College of Natural, Mathematical and Health Sciences   **Spring 2011**
MATH111 College Algebra (3,0)   **3 Credits**

Prerequisites: Two years of high school algebra equivalent/satisfactory score on ACT or Placement Exam or MATH102 with a grade of C or better. High school plane geometry also recommended.

Instructor(s): George Voutsadakis
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          906-635-2667
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Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
2:00-3:00 pm	2:00-3:00 pm	2:00-3:00 pm	2:00-3:00 pm	12:00-1:00 pm

Required Texts: Functions and Change: A Modeling Approach to College Algebra, Fourth Edition, Crauder, Evans and Noell.

Recommended Text: None

Course Description: This course is a study of families of functions through formulas, tables, graphs and words, emphasizing applications in business, life and social science. The function families include linear, polynomial, rational, exponential, logarithmic and power functions. Within these families, topics include problem solving, model creation, solving equations, systems of equations and inequalities, rates of change, graphing, analysis and interpretation.

Course Goals:
1. Involve students in a meaningful and positive, intellectually engaging mathematical experience.
2. Provide students with opportunities to analyze, synthesize and work collaboratively on problems.
3. Further develop the logical reasoning needed in the workplace and by an informed citizenship.
4. Strengthen students' algebraic and quantitative abilities useful in the study of other disciplines.
5. Develop mastery of algebraic techniques necessary for problem solving and mathematical modeling.
6. Improve students' ability to communicate mathematical ideas clearly both in speaking and writing.
7. Develop competence and confidence in problem solving ability.
8. Develop ability to use technology for understanding and doing mathematics.
9. Develop a personal framework of problem solving heuristics (read the problem at least twice, clearly define variables, sketch and label a diagram, list what is given, restate the question asked, etc.)

Course Objectives: At the conclusion of MATH111 students should be able to:
1. Solve problems presented in the context of real world situations with emphasis on model creation, revision and interpretation. This will be done using multiple perspectives (formulas, tables, graphs and words) and will include fitting an appropriate curve to a scatter plot.
2. Calculate the average rate of change of a function on a given interval and use it as an estimation tool.
3. Define, evaluate, and analyze linear functions and solve linear equations and systems. (The

analysis will include finding slopes, input/output values, intercepts, intersections and determining if data are linear.)

4. Define, evaluate, and analyze exponential functions and solve exponential equations. (The analysis will include finding input/output values, growth/decay factors or rates and determining if data are exponential.)

5. Define, evaluate, and analyze logarithmic functions and solve logarithmic equations. (The analysis will include finding input/output values, comparing inputs/outputs of logarithmic scales using ratios and using properties of logarithms to evaluate functions and solve equations.)

6. Define, evaluate and analyze power functions and solve power equations. (The analysis will include finding input/output values, comparing inputs/outputs of power functions using ratios and determining if data can be represented by a power function.)

7. Define, evaluate, and analyze polynomial functions and solve polynomial equations. (The analysis will include finding input/output values, finding zeros and optimization.)

8. Perform operations on functions such as compositions and inversions.

9. Solve polynomial inequalities.

Grading Scale and Policies:
Point and Percentage Values:

Quizzes	100 points	25%
Exams	200 points	50%
Departmental Final Exam	100 points	25%
	Total 400 points	Total 100%

Grading Scale:

94-100	A	70-74	C
90-93	A-	65-69	C-
87-89	B+	60-64	D+
84-86	B	55-59	D
80-83	B-	50-54	D-
75-79	C+	0-49	F

Grading Policies: You will be graded on correct methodology. This means that if you provide an answer but show no work or your work is incorrect, you will not receive credit. You must follow directions. Your solutions must be written in a connected, step-by-step logical fashion and all variables should be clearly defined. If your solution is not written clearly, you will not receive full credit. In many cases, setting up the correct mathematical model and using this model to solve a problem will be just as important as computing a numeric answer. When you use technology to provide an answer, you must state your method. Where possible, you must include units of measurement for your answers.

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Ground Rules:

1. **Calculator:** You will need a graphing calculator. The TI-83/84 Plus is the recommended calculator for this course. This is the one your instructor will be using and your instructor may not be able to provide assistance with other models. All other electronic devices, including computers, PDAs and cell phones, must be turned off for all class lecture sessions.
2. **Purpose of Lecture:** Lectures are an opportunity for students to ask questions and seek clarification on material. This implies student preparation has been accomplished prior to class. Lecture is also the opportunity for the instructor to coordinate coverage of the material and present material that is historically or potentially difficult. It does not negate student preparation or study.
3. **Attendance Policy:** Attendance is strongly encouraged. If you miss a class, or are late, you are still responsible for class notes and assignments. Moreover, you will be assigned a 0 score should a quiz take place during that missed lecture.
4. **Make-up Policy:** Each exam should be taken at the designated time. An exam may be taken prior to or after the scheduled date, by agreement with the instructor, provided that the student provides a request with a documented valid excuse well in advance of the scheduled date. If an absence is unexcused, no make-up will be provided, either for exams or for quizzes.
5. **Academic Integrity:** Students are expected to perform all assigned work themselves. Any form of cheating or plagiarism will be handled in accordance with the Academic Integrity Procedures. Violations of the University Academic Integrity Policy may result in an F course grade.
6. **Testing:** Use of head phones, cell phones and hats during exams is prohibited.

University Policies and Statements:

The Americans with Disabilities Act & Accommodations

In compliance with Lake Superior State University policies and equal access laws, disability-related accommodations or services are available to students with documented disabilities.

If you are a student with a disability and you think you may require accommodations you must register with Disability Services (DS), which is located in the KJS Library, Room 130, (906) 635-2355 or x2355 on campus. DS will provide you with a letter of confirmation of your verified disability and authorize recommended accommodations. This authorization must be presented to your instructor before any accommodations can be made.

Students who desire such services should meet with instructors in a timely manner, preferably during the first week of class, to discuss individual disability related needs. Any student who feels that an accommodation is needed – based on the impact of a disability – should meet with instructors privately to discuss specific needs.

IPASS (Individual Plan for Academic Student Success)

If at mid-term your grades reflect that you are at risk for failing some or all of your classes, you will be contacted by a representative of IPASS. The IPASS program is designed to help you gain control over your learning through pro-active communication and goal-setting, the development of intentional

learning skills and study habits, and personal accountability. You may contact 635-2887 or email ipass@lssu.edu if you would like to sign up early in the semester or if you have any questions or concerns.

The course outline below is a projection of the general structure and content of the course. It is tentative and subject to change without prior notice.

Tentative Course Outline

Week	Dates	Monday	Wednesday	Friday
1	01/10/11	P	1.1	1.2
2	01/17/11	1.3	1.4	1.4
3	01/24/11	2.1	Review	Exam 1
4	01/31/11	2.2	2.3	2.4
5	02/07/11	2.4	Inequalities	2.5
6	02/14/11	3.1	Review	Exam 2
7	02/21/11	3.2	3.3	3.4
8	02/28/11	Break	Break	Break
9	03/07/11	3.4	3.5	4.1
10	03/14/11	4.2	Review	Exam 3
11	03/21/11	4.3	4.3	4.4
12	03/28/11	4.5	4.5	5.1
13	04/04/11	5.2	Review	Exam 4
14	04/11/11	5.2	5.3	5.4
15	04/18/11	5.4	5.5	5.6

The homework exercises for each section covered are below. You should spend a lot of your math study time doing homework. It is recommended that you buy or print graph paper for this course and use it when completing your homework. If you are struggling with your homework seek help from your instructor or the tutors in the Learning Center.

Assignments

Section	Algebraic Exercises	Skill Building Exercises	Exercises
P			
1.1	A1, A2, A3, A5-A15 odd	S1, S4, S7, S13, S20, S25, S29	1, 2, 5, 9, 13, 17
1.2	A1, A5, A7, A12, A15, A17, A27	S1, S5, S9, S13, S14, S17, S20	1, 4, 6, 7, 11, 15, 19
1.3	A2	S1-S14	1, 3-5, 11, 15
1.4	A1-A3, A19	S1, S6, S9, S14, S15, S22, S24, S25	1, 4, 11-15, 19, 21
2.1		S1, S2, S9, S11, S13, S21, S23	1, 4, 9, 14, 15, 17, 18
2.2	A1-A4, A7, A9-A11, A23, A27, A28	S3, S4, S11, S15, S25	3, 6, 7, 14, 15, 17, 19
2.3	A1, A3, A7, A10, A11, A17,	S3, S7, S17	4, 7, 9, 13, 16, 17

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	A19, A22, A25, A29, A31		
2.4	A1-A11 odd, A15, A17, A25, A27	S1, S5, S13, S14	1, 2, 5, 7, 10, 17
2.5	A1, A3, A9, A10, A16	S3, S5, S23	3, 5, 11, 15, 18
3.1	A15-A18	S1, S3, S5, S7, S8, S13, S17, S19	1, 3, 5, 7, 8, 11, 12
3.2	A1, A3, A5, A7, A13, A17	S1, S3, S5, S9, S11, S17, S19	1, 3, 5, 6, 9, 11
3.3	A1, A5, A11	S1-S3, S5, S7, S8	2, 3, 7, 9, 10, 11
3.4		S13, S15, S17	1, 2, 5, 8, 15, 17
3.5	A1 & A3 by hand, A7, A9, A19, A20, A23, A24 using calculator	S3, S15, S16, S19	2, 3, 5, 6, 8, 14, 15
4.1	A1-A8, A13, A15, A19	S1, S9, S11, S17, S18, S21, S23	3, 4, 5, 6, 9, 14, 22
4.2	A1, A2	S1, S3, S5, S9, S13, S21	1-5, 7, 9, 10
4.3	A1, A3	S5, S8, S15, S18	2, 3, 5-7, 9, 13, 16
4.4	A1-A25 odd	S1-S33 odd	1, 2, 5, 6, 8, 13
4.5	A7-15 odd	S3, S9, S13, S15	3, 5, 7, 9
5.2	A3	S7, S9, S11, S13, S15	3-5, 7, 11
5.3	A5, A7, A9, A13	S1, S3, S5, S11, S13	1, 5, 6, 7, 9
5.4		S1, S3, S5, S6, S7, S8, S11, S13	1, 5, 7, 12
5.5		S1, S5, S7, S11, S12	1, 2, 5-9, 11, 13, 15
5.6		S1-S4, S11-S14	1, 3