

Improving Student Learning



Spring 2012 Report

Forward

In 2009, Luna Community College took a progressive approach to student learning with a reorganization of learning goals for all programs of study and implementation of an institutional assessment plan. In addition, LCC recognized a need for a standard syllabi with a focus on student learning outcomes and methods to measure those outcomes.

In the Spring of 2010, LCC identified a further commitment to assessment by requiring academic departments to be integrated into the assessment process; therefore, it was determined that all departments participate in semester assessment reporting. The department director along with the faculty conduct the process. The purpose is to provide a baseline for future improvements, not only for improving student learning but for program quality, curriculum improvements and instructional delivery.

This spring 2012 report on Improving Student Learning is a testimony to LCC's commitment to assessment.

Vidal Martinez, Ed.D.
Vice President for Instruction
Luna Community College

June 8, 2012

LCC's Principles of Assessment

- Primary goal of Assessment is to continuously improve student learning at Luna Community College.
- Assessment is an extension to the needs and attention of students at Luna Community College.
- Assessment is ongoing at Luna Community College.
- Assessment activities must be useful to the individuals that conduct them, to programs, and to Luna Community College.

LCC's Assessment Plan

All course offerings, including degree and certificate programs, at Luna Community College are required to follow the four step assessment process. They include:

- A list of expected learning outcomes
- Assessment tools that directly measure those learning outcomes
- The results of the data, and
- How the data will be used to improve student learning

Luna Community College: Improving Student Learning – Spring 2012 Report

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Department of Humanities
Assessment Report
ENG104E-Grammar, Usage and Writing

Spring 2012

Prepared by Michelle Mitchell, Adjunct Faculty

PURPOSE

The primary purpose of ENG104E is to improve writing skills by focusing on the fundamentals of sentence structure and revision, correct usage, grammar, punctuation, paragraph construction and short compositions. The writing process—prewriting, sorting, drafting, revision, editing – is emphasized.

COURSE LEARNING OUTCOMES (COMPETENCIES) Student will:

- Apply conventions of standard written English and grammar, language usage, punctuation, word choice, and style, and recognize academic writing conventions; (C2) (CS II/BM II-A, II-B, II-C)
- identify the topic sentence of a paragraph, the overall main point or thesis, and supporting details of a text; (C2, C4) (CS IV, BM IV-A)
- construct cohesive paragraphs with topic sentences and supporting details that advance the thesis; (C2, C3, C4) (CS IV, BM IV-B)
- respond appropriately to different kinds of reading and writing situations (C2, C3, C4) (CS VII, BM VII-A, CS IX, BM IX-A)
- develop and apply successful strategies for generating, revising, editing, and proofreading; (C1, C2, C3, C4) (CS IV, BM IV-D, IV-E)
- develop the ability to critique their own and others' work; (C3, C4) (CS IV, BM IV-F)
- use varying organizational strategies for paragraphs (compare / contrast, cause and effect, classification / division); (C1, C2, C3, C4) (CS I, BM I-B, CS IV, BM IV-A)
- employ rhetorical modes (persuasive, informative, narrative, descriptive) to write for different audiences and purposes; (C1, C2, C3, C4) (CS I, BM I-B, CS IV, BM IV-A)
- recognize that the audience for academic writing requires a more formal language than social writing situations such as email and text messaging and; (C4) (CS IV, BM IV-C)
- demonstrate MLA guidelines. (C1) (CS IV, BM IV-G)

METHODS OF MEASURING LEARNING OUTCOMES

1. Pre/Post Test
2. Teacher Rubrics
3. Discussion/Class Assignments
4. Final Exam

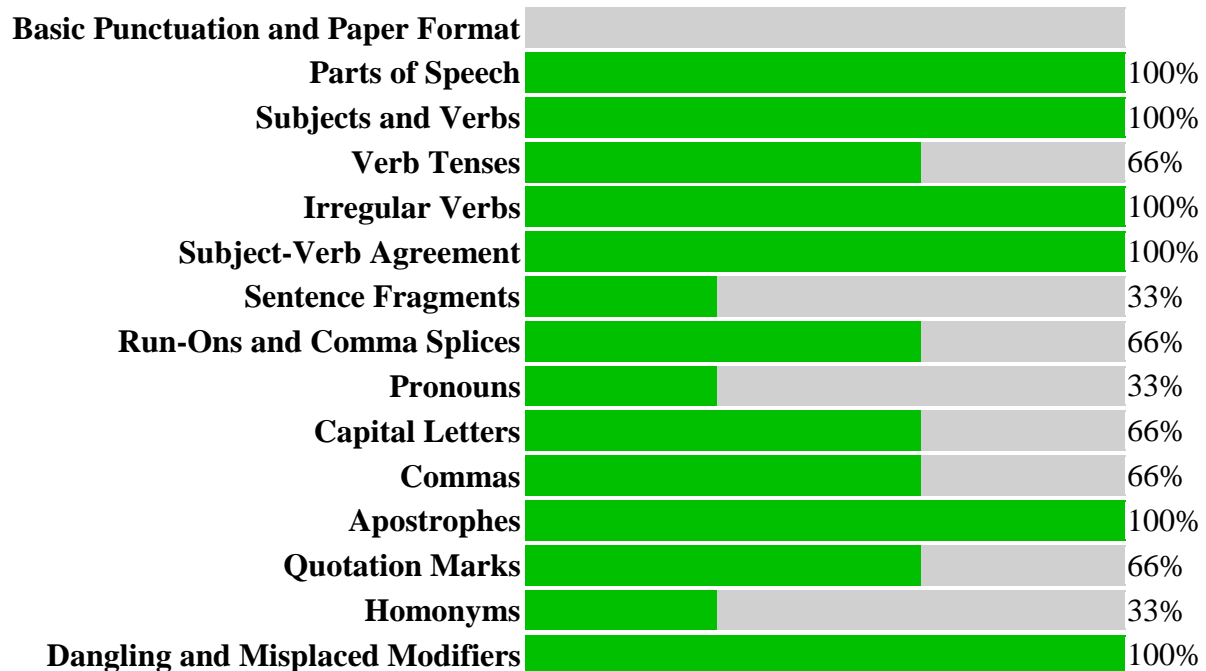
Evaluation/Grading Assignments: All grading is based on a point system.

- Daily assignments in class: 25%
- Discussions in class: 25%
- Plato Assignments: 25%
- Final Exam: 25%

DIAGNOSTIC EVALUATIONS

All students take a Diagnostic test two times within the semester. The test correlates with the textbook the students are currently using. This chart shows strengths and weaknesses for each individual student, and helps the instructor locate areas to review in grammar and writing. The following is an example of the assessment sent to the instructor after the student has completed the test:

Percent Correct by Concept:



This student would benefit from review of the following skills:

Subject-Verb Agreement, covered in [Chapter 10](#) of the *Sentence Skills* textbook and Online Learning Center, and [Chapter 17](#) of *AllWrite! 2.0* .

Run-Ons and Comma Splices, covered in [Chapter 6](#) of the *Sentence Skills* textbook and Online Learning Center, and [Chapter 15.3, 15.4](#) of *AllWrite! 2.0* .

Quotation Marks, covered in [Chapter 25](#) of the *Sentence Skills* textbook and Online Learning Center, and [Chapter 24.3](#) of *AllWrite! 2.0* .

CONCEPTS CHART

Concepts	100		66		33			
	0-50							
	Diag.A	Diag.B	Diag.A	Diag.B	Diag.A	Diag.B	Diag.A	Diag.B
Basic Punctuation and Paper Format	5	5	0	0	0	0	5	1
Parts of Speech	4	2	1	1	3	2	2	1
Subjects and Verbs	5	5	2	0	2	0	1	1
Verb Tenses	6	3	4	0	0	0	0	3
Irregular Verbs	7	5	2	0	1	1	0	0
Subject-Verb Agreement	5	5	3	1	2	0	0	0
Sentence Fragments	2	1	5	2	3	3	0	0
Run-Ons and Comma Splices	3	0	6	3	1	1	0	2
Pronouns	0	1	5	3	4	1	1	1
Capital Letters	2	2	1	3	6	1	1	0
Commas	2	2	2	2	1	2	5	0
Apostrophes	1	1	2	0	5	0	2	5
Quotation Marks	2	3	4	2	4	0	0	1
Homonyms	4	3	4	3	2	0	0	0
Dangling Misplaced Modifiers	2	0	1	0	0	0	7	6

CURRENT TEXT:

- *English Skills, Ninth Edition or Tenth Edition*
by John Langan
ISBN: 978-0-07-338410-8

IMPROVEMENT:

- Student and teacher need to be working out of the same edition. It is very difficult to conduct class when the text's page numbers are not the same as well as some of the assignment activities.

Department of Humanities
Summary Assessment Report
English 104 Section 02: Grammar Usage and Writing
Spring, 2012

Prepared by: Isabel M. Gallegos, Adjunct Faculty

PURPOSE

The purpose of this report is to assess if students in English 104 are meeting the current mandated competencies. In assessing student performance, instructors are able to collect, review, and compare assessment data for the use of improving student learning as well as for making necessary changes to ensure student success.

BACKGROUND

English 104 has been taught continually since Fall 2006 at Luna Community College. Description of the course in the LCC 2009-2012 is as follows:

This course is designed for improving writing skills by focusing on the fundamentals of sentence structure, revision, correct usage, grammar, punctuation, paragraph construction and short compositions. The Writing Process – pre-writing, sorting, drafting, revision, and editing, is emphasized.

During Spring, 2012 semester, the initial registration for English 104, Section 02 was twenty-two, with nineteen students, two of which never attended the course.

CORE COMPETENCIES

- ✓ Organize a multi-paragraph composition
- ✓ Establish main ideas and use supporting detail
- ✓ Develop ideas through illustration, detail, example and fact
- ✓ Use correct spelling, grammar, sentence structure, punctuation and proper diction

COURSE SPECIFIC LEARNING OBJECTIVES

- ✓ Student will write using an array of sentences
- ✓ Student will organize and link facts, opinions and ideas with cohesiveness
- ✓ Student will utilize editing skills for revision of written work
- ✓ Student will utilize resources such as dictionaries, thesaurus and atlas for research
- ✓ Student will utilize library resources such as publications, magazines, non-fiction, fiction for supporting research

Assessment Methods

Grading Weight Factor

Attendance, Participation, Homework	15%
Essay	15%
Plato	15%
Mid-term Examination	25%

Final Examination

0%

Summary of Results

Competency Rating Form Spring, 2012

Student	CI	C2	C3	C4	Average
1					W
2					W
3					W
4	0	0	0	0	0
5	2	2	2	3	2
6	0	0	0	0	0
7	4	4	4	4	4
8	0	0	0	1	.25
9	4	4	5	4	4.25
10	4	4	5	4	4.25
11	1	1	1	2	1.25
12	1	1	1	2	1.25
13	3	3	2	3	2.75
14	3	3	2	2	2.5
15	4	4	4	4	4
16	4	4	5	4	4.25
17	3	3	4	3	3.25
18	1	1	1	2	1.25
19	2	2	3	3	2.5
20	4	4	5	4	4.25
21	3	3	2	3	2.75
22	4	4	4	4	4

Pre-Test Post-Test Comparison

Student	Pre-Test	Final Exam
1		W
2		W
3		W
4	0	0
5	67	70
6	0	0
7	78	94
8	52	0
9	82	98
10	84	96
11	50	0
12	47	72

13	72	56
14	46	70
15	80	98
16	81	96
17	77	90
18	64	80
19	70	73
20	82	97
21	74	56
22	75	90

Final Grade Report

Student	Final Exam	Grade	Letter Grade
1			W
2			W
3			W
4	0	0	F
5	70	72	C
6	0	0	F
7	94	86%	B
8	0	14	F
9	98	96	A
10	96	92	B
11	0	66	D
12	72	66	D
13	56	72	C
14	70	68	D
15	98	92	A
16	96	94	A
17	90	76	C
18	80	65	D
19	73	68	D
20	97	98	A
21	56	74	C
22	90	86	B

Summary Conclusions: Fundamental Prerequisites for Effective Learning

Students have displayed the following study skills:

- 1% of the initially enrolled students have never attended class
- 13.6% of the initially enrolled students withdrew
- Those students performing below average display immature study skills
- Students performing below average display poor attendance

- **Students performing below average enroll in English 105 with little preparedness**

Examples of the Use of Assessment Data for Improving Student Learning Outcomes

Summary: Students have been provided a direct student-instructor learning experience where students are responsible for week-to-week study based assignments with teacher lecture and direct instruction. An assignment outline is provided to each student where self direction, self instruction and self monitoring are encouraged.

Future considerations to ensure student success:

- Review course prerequisites for ensuring student achievement
- Review course textbook for meeting course objectives
- Institute advantages for 85% attendance and above
- Drop students with 65% or more absenteeism by fourth week of course
- Institute high standards for all courses, including the developmental courses

**DEPARTMENT OF SCIENCE, MATH, and ENGINEERING
TECHNOLOGY**

**SUMMARY ASSESSMENT REPORT
MATH101 Basic Mathematics – Spring 2012**

Prepared by Angie Manafy, Faculty

PURPOSE

The purpose of this report is to assess student achievement in MATH101 Basic Mathematics a developmental course at LCC, with the goal of improving students learning and preparing them to get into the higher math classes which is the foundation of education. With the data collected from this class the changes will be made to improve student learning with respect to material taught in the course and how delivered.

BACKGROUND

Basic Math 101 has been taught continually at LCC. The course is described in the LCC 2009-20012 Catalog:

COURSE DESCRIPTION: This course is a review of basic mathematical principles including whole numbers, addition, subtraction, multiplication, division, fractions, and decimals. This course will emphasize problem solving and word problems.

This report covers two sections of MATH101 that were delivered during the spring 2012 semester. MATH101-01 started with 8 registered students; at the end of the semester going into the final exam 7 students remained; only 7 students took the final exam. MATH101-03 started with 10 students and finished with 8; only 4 students completed the final exam.

LEARNING OUTCOMES -- Math 101

Upon completion of the course with a C (70%) or better the students will:

1. Utilize prior knowledge and adopt new math skills.
2. Demonstrate the use of math skills and learning techniques
3. Expand skills in using a variety of study techniques
4. Cultivate math skills in addition, subtraction, multiplication and division of numbers
5. Identify whole numbers, fractions, decimals and order of operations as applied to math problems

STATE COMPETENCIES:

C1. Display, analyze, and interpret data.

Discriminate among different type of data displays for the most effective presentations.

Draw conclusions from the data presented.

Analyze the implication of the conclusion to real life situations

C2. Demonstrate knowledge of problem-solving strategies.

For a given problem, gather and organize relevant information.

Choose an effective strategy to solve the problem.

Express and reflect on the reasonableness of the solution to the problem.

C3. Construct valid mathematical explanations.

Students should: Use mathematics to model and explain real- life problems.

C4. Demonstrate an appreciation for the extent, application and beauty of mathematics.

C5. Students should: Recognize the inherent value of mathematical concepts, their connection to structures in nature, and their implications for everyday life.

Grading Criteria –The methods used to assess students progress toward and achievement of the learning outcome included:

Exams (7)	-	30%	Grading Scale:
Assignments/Quizzes/Portfolio	-	-35%	A 90 – 100
Final Exam	-	30%	B 89 – 80
Participation/Attendance	-	5%	C 89 - 70
			D 60 - 69
			F 59 and below

SUMMARY OF RESULTS

The following tables display the results of student achievement of the learning outcomes. The results are shown for each section.

MATH 101/01 LEARNING OUTCOMES–BASIC MATH 101/01

Student ID#		C1	C2	C3	C4	C5	Average
1	A	2	2	2	2	2	2
2.	B	4	5	5	4	5	4.6
3.	C	2	2	2	2	2	2
4.	D	3	3	2	3	2	2.6
5.	E	2	2	2	2	2	2
6.	F	2	2	2	2	2	2
7.	G	5	4	5	5	5	4.8

MATH 101 LEARNING OUTCOMES–BASIC MATH 101/03

Student ID#		C1	C2	C3	C4	C5	Average
1	A	1	1	1	1	1	1
2.	B	1	1	1	1	1	1
3.	C	1	1	1	1	1	1
4.	D	5	5	5	5	5	5
5.	E	1	1	1	1	1	1
6.	F	3	3	3	4	3	3.2
7.	G	5	4	5	5	5	4.8
8	H	3	3	3	3	3	3

BASIC MATH 101/01

<u>Pre-Test Post Test Comparison</u>			
<u>YOU MUST USE % SCORES</u>			
Student ID #		% SCORE	
		PRE-TEST	FINAL EXAM
1.	A	52	68
2.	B	80	90
3.	C	30	---
4.	D	40	---
5.	E	40	69
6.	F	58	--
7.	G	80	88

BASIC MATH 101/01

Student #	Final Exam	Grade	Final Grade
A	68	70	C
B	90	94	A
C	68	70	C
D	---	40	F
E	69	70	C
F	---	48	F
G	82	92	A

Total 8 students registered for class

A= 28.5%

B=

C's = 42.8%

D's = -----

F's = 25%

W's = 12.5%

Percent Successful- Grade "C" or Higher = 71.4%

BASIC MATH 101/03

<u>Pre-test Post Test Comparison</u>			
<u>YOU MUST USE % SCORES</u>			
Student ID #		% SCORE	
		PRE-TEST	FINAL EXAM
1.	A	40	----
2.	B	32	----
3.	C	30	----

4.	D	85	90
5.	E	30	----
6.	F	68	---
7.	G	80	95
8.	H	62	75

BASIC MATH 101/03

Student #	Final Exam	Grade	Final Grade
A	----	30	F
B	----	----	F
C	----	40	F
D	90	94	A
E	----	----	F
F	----	68	D
G	95	98	A
H	75	78	C

Total 10 students registered for class basic math 101/03

A's = 25%

B's = ----

C's = 12.5%

D's = 12.5%

F's = 50%

W's = 20%

Percent Successful- Grade "C" or Higher = 37.5%
Fundamental Prerequisites for Effective Learning

Students have consistently demonstrated five areas of weakness that affect their performance in MATH 101 Basic Mathematics:

- 1) Students generally have difficulty concentrating.
- 2) Students generally have a difficult time articulating what they have learned.
- 3) Students generally do not know how to study
- 4) Students are not prepared to do even basic mathematics.
- 5) Poor attendance affects comprehension and grades.

Examples of the Use of Assessment Data for Improving Student Learning Outcomes

Basic Mathematics is delivered by lecture and in class assignments. Students are responsible for their learning outside of the classroom and to this end, homework assignments are used to get the students to preview the material. In addition, tutoring services are available at the SMET/BCS lab or the Access Center.

The following describe the proposed modifications to course delivery and student behavior patterns

- Continue homework assignments for course but add more student-centered learning activities during the lecture that emphasize topical review and practice in problem solving.
- More class discussion on difficult topics – giving more practical assignments and homework.
- Reinstate College Success course to improve student study habits and emphasize attendance.
- Institute higher standards for developmental mathematics courses.
- Use ACE Lab for tutoring help for extra credit in course.

**DEPARTMENT OF SCIENCE, MATH, and ENGINEERING
TECHNOLOGY**

SUMMARY ASSESSMENT REPORT

Math 105E – General Mathematics – Spring 2012

Prepared by Leasa Martinez, Adjunct Instructor

PURPOSE

The purpose of this report is to evaluate the effectiveness of the Math 105E remedial math class and to investigate methods to improve student learning.

BACKGROUND

The Math 105E course has been offered as an online math course since the fall of 2009. The course description in the LCC 2009-2012 Catalog is as follows:

This course will cover skills/concepts of arithmetic with an introduction to basic algebra for students needing to strengthen their basic mathematical background. Emphasis will be placed on ratios, proportions, percents, measurement, graphs, real number system concepts, signed numbers, and linear equations in one variable.

Twenty one students registered for the Spring 2012 semester. One student withdrew almost immediately and 5 more students withdrew along the course of the semester. Fifteen students completed the course. Twelve students passed the course with a C or better, one student earned a D, and two students failed the course due to academic dishonesty.

OBJECTIVES OF THE COURSE: Upon successful completion of this course, with a minimum of 70%=C or better, the student should:

1. Have a basic understanding of ratios, rates, proportions, percents, unit cost, and the applications of percent.
2. Understand the basic concepts of : simple interest, initial cost and ongoing cost of buying a house and a car, balancing a checkbook, and statistics and probability.
3. Have a basic understanding of: measurement and measurement conversions (metric and US customary system), integers and operations with integers, scientific notation, and solving variable equations.

Methods of Measuring Learning Outcomes:

- Participation and evaluation of student learning in class
- Notebook Assignments
- Section Quizzes
- Chapter Tests
- Midterm and Final

Expected Competencies for the Course

C1. Display, analyze, and interpret data.

- a) Discriminate among different type of data displays for the most effective presentations.
- b) Draw conclusions from the data presented.
- c) Analyze the implication of the conclusion to real life situations

C2. Demonstrate knowledge of problem-solving strategies. The finding of limits.

- a) For a given problem, gather and organize relevant information.
- b) Choose an effective strategy to solve the problem.
- c) Express and reflect on the reasonableness of the solution to the problem.

C3. Construct valid mathematical explanations.

Students should: Use mathematics to model and explain real life problems.

C4. Students should: Recognize that math has evolved over centuries and that our current body of knowledge has been built upon contributions of many people and cultures over time.

C5. Demonstrate an appreciation for the extent, application and beauty of mathematics.

Students should: Recognize the inherent value of mathematical concepts, their connection to structures in nature, and their implications for everyday life.

The following tables display the results of student achievement of the expected competencies. The results are shown for each section.

COMPETENCY RATING FORM –Math 105E Spring 2012

Student ID#		C1	C2	C3	C4	C5	Average
1.	A	3	4	4	4	4	3.8
2.	B	4	5	5	5	5	4.8
3.	C	3	4	4	4	4	3.8
4.	D	3	4	4	4	4	3.8
5.	E	2	3	3	4	4	3.2
6.	F	2	3	2	3	1	2.2
7.	G	4	5	5	5	5	4.8
8.	H	3	4	4	4	4	3.8
9.	I	5	5	5	5	5	5
10.	J	3	2	2	2	2	2.2
11.	K	3	3	3	3	3	3
12.	L	4	5	5	5	5	4.8
13.	M	3	4	4	4	4	3.8

14.	N	2	3	3	3	3	3
15.	O	2	2	2	2	1	1.8
	Class Average	3.06	3.7	3.66	3.8	3.6	

<u>Midterm and Final Grades</u>			
Student ID #		% SCORE	
		MIDTERM	FINAL EXAM
8.	A	90	95
9.	B	94	100
10	C	95	92
11	D	93	80
12	E	80	73
13	F	88	71
14	G	98	98
15	H	90	83
16	I	98	98
17	J	75	96
18	K	92	91
19	L	90	94
20	M	90	98
21	N	85	68
22	O	88	71
23	P	63	-
24	Q	70	-
25	R	66	-

Grade Distribution

Final Grade	# of students	% of students
A	4	19%
B	5	24%
C	3	14%
D	1	5%
F	2	10%
W	6	29%

Summary Conclusions: Fundamental Prerequisites for Effective Learning

Poor performance in this class is consistently related to the following five areas:

- 1) Students do not know how to “read” a math book and utilize the examples.
- 2) Students do not utilize the resources of the online or site based tutors.
- 3) Students do not put in the time needed to practice with homework before taking tests/quizzes
- 4) Poor attendance affects comprehension and grades.
- 5) Students do not meet deadlines and receive zero’s on homework, tests, and quizzes.

Examples of the Use of Assessment Data for Improving Student Learning Outcomes

The expected sequence for students is: come to class, do the assigned questions and check answers in the back of book, come to class and ask questions about any problem you did not understand, take the section quiz, correct any problems that were missed for ½ credit, take the chapter test after all quizzes have been corrected.

Some possibilities for improving outcomes:

- An online math class limits the possibility for hands on tasks and interactive learning. A larger class makes online interactions even more difficult and students are often more passive. Limit class size to 15.
- Spend time helping students learn to “read” and utilize the math book.
- Continue to emphasize connections between bookwork and real life.
- Provide immediate feedback when possible so students do not practice mistakes.

**DEPARTMENT OF SCIENCE, MATH, and ENGINEERING
TECHNOLOGY
SUMMARY ASSESSMENT REPORT
MATH 105 General Mathematics Spring 2012**

Prepared by Dr. Sam Stockett, Instructor

PURPOSE

The purpose of this report is to see if students in MATH 105 General Math are being prepared for the subsequent courses meeting state HED mandated competencies and instructor developed learning outcomes in mathematics. The end goal of assessment is to improve student learning. The data collected from this class and previous MATH 105 sections indicates a need for written and oral components in addition to the usual mathematics.

BACKGROUND

MATH 105 is a course meant to help prepare students for Math 116 Intermediate Algebra which in turn is preparation for Math 180 College Algebra which meets state HED requirements for transfer.

LEARNING OUTCOMES

Students will:

- Display, analyze and interpret data.
 - Discriminate among different types of data displays for the most effective presentations
 - Draw conclusions from data presented
 - Analyze the implications of the conclusions to real life situations
- Demonstrate knowledge of problem solving strategies.
 - For a given problem, gather and organize relevant information.
 - Choose an effective strategy to solve the problem
 - Express and reflect on the reasonableness of the solution to the problem

COURSE SPECIFIC LEARNING OBJECTIVES

Upon completion of MATH 105 students will:

- Solve basic percent equations
- Calculate percent increase and decreases
- Calculate simple and compound interest
- Convert quantities from one system of units to another
- Present and interpret data as Graphs, Histograms and Box-Whisker Plots
- Calculate Measures of Central Tendency

ASSESSMENT METHODS

The methods used to assess student progress toward and achievement of the learning outcomes included:

- Four chapter exams
- Weekly quizzes
- A final exam
- Chapter homework assignments
- Subjective evaluation of class discussion

Summary of Results

The following tables display the results of student achievement of the learning outcomes.

COMPETENCY RATING FORM – MATH 105 General Mathematics Spring 2012

Student	C1	C2	Average
A	1	1	1
B	4	4	4
C	4	4	4
D	2	3	2.5
E	4	3	3.5
F	3	3	3
G	4	4	4
H	3	2	2.5
I	4	4	4
J	3	3	3
K	3	3	3
L	3	3	3
M	4	3	3.5
Class Average	3.2	3.1	3.2

Pre-Test Post Test Comparison			
	Student ID #	PRE-TEST % SCORE	FINAL EXAM
26	A	0	0
27	B	35	97
28	C	30	86
29	D	40	70
30	E	10	86
31	F	5	76
32	G	5	75
33	H	5	84
34	I	10	65

35	J	15	93
36	K	5	80
37	L	10	68
38	M	5	73
39			

FINAL GRADE REPORT

Student #	Final Exam	Final Grade
A	0	F
B	97	A
C	86	B
D	70	C
E	86	B
F	76	C
G	75	C
H	84	A
I	65	C
J	93	A
K	80	B
L	68	C
M	73	B
N	95	A

Total 16 students registered for class

A's = 25%

B's = 25%

C's = 31%

D's = 0%

F's = 6%

W's = 11%

Percent Successful – Grade “C” or Higher = 93%

Percent retained: 94%

Summary Conclusions: Fundamental Prerequisites for Effective Learning

- Students generally have difficulty relating numbers and pictures on paper to real world situations
- Students generally have difficulty recognizing the reasonableness or unreasonableness of the magnitudes of answers
- Students generally have difficulty in the translation between natural language and mathematics

Examples of the Use of Assessment Data for Improving Student Learning Outcomes

- Require some answers to be articulated in natural language rather than given as a number. This issue was recognized in the Fall 2011 semester and attempts at rectification were unsuccessful to date.
- More actively encourage student participation in class. Encourage group learning and discussion. This issue was also noticed in the Fall and has improved.
- Emphasize “reality checking” solutions.
- Include estimation techniques.