Syllabus for: Math 120

Semester & Year:	Spring 2013
Course ID and Section Number:	MATH-120-E2690 (032690)
Number of Credits/Units:	4
Day/Time:	MWF 8:30 am – 9:45 am
Location:	LS112
Instructor's Name:	Erik Kramer
Contact Information:	Office location and hours: PS 119D MWF 10:00 & MW 12:30 Phone: 476-4228 Email: erik-kramer@redwoods.edu

Course Description (catalog description as described in course outline): A course in which functions are investigated graphically, numerically, symbolically and verbally in real-world settings. Linear, quadratic, polynomial, rational, radical, exponential, and logarithmic equations and functions are explored. Technology is integrated into all aspects of the course.

Student Learning Outcomes (as described in course outline) :

1. **Evaluate and interpret general functions symbolically, numerically, and graphically.**
2. **Produce an accurate graph of each function type introduced in the course, identifying and plotting all salient features.**
3. **Demonstrate appropriate use of technology in analyzing the behavior of functions presented in the course.**
4. **Use mathematical models to analyze and interpret real-world situations.**
5. **Use sound mathematical writing and appropriate use of symbolism in presenting solutions of mathematical exercises and applications.**

Special accommodations: College of the Redwoods complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request at least one week before the first test so that necessary arrangements can be made. No last-minute arrangements or post-test adjustments will be made. If you have a disability or believe you might benefit from disability related services and may need accommodations, please see me or contact Disabled Students Programs and Services. Students may make requests for alternative media by contacting DSPS.

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

The student code of conduct is available on the College of the Redwoods website at: http://redwoods.edu/District/Board/New/Chapter5/AP%205500%20Conduct%20Code%20final%2002-07-2012.pdf

Additional information about the rights and responsibilities of students, Board policies, and administrative procedures is located in the college catalog and on the College of the Redwoods homepage.
College of the Redwoods is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

Math 120-E2690 (032690) Course Syllabus
Spring Semester 2013

1 Course Information

Lectures will be MW 8:30 - 9:45 am in LS 112. There will be assigned homework each week. There will be short chapter tests at the end of each chapter with homework collected with the test. Group work in the form of collaborative exercises will occasionally happen in class. mid-term exam and a cumulative final.

Instructor Information:
Erik Kramer
PS 119D
476-4228
erik-kramer@redwoods.edu
Office Hours: MWF 10:00, MW 12:30 and by appointment for other days/times. If you plan to come late to an office hour, please let me know so I don't wander off.
Text: *Intermediate Algebra*, available for free at `http://msenux.redwoods.edu/IntAlgText/`. A printed copy of the text can be purchased for a nominal price at the college bookstore. There is also an exercise and solutions manual for sale, so make sure you're buying the one you want.
Required Materials: You will need the following: a graphing calculator: a TI-83/84 is recommended, internet access where you study, graph paper, and writing implements.

2 Course Description

This is a course in intermediate algebra. A focal point of this class will be functions. Functions will be investigated graphically, numerically, symbolically, and verbally, as well as in real-world applications. Linear, quadratic, absolute value, polynomial, rational, radical, exponential, and logarithmic functions will be explored. Technology as a tool for understanding and working with functions will be integrated into this course.

Functions are more than a mathematical tool, but represent a way of thinking. The ideas behind functions go far deeper than the notation and rules studied in this class. It is very common at the beginning to be fixated on notation and not see the idea behind the notation. This generally has the effect of putting a glass ceiling on your learning. I encourage you, therefore, to look for the ideas behind the notation as much as you can in this class.

The issue of ideas being obscured by notation is there in many subjects. As well, the mathematical ideas behind math functions is foundational to many other disciplines. This fact is not immediately obvious based on the kinds of notation used in other disciplines. Many disciplines do not use the exact same notation that is used in math texts. Knowledge of notation based on this course has limited transferability to other courses and disciplines, but the ideas and skills developed in this course have much broader relevance and applicability.

Course Outcomes: The course outcomes describe what a passing student should be able to do as a result of the skills and knowledge gained in this course.

1. Evaluate and interpret general functions symbolically, numerically, and graphically.
2. Produce an accurate graph of each function type introduced in the course, identifying and plotting all salient features.
3. Demonstrate appropriate use of technology in analyzing the behavior of functions presented in the course.
4. Use mathematical models to analyze and interpret real-world situations.
5. Use sound mathematical writing and appropriate use of symbolism in presenting solutions of mathematical exercises and applications.

In order to meet the above outcomes, you will need to gain in both knowledge and skill. Simply having knowledge of the material presented in lectures and the textbook is generally insufficient to demonstrate the course outcomes. It is crucial that you also gain in skill. Skill is gained by practice, both during class, and outside class. It is safe to say that skill gained through practice represents well more than half of what you gain through taking this course. Therefore, it is imperative that you practice as much as possible by completing all out of class assignments. Furthermore, you are encouraged to do more practice on your own as needed to gain in skill and confidence with the material of any particular chapter.

3 Ground Rules

1. **Lectures:** Students are expected to attend all the lectures. Pop quizzes could occur in any lecture. Group work that contributes to the course grade will also occur regularly. Students should not interrupt lectures unbidden. Questions should be kept pertinent to the material. Everyone in the class is expected to help maintain a respectful and safe learning environment.
2. **Homework:** Only a few written homework problems for each section will be collected. The assigned problems are attached to this syllabus and include recommended practice problems in addition to the problems you are expected to turn in. Written problems will be turned in on the day of the chapter test; **late homework will not be accepted for credit**. Each section should be clearly labeled.
3. **Optimath:** Optimath is a web based system used by the CR math department for online assignments. It has assignments with problems that fit well with the course text.

I will create practice assignments that you may optionally do for your practice. You could, for example, do Optimath practice assignments instead of the recommended practice problems on the homework. However, you should still do the homework problems from the book that will be collected for credit. Optimath can be found at http://msenux.redwoods.edu/optimath . Be sure to exit MyCR before using the link to Optimath, the two are incompatible.

4. **Quizzes, Chapter Tests, & Exams:** All quizzes, chapter tests, and exams will be closed book and closed notes unless otherwise stated. Quizzes may or may not be announced. Chapter tests and the midterm exam will occur on the dates where they appear in the attached course schedule. The final exam will occur on the date and time specified by the published college finals schedule.

5. **Collaborative Exercises:** Group work will occur in the form of collaborative exercises. During a collaborative exercise you will be expected to form into groups. The groups will each be assigned a problem or problems to work on. A random member of the group may be selected to present the solution on the board, with the group's points based on the work put up on the board.

6. **Grading:** The breakdown of the course grade is shown in the following table.

Collaborative Exercises	10%
Written Homework	20%
Chapter Tests & Quizzes	30%
Midterm Exam	20%
Final Exam	20%

In determining the final letter grade I will look at a weighted average of the above as well as the average over Tests & Quizzes and the two Exams, and use the highest score. I reserve the right to use '+' and '-' modifiers to letter grades, but I generally use them sparingly. I furthermore reserve the right to drop you from the course for unsatisfactory learning progress, attendance, or course participation. Grades will be determined on traditional percent cutoffs at 10% increments. The cutoffs may be lowered at my discretion, but will not go up.

7. **Special Accommodations:** If you

   a. Need classroom or testing accommodations because of a disability

   b. Have emergency medical information to share with me

   c. Need special arrangements in case the building needs to be evacuated

   Please make an appointment with me as soon as possible. If you need testing accomodations, bring me the needed paperwork sufficiently ahead of time for arrangements to be made. Testing accomodations cannot be arranged retroactively, and prior scores cannot be adjusted.

8. **Electronics:** Cellular phones, pagers and other devices that may disrupt the class should be turned off. Exceptions for devices necessary to you should be cleared with me first.

9. **Cheating:** There will be zero tolerance for cheating on quizzes, tests, or exams. Suspicion of cheating can lead to zero credit for that exam. Multiple instances of cheating will prevent you from passing this course.

4 Course Schedule

This course schedule

Week 1 1/14/13
- M Syllabus; 1.1 Preliminaries
- W 1.2 Solving Equations; 1.3 Logic; Interval and Set Notation
- F 1.4 Compound Inequalities

Week 2 1/21/13
- M HOLIDAY
- W Ch.1 test; 2.1 Introduction to Functions
- F 2.2 The Graph of a Function

Week 3 1/28/13
- M 2.3 Interpreting the Graph of a Function (Census Day)
- W 2.4 Solving Equations and Inequalities by Graphing
- F Ch. 2 test; 3.2 Slope

Week 4 2/4/13
- M 3.3 Equations of Lines; 3.4 The Point-Slope Form of a Line
- W 3.5 The Line of Best Fit; F Ch.3 test; 5.1 The Parabola

Week 5 2/11/13
- M 5.2 Vertex Form; (Will review Geometric Transformations from 2.5 & 2.6)
- W 5.3; Zeros of the Quadratic; 5.4 The Quadratic Formula
- F Holiday

Week 6 2/18/13
- M Holiday
- W Class Cancelled
- F Class Cancelled

Week 7 2/25/13
- M 5.5 Motion with Constant Acceleration; 5.6 Optimization
- W Review for Midterm Exam
- F Midterm Exam

Week 8 3/4/13
- M 6.1 Polynomial Functions
- W 6.2 Zeros of Polynomials
- F 6.3 Extrema and Models

Spring Break 3/11/13 - 3/16/13

Week 9 3/18/13
- M Ch. 6 test; 7.1 Introducing Rational Functions
- W 7.2 Reducing Rational Functions
- F 7.4 Products and Quotients of Rational Functions

Week 10 3/25/13

M 7.5 Sums and Differences of Rational Functions
W 7.6 Complex Fractions
F 7.7 Solving Equations Containing Rational Expressions

Week 11 4/1/13

M Ch. 7 test
W 8.1 Exponents and Roots
F 8.2 Exponential Functions

Week 12 4/8/13

M 8.3 Applications of Exponential Functions
W 8.4 Inverse Functions; 8.5 Logarithmic Functions F 8.6 Properties of Logarithms; Solving Exponential Equations

Week 13 4/15/13

M 8.7 Exponential Growth and Decay
W Ch. 8 test; 9.1 The Square Root Function
F 9.2 Multiplication Properties of Radicals

Week 14 4/22/13

M 9.3 Division Properties of Radicals
W 9.4 Radical Expressions F 9.5 Radical Equations

Week 15 4/29/13

M 9.6 The Pythagorean Theorem
W Review for Final Exam

Final Week 12/10/12