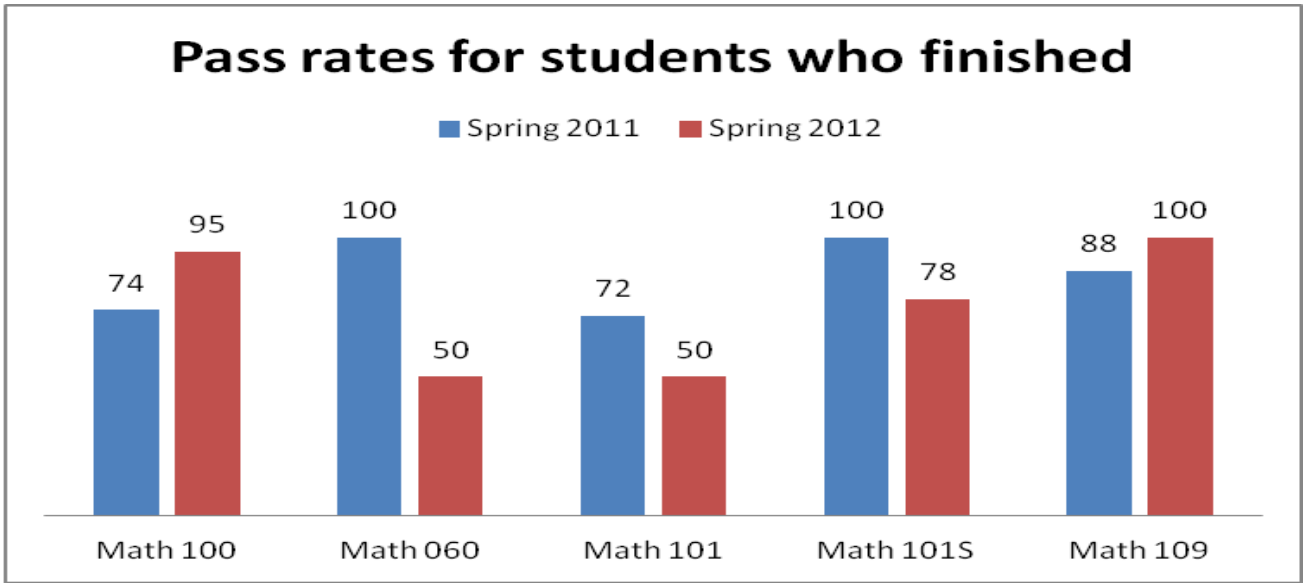
Spring 2011 to Spring 2012 Comparisons

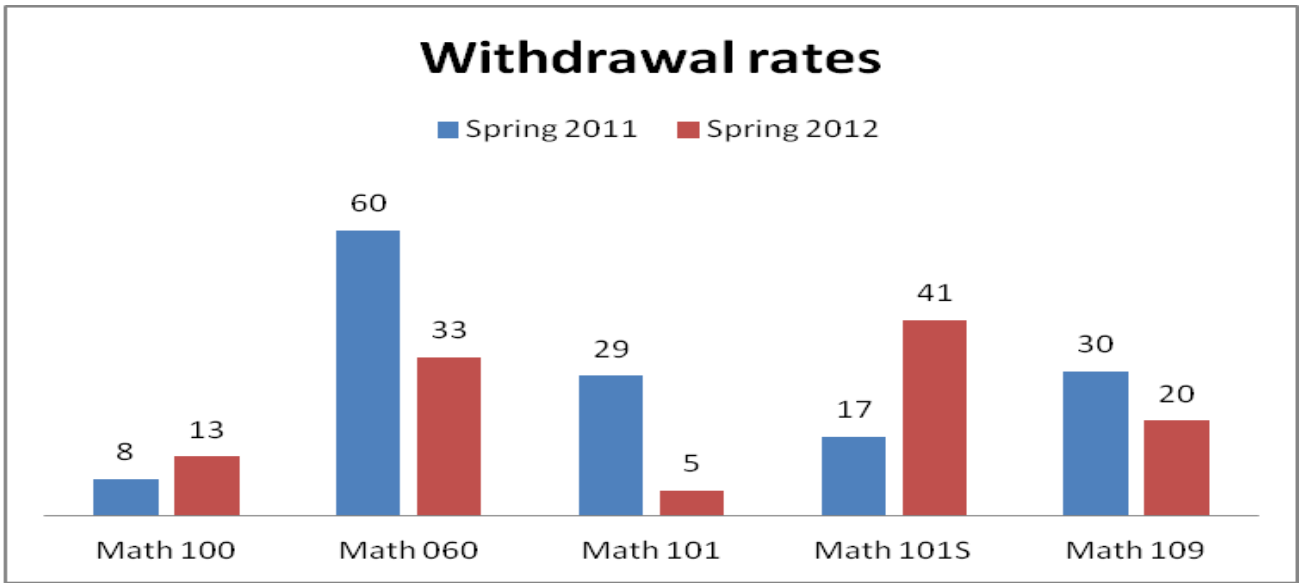
Below are figures illustrating similarities and differences between total enrollment, pass rates, and withdrawal rates for all Math courses in the Spring of 2011 (from data that was available for the Spring of 2011) and the Spring of 2012.

Figure 88: Spring 2011 to Spring 2012 Comparisons

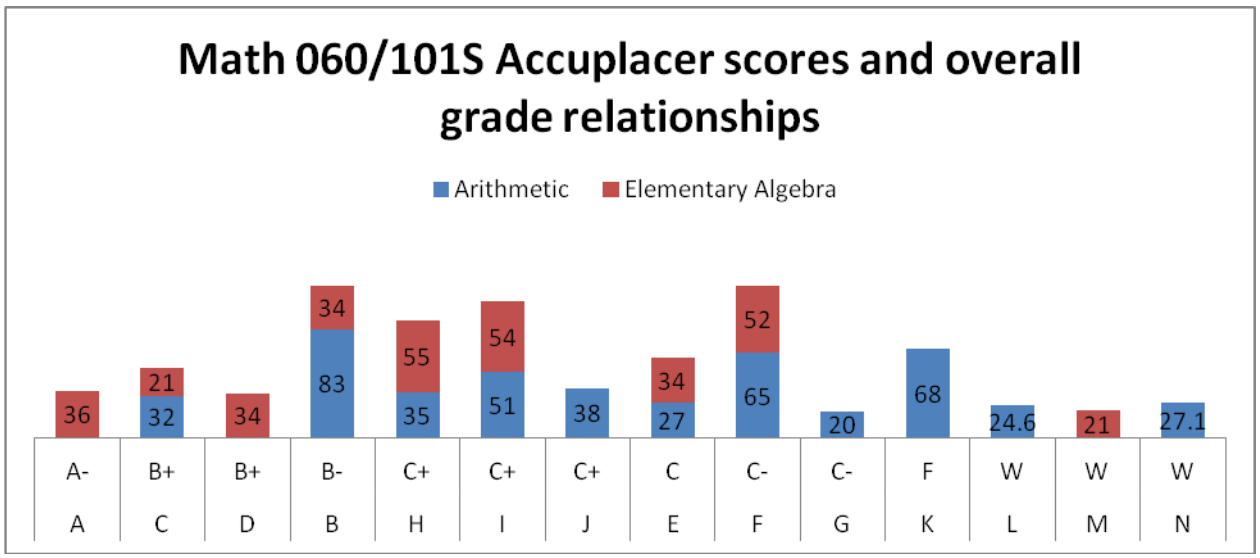



Pass rates out of total enrolled
Spring 2011
Spring 2012
64
56
40
27
47
21
83
41
61
30
Math 100
Math 060
Math 101
Math 101S
Math 109


Pass rates for students who finished
Spring 2011
Spring 2012
74
95
100
50
72
50
100
78
88
100
Math 100
Math 060
Math 101
Math 101S
Math 109

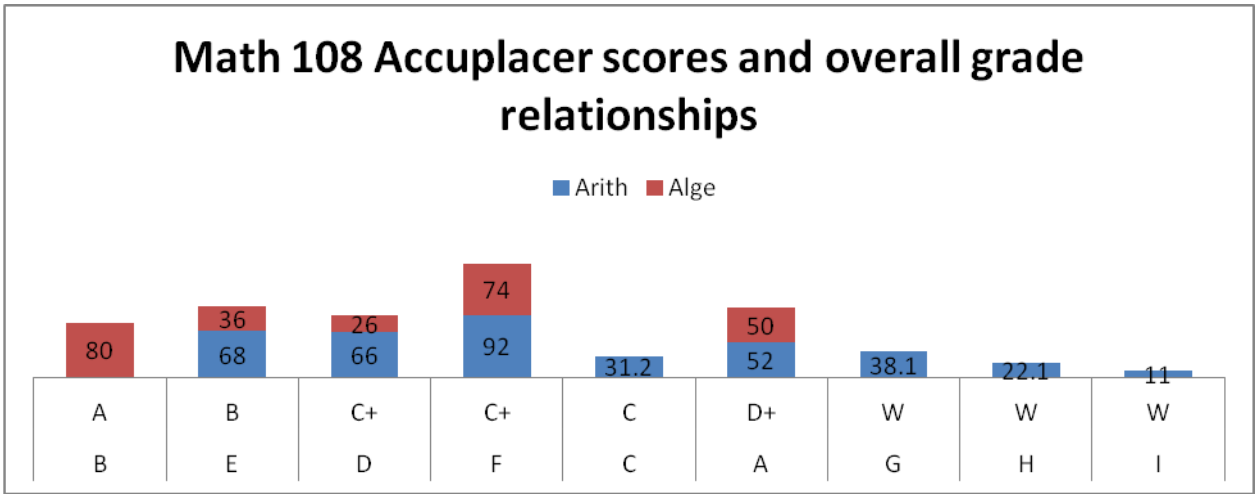


Interesting Findings



*Accuplacer information was not available for all students taking these specialist taught courses. This graph is representative of student scores that could be found for these courses in the Spring of 2012.

With 2 exceptions (students F and K), the students who fail with a C- or lower, withdraw, or do not finish the course, tend to have arithmetic scores in the low to upper 20's range. For students who passed the course, arithmetic scores ranged from 32 to 83, while algebra scores ranged from 21-55.



*Accuplacer information was not available for all students taking these piloted specialist taught courses. This graph is representative of student scores that could be found for the Spring of 2012.

With the exception of two students (students A and G), students who earned a C had very low arithmetic scores. In particular, 2 of the students who withdrew had extremely low scores.

A *very* low Accuplacer score seems to be a good predictor of who will withdraw from courses.

Recommendations

More support is needed for students taking Math 030-101S. One option might be to move to a mathematics model that has more co-requisite supports. The core of tutors for example, will need to be strengthened.

A second option might be to pilot a course that is module based so that students start from where they are and then progress. More research on developmental math remediation will need to be done to determine what route would be best.

Students should not be taking Math 108 or Math 109 if it has been more than 3 years since they have taken an algebra course and/or if they have an extremely low accuplacer score. Algebraic skills are easily lost if they are not used on a consistent basis.

Lab classes should not be held on the same day of the lecture. Students need time to digest the material, particularly those with high anxiety.

Students need special workshops with Academic services that focus on strategies for retaining material.

Homework in MyMathLab will need to be adjusted so that some problems will have accessible learning aids while others will not. This has already been done for Summer 2012 courses and will be implemented for the Fall of 2012.

Unless there is some strong justification for the usefulness, the content of Math 108 may need to be more about drug calculations for example, and less about truth tables, as the former is more relevant to the nursing than the latter. More research can be done as needed.

Appendices

Appendix A

Students	Course	Instructor	Diagnostic Pretest	Diagnostic Posttest	Attendance rate	Hw avg	Test avg	Hrs. Spent in Study Plan	Grade in Course	Overall Grade	Avg needed to pass	passed	Repeating	absolute change in diag	relative % change in diagnstic	Arithmetic	Elementary Algebra	
B	Math 100 Tues	Fn	20.6	50	100	86.9	63.2	3	C	73	73	y	n	29.4	143	29	32	
D	Math 100 Tues	Fn	42.6	66.2	75.7	100	86.9	14	B+	86.6	73	y	n	23.6	55			
F	Math 100 Tues	Fn	45.6	76.5	85.7	71.7	94.7	3	A-	90.5	73	y	n	30.9	68		36	
DD	Math 100	PS	57	100	nA	96.05	0	nA	B	86.41	73	y	n	43	75			
EE	Math 100	PS	34	75	nA	95.95	0	nA	A	91.69	73	y	n	41	121			
I	Math 030	Fn	23.5	50	78.6	95.7	71.1	20	C+	76	73	y	n	26.5	113	41	22	

FF	Math 100	PS	11	78	nA	75.66	0	nA	C	73.3	73	y	n	67	609			
II	Math 100	PS	42	0	nA	66.59	0	nA	C	69.38	73	y	n					
JJ	Math 100	PS	0	73	nA	68.79	0	nA	C	70.84	73	y	n					
K	Math 100 Tues	Fn	20.6	41.2	92.9	78.8	69.5	4	C	74.7	73	y	n	20.6	100			
M	Math 100 Tues	Fn	29.4	48.5	85.7	56	80.2	4	C+	78.8	73	y	n	19.1	65	51	54	
n	Math 100 Tues	Fn	27.9	72.1	100	99.8	86.6	47	A-	90.2	73	y	n	44.2	158		28	
P	Math 100 Tues	Fn	23.5	66.2	100	98.5	96.2	3	A	96.3	73	y	n	42.7	182	32	21	
Q	Math 100 Tues	Fn	20.6	70.6	100	95.4	90.7	18	A-	92.3	73	y	n	50	243		34	
KK	Math 100	PS	0	75	nA	82.49	0	nA	B-	80.95	73	y	n					
R	Math 100 Wed	Fn	29.4	42.6	94.3	71.8	74.1	1	C+	76.5	73	y	n	13.2	45			
U	Math 100	Fn	22.	60.	87.	96.	77.	6	B-	81	73	y	n	38	17		21	

	Tues		1	3	1	5	2			.8				.2	3			
LL	Math 100	PS	52	98	nA	87.64	0	nA	A-	87.49	73	y	n	46	88			
y	Math 100 Tues	Fn	16.2	54.4	100	92.4	82.9	5	B+	86.9	73	y	n	38.2	236	25	69	
Z	Math 100 Wed	Fn	44.1	48.5	75	58	82.8	1	C+	78.4	73	y	n	4.4	10	35	55	
MM	Math 100	PS	27	86	nA	66.97	0	nA	C	71.39	73	y	n	59	219			
nn	Math 100	PS	0	86	nA	75.31	0	nA	C-	65.99	73	n	n					
OO	Math 100	PS	21	83	nA	72.14	0	nA	B	79.84	73	y	n	62	295			
PP	Math 100	PS	0	60	nA	52.64	0	nA	D	58.29	73	n	n					
CC	Math 100 Wed	Fn	36.8	66.2	100	94.1	101.5	4	A	100.1	73	y	n	29.4	80			
C	Math 100 Tues	Fn	20.6	38.2	100	93.6	69.7	4	C+	77.8	73	y	y	17.6	85			
G	Math	Fn	17.	30.	87.	85.	64.	1	C	71	73	y	y	13	76	22	23	

	030		6	9	1	7	4	3		.1				.3				
H	Math 030	Fn	47.1	73.5	92.9	96.9	105.3		A	101.9	73	y	y	26.4	56	68		
J	Math 030	Fn	25	35.3	65.7	91.8	81.6	18	C+	79.6	73	y	y	10.3	41			
O	Math 100 Tues	Fn	23.5	23.5	85.7	93.8	63	4	C	70.1	73	y	y	0	0			
V	Math 030	Fn	23.5	55.9	84.3	98.9	73.4	4	C+	78.6	73	y	y	32.4	138			
W	Math 100 Tues	Fn	29.4	17.6	92.9	59	73.2	28	C	73.1	73	y	y	-11.8	-40	20	21	
QQ	Math 100	PS	0	100	nA	92.66	0	nA	B	85.1	73	y	y					
A	Math 030	Fn	13.2	64.7	97.1	98.3	84.3	7	B+	87.3	73	y	n	51.5	390	20		
E	Math 030	Fn	17.6	44.1	92.9	83.3	75.1	1	C+	78.3	73	y	n	26.5	151			
L	Math 030	Fn	38	50	90	95.6	70.4	2	C+	77.2	73	y	n	12	32	38		
S	Math 030	Fn	23.5	55.9	100	96.3	70.5	9	C+	78.6	73	y	n	32.4	138			
T	Math	Fn	38.	72.	81.	73.	90.		B	85	73	y	n	33	89	65	52	

	030		2	1	4	6	2			.7				.9				
X	Math 100 Tues	Fn	20.6	39.7	92.9	91.5	74.8		B-	80.6	73	y	n	19.1	93	27	34	
AA	Math 030	Fn	na	29.4	90	61.7	63.4		D+	67.5	73	n	n			24	24	
BB	Math 030	Fn	23.5	38.2	100	94.2	74.3	5	B-	80.5	73	y	n	14.7	63	22		

Appendix B

Students	Course	Instructor	Diagnostic Pretest	Diagnostic Postest	Attendance rate	Hw avg	Test avg	Hrs. Spent in Study Plan	Grade in Course	Overall Grade	Avg needed to pass	passed	absolute change in diag	relative % change in diagnostic	Repeating	Arithmetic	Elementary Algebra
A	Math 101S	HB	8.3	66.7	100	95.3	71.2	3	C	74.5	73	y	58.4	704	n	38.1	?
B	Math 101S	HB	19.4	na	60	83.1	79.5	6	C	74.8	73	y			n	53	41
C	Math 101S	HB	8.3	33.3	87.3	97.5	86.3	3	B+	87	73	y	25	301	n	34	37
D	Math 101S	HB	19.4	38.9	66	66.9	82.4	5	C	75	73	y	19.5	101	n		
E	Math 101S	HB	38.9	44.4	29.4	86.3	60	0	D	63.1	73	n	5.5	14	y		
F	Math	HB	13.9	27.8	85.9	99	79.	1	B	84.9	73	y	13.9	100	n	31.2	?

	101S						8										
G	Math 101S	HB	25	36.1	87.5	81.1	77	0	B-	79.6	73	y	11.1	44	y		
H	Math 101	HB	28	70	na	90	60	3	B	81	73	**Y**	42	150	y		
I	Math 101	HB	28	64	na	100	82	22	B+	85	73	**Y**	36	128.5714	N		
J	Math 101	HB	62	64	na	79	35	7	D	62	73	**N**	2	3.225806	n		
K	Math 101	HB	42	56	na	86	98	2	B+	86	73	**Y**	14	33.33333	n		
L	Math 101	HB	42	53	na	90	85	2	B	79	73	**Y**	11	26.19048	n		
M	Math 101	HB	31	39	na	93	82	13	B	81	73	**Y**	8	25.80645	n		
N	Math 101	HB	14	53	na	98	51	3	C	73	73	**Y**	39	278.5714	y		
O	Math	HB	19	50	na	99	70	31	D	69	73	**N**	31	163.15	y		

	101													79			
P	Math 101	HB	39	45	na	100	73	1	B	81	73	**Y**	6	15.38462	n		
Q	Math 101	HB		48	na	82	40	5	F	47	73	**N**			n		
R	Math 101	HB	50	75	na	99	82	28	B	83	73	**Y**	25	50	n		
S	Math 101	HB	22	50	na	100	85	29	A	90	73	**Y**	28	127.2727	n		
T	Math 101	HB	50	84	na	100	96	1	A	90	73	**Y**	34	68	n		
U	Math 101	HB	42	62	na	74	82	8	C+	76	73	Y	20	47.61905	n		
V	Math 101	HB	36	73	na	96	65	2	D	65	73	N	37	102.7778	n		

Appendix C

Students	Course	Instructor	Diagnostic Pretest	Diagnostic Poststest	Attendance rate	Hw avg	Test avg	Hrs. Spent in Study Plan	Grade in Course	Overall Grade	Avg needed to pass	passed	absolute change in diag	relative % change in diagnostic	Repeating	Arithmetic	Elementary Algebra	Tests not including Final	Final Exam
A	Math 100-H	HB	46	40	100	99	81	2	B+	88	73	Y	-6	-12	Y				
B	Math 100-H	HB	53	70	77	100	92	7	A	93	73	Y	17	32	N				
C	Math 100-H	HB	53		69	95	83	1	B	86	73	Y			N				
D	Math 100-H	HB	33	52	100	100	90	35	A	93	73	Y	18	55	N				

E	Math 100-H	HB	50	51	100	94	85	7	B+	87	73	Y	2	3	N				
F	Math 100-H	HB	38	50	92	98	90	6	B+	89	73	Y	12	32	N				
G	Math 100-H	HB		68	92	100	89	2	B+	88	73	Y			N				
H	Math 100-P	PS	12	75	na	53	80	na	C	68	73	Y	63	525	N			87.33	65
I	Math 100-P	PS	10	81	na	60	79	na	C	70	73	Y	71	710	N			82.67	70
J	Math 100-P	PS	25	85	na	71	76	na	B-	74	73	Y	60	240	N			80.9	65
k	Math 100-P	PS	20	78	na	46	75	na	C	69	73	Y	58.5	300	N			77.33	71
L	Math 10	PS	18	75	na	62	70	na	C	63	73	Y	57	317	N			71.67	67

	0-P																		
M	Math 100-P	PS	0	0	na	29	51	na	F	42	73	N			N			52	50
N	Math 100-P	PS	54	87	na	64	85	na	C+	73	73	Y	33	61	N			85.33	85
O	Math 100-P	PS	43	77	na	36	78	na	C	59	73	Y	34	79	Y			77	80
P	Math 100-P	PS	16	89	na	97	83	na	B+	83	73	Y	73	456	N			87.67	72
Q	Math 100-P	PS	65	75	na	65	78	na	C	70	73	Y	10	15	N			82	68
R	Math 100-P	PS	65	79	na	12	86	na	C	61	73	Y	14	22	Y			85.67	86
S	Math 100-P	PS	45	89	na	87.07	81	na	B	78	73	Y	44	98	N			83	76

Appendix D

Students	Course	Instructor	**Diagnostic Pretest**	**Diagnostic Postest**	**Attendance rate**	**Hw avg**	**Test avg**	**Hrs. Spent in Study Plan**	**Grade in Course**	**Overall Grade**	**Avg needed to pass**	**passed**	**absolute change in diag**	**relative % change in diagnostic**	**Repeating**	**Arithmetic**	**Elementary Algebra**
A	Math060	FN	29.9	65.3	92.5	96.6	62.5	7.0	C-	72.0	73.0	no	35.4	118.4	no	20	
B	Math060	FN	29.9	52.8	100.0	81.6	67.5	1.0	C	74.5	73.0	yes	22.9	76.6	no		
C	Math060	FN	18.8	37.5	89.4	93.9	50.5	18.0	D	63.7	73.0	no	18.7	99.5	no		
D	Math060	FN	2.1	16.7	98.8	96.0	68.0	2.0	C+	76.6	73.0	yes	14.6	695.2	no	38	
E	Math060	FN	39.6	41.7	100.0	94.0	58.0	9.0	C-	69.5	73.0	no	2.1	5.3	no		
F	Math060	FN	36.1	54.2	85.6	52.1	75.2	0.0	C-	72.4	73.0	no	18.1	50.1	no	65	52

G	Math060	FN	31.9	78.1	92.5	96.5	75.6	11.0	B-	81.7	73.0	yes	46.2	144.8	no	83	34
H	Math060	FN	20.8	40.3	93.8	96.2	66.3	0.0	C	75.5	73.0	yes	19.5	93.8	no	27	34
I	Math 101S	FN	25.7	39.6	96.9	84.4	60.8	4.0	C-	69.5	73.0	no	13.9	54.1	no		
J	Math 101S	FN	51.4	84.0	96.9	83.8	90.2	3.0	A-	90.7	73.0	yes	32.6	63.4	no		
K	Math 101S	FN	38.2	56.9	87.5	91.6	75.9	4.0	C+	78.1	73.0	yes	18.7	49.0	yes		
L	Math 101S	FN	19.4	58.0	98.8	97.5	60.6	31.0	C-	72.0	73.0	no	38.6	199.0	no		
M	Math 101S	FN	4.2	31.3	96.9	93.2	69.9	4.0	C+	78.7	73.0	yes	27.1	645.2	no		
N	Math 101S	FN	27.1	74.3	99.4	99.6	84.7	3.0	B+	88.7	73.0	yes	47.2	174.2	no		
O	Math 101S	FN	43.1	73.3	100.0	92.6	86.6	18.0	B+	89.3	73.0	yes	30.2	70.1	no		
P	Math	FN	42.4	65.3	79.4	61.	86.	89.4	C+	78.9	73.0	yes	22.9	54.0	no		

	101S					1	5										
Q	Math 101S	FN	45.8	66.0	98.8	98.2	98.6	4.0	A	98.6	73.0	yes	20.2	44.1	no		
R	Math 101	JF	6.6	19.8	83	80.1	59.5	3.33	C-	72.03	73	N	13.2	200	N		
S	Math 101	JF	44.4	47.2	75	99.8	59.6	13.5	C-	71.51	73	N	2.8	6.3	N		
T	Math 101	JF	0	0	83	89.2	68.2	7.33	C	74.3	73	Y			N		
U	Math 101	JF	33.3	35.8	67	93	55.8	0.3	D+	68.66	73	N	2.5	8	N		
V	Math 101	JF	2.1	36.5	100	85.7	35.2	20	D	56.3	73	N	34.4	1638	N		
W	Math 101	JF	43.8	88.9	100	99.4	98.7	25.5	A	103.66	73	Y	45.1	103	N		
X	Math 101	JF	10.4	0	75	84.9	63.8		C	72.54	73	Y			Y		
Y	Math	JF	13.2	35.4	100	82.	45.	0.67	D	60.04	73	N	22.2	168	Y		

	101					7	9										
Z	Math 101	JF	43.8	99.3	100	97.8	52		C-	69.96	73	N	55.5	127	N		
AA	Math 101	JF	20.8	61.8	100	90	56.5	46.67	C-	69.43	73	N	41	197	N		
BB	Math 101	JF	0	0	92	87.6	66		C+	76.58	73	Y			N		
CC	Math 101	JF	16.7	25	92	92.8	50	0.25	D	65.68	73	N	8.3	50	y		

Appendix E

Student	Math 108	Diagnostic Pretest	Diagnostic Poste st	Attendance rate	Hw avg	Test avg	Hrs. Spent in Study Plan	Grade in Course	Overall Grade	Avg needed to pass	passed	absolute change in diag	relative % change in diagnostic
C	Math 108 - Sat	44.9	9.5	99.4	98.5	90.2	5	A-	92.2	63	yes	-35.4	-78.8
F	Math 108 - Sat	38.9	73.5	92.5	96.9	97.2	2	A	94.6	63	yes	34.6	88.9
I	Math 108 - Sat	30.4	54.9	100	99.2	66.3	2	C	76.4	63	yes	24.5	80.6
M	Math 108 - Sat	na	58.5	98.8	81	69.5	2	C	73.8	63	yes		
P	Math 108 - Sat	29.9	42.8	99.4	98.7	66.6	0	C-	70.8	63	yes	12.9	43.1
Student	**Math 108**	**Diagnostic Pretest**	**Diagnostic Poste st**	**Attendance rate**	**Hw avg**	**Test avg**	**Hrs. Spent in Study Plan**	**Grade in Course**	**Overall Grade**	**Avg needed to pass**	**passed**	**absolute change in diag**	**relative % change in diagnostic**
A	Math	35.8	65.7	100	90	64.3	4	C	73.2	63	yes	29.9	83.5

	108-Fri												
B	Math 108-Fri	36.8	35.5	87.5	96.6	56.1	2	D+	67.6	63	yes	-1.3	-3.5
D	Math 108-Fri	28.4	71.3	100	100	93.7	1	A	95.9	63	yes	42.9	151.1
E	Math 108-Fri	12	23.1	91.9	98.4	62.8	6	C-	72	63	yes	11.1	92.5
G	Math 108-Fri	12.2	39.3	81.3	92.8	54.7	4	D	65.6	63	yes	27.1	222.1
H	Math 108-Fri	41.6	45.6	81.3	91.6	52.7	2	D	63.2	63	yes	4	9.6
J	Math 108-Fri	29.4	47.3	100	98.3	78.8	5	B	84.3	63	yes	17.9	60.9
K	Math 108-Fri	6.8	32.8	90.6	87.5	73.3	1	C+	77.7	63	yes	26	382.4
L	Math 108-Fri	38.5	28.4	98.8	99.3	76.8	2	B	82.8	63	yes	-10.1	-26.2
N	Math 108-Fri	28.4	59.8	93.8	96.4	70.5	3	C+	78.8	63	yes	31.4	110.6
O	Math 108-Fri	20.3	34.6	78.8	50.6	74.9	0	C-	71.8	63	yes	14.3	70.4
Q	Math 108-Fri	40.9	62.8	100	100	85.4	0	A-	89.5	63	yes	21.9	53.5

Appendix F

Student	Diagnostic Pretest (not taken)	Diagnostic Postest (not taken)	Attendance Rate (%)	HW Average (%)	Quiz Average (%)	Optional Quiz 6 (replaced lowest of Quizzes 1-5)	Extra credit on Final Exam	Final Exam	Final Exam + extra credit	Overall Grade Average	Avg needed to pass	Grade in course	Hours spent in Study Plan	Passed (Y/N)	Overall exam average, including
A	NA	NA	100	83.4	59.2	0	4	36	40	62.352	63	**D**		Y	20
B	NA	NA	86	75.4	66.9	63	14	20	34	60.656	63	**D**	3	Y	28.5
C	NA	NA	100	81.6	60.0	0	5	51	56	67.104	63	**C-**		Y	24
D	NA	NA	64	77.2	76.9	0	3	54	57	69.708	63	**C**	3.5	Y	88
E	NA	NA	93	78.2	37.2	0	16	32	48	54.228	63	**D**	0.3	Y	53.1
F	NA	NA	100	94.2	71.1	60.3	14	27	41	69.572	63	**C**	16.5	Y	60.15
G	NA	NA	100	92.6	71.9	78	41	57	98	86.672	63	**A-**	0.3	Y	74.75
H	NA	NA	93	94.2	80.0	0	0	49	49	74.848	63	**C+**	5.3	Y	53.15
I	NA	NA	86	60.5	45.8	73.2	14	19	33	48.936	63	**D**	2.25	Y	32.42

J	NA	NA	93	88.9	75.6	70.3	20	30	50	72.304	63	**C**		Y	52.78
K	NA	NA	93	87.4	65.3	74.5	20	55	75	75.384	63	**C+**	1	Y	60.13
L	NA	NA	50	77.3	45.5	0	0	33	33	48.576	63	**D**	5	Y	39.27
M	NA	NA	93	77	61.2	64.3	1	41	42	61.764	63	**D**	5	Y	51.08