Syllabus for: Intermediate Algebra

Semester & Year:	Fall 2013
Course ID and Section Number:	Mathematics 120 033847
Number of Credits/Units:	4
Day/Time: **Location:**	TThF 8:30 – 9:45 LRC 105
Instructor's Name:	Kramer
Contact Information:	Office location and hours: HU 211A Hours on Syllabus Phone: Wish I Knew 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 (033847) Course Syllabus
Fall Semester 2013

1 Course Information

Lectures will be TThF 8:30 - 9:45 am in LRC 105. There will be assigned homework each week. There will be a short chapter quiz at the end of each chapter with homework collected with the quiz. There will be a mid-term exam and a cumulative final.
Everyone is asked to fill out an entrance survey for this class. It can be found at
`http://msenux.redwoods.edu/surveys/math120studentinfo_f13.html`

Instructor Information:
Erik Kramer
HU 211A (Prep Room)
erik-kramer@redwoods.edu
Office Hours: MTWTh 1:05 - 1:55 pm; F 10:00 - 10:55 am
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, 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 focus on notation and not see the ideas 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 mathematical ideas behind 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. 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: You have the choice in this class on whether to turn in written homework from the book or complete it online.** Homework problems assigned from the book are attached to this syllabus. If you choose to turn in written homework, you only need to turn those problems designated as Turn In, not Recommended Practice. Written problems will be turned in on the day of the chapter quiz; **late homework will not be accepted for credit**. Each chapter section should be clearly labeled. Homework will not be graded, but just checked for credit. However, if over 50% of a section is incorrect you risk not receiving credit.
3. **Optimath:** Optimath is a web based system used by the CR math department for online assignments. There will be assignments corresponding to each chapter section in

Optimath that may be completed instead of turning in homework. Optimath assignments may be done as many times as you like, and to receive credit for homework you should achieve at least 70% of the possible points. **Optimath assignments must be completed before the chapter quiz for credit.** If you think you'd prefer to do Optimath assignments to homework from the text, be sure to try it out early enough to make sure it works for your computer. Inability to get Optimath to work will not be considered a valid excuse for not completing homework. 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 & Exams:** Quizzes and exams will comprise of problems from the relevant chapter(s) that are similar to assigned homework problems, including Recommended Practice problems. All quizzes and exams will be closed book and closed notes unless otherwise stated. Chapter quizzes 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. **Grading:** The breakdown of the course grade is shown in the following table.

Written Homework	30%
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 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.

6. **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.

7. **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.

8. **Drop Policy:** It is the policy of the College of the Redwoods Math Department to exercise a "Faculty Withdrawal" for any student who has missed more than 15% of the class meeting time prior to the drop deadline, due to the severely diminished likelihood of a successful outcome in the course. It is important to note that, if it is the student's intention to withdraw from the course, the responsibility remains with the student to ensure the proper paperwork has been filed. In particular, students are not to assume the instructor will file the "Withdrawal" automatically.

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 may change or vary somewhat within each week.

Week 1 8/26/13
T Syllabus; 1.1 Preliminaries
Th 1.2 Solving Equations;
F 1.3 Logic; Interval and Set Notation

Week 2 9/2/13
T Class Cancelled for a Day
Th 1.4 Compound Inequalities
F Ch.1 Quiz; 2.1 Introduction to Functions (Census Day)

Week 3 9/9/13
T 2.2 The Graph of a Function
Th 2.3 Interpreting the Graph of a Function
F 2.4 Solving Equations and Inequalities by Graphing

Week 4 9/16/13
T Ch. 2 Quiz; 3.2 Slope
Th 3.3 Equations of Lines; 3.4 The Point-Slope Form of a Line
F 3.5 The Line of Best Fit;

Week 5 9/23/13
T Ch.3 Quiz; 5.1 The Parabola
Th 5.2 Vertex Form; (Will incorporate Geometric Transformations from 2.5 & 2.6)
F 5.3; Zeros of the Quadratic; 5.4 The Quadratic Formula

Week 6 9/30/13
T 5.6 Optimization
Th Review for Midterm Exam
F Midterm Exam

Week 7 10/7/13
T 6.1 Polynomial Functions
Th 6.2 Zeros of Polynomials
F Ch. 6 Quiz; 7.1 Introducing Rational Functions

Week 8 10/14/13
T 7.2 Reducing Rational Functions
Th 7.4 Products and Quotients of Rational Functions
F 7.5 Sums and Differences of Rational Functions

Week 9 10/21/13
T 7.6 Complex Fractions
Th 7.7 Solving Equations Containing Rational Expressions
F 7.8 Applications of Rational Functions

Week 10 10/28/13
T Ch. 7 Quiz
Th 8.1 Exponents and Roots
F 8.2 Exponential Functions

Week 11 11/4/13
T 8.3 Applications of Exponential Functions
Th 8.4 Inverse Functions
F 8.5 Logarithmic Functions

Week 12 11/11/13
T Class Cancelled for a Day
Th 8.6 Properties of Logarithms; Solving Exponential Equations
F 8.7 Exponential Growth and Decay

Week 13 11/18/13
T Ch. 8 Quiz
Th 9.1 The Square Root Function
F 9.2 Multiplication Properties of Radicals

Week 14 11/25/13
T 9.3 Division Properties of Radicals
Thanksgiving

Week 15 12/2/13
T 9.4 Radical Expressions
Th 9.5 Radical Equations
F 9.6 The Pythagorean Theorem; Review for Final Exam

Finals Week

Section #	Turn In	Recommended Practice
1.1	6, 10, 16, 18, 28	3, 5, 11, 13, 17, 23, 25, 29 , 31, 33, 35, 37, 39, 41
1.2	12, 16, 32, 42, 46	3, 7, 15, 17, 19, 25, 27, 33, 39, 41, 47, 49, 53
1.3	12, 22, 30, 40, 42	3, 9, 17, 19, 23, 25, 27, 29, 33, 35, 41, 43, 51, 53
1.4	10, 34, 50, 56, 62	1, 5, 9, 13, 15, 17, 19, 27, 31, 33, 39, 49, 51, 55, 59
2.1	20, 46, 56, 68, 76	3, 5, 17, 19, 43, 45, 49, 57, 61, 67, 73, 75, 77, 79, 81
2.2	4, 6, 14, 18, 22	1, 5, 9, 11, 13, 15, 21
2.3	2, 12, 18, 20, 24	3, 5, 9, 11, 15, 17, 19, 21, 23, 25, 29
2.4	8, 14, 20, 24, 38	7, 9, 13, 15, 21, 25, 29, 31, 37, 41
3.2	8, 14, 20, 22, 24	9, 11, 13, 17, 19, 21, 23, 25
3.3	2, 8, 20, 26, 36	5, 9, 11, 23, 25, 29, 35, 39, 41, 43, 45, 47
3.4	8, 16, 22, 26, 30	5, 7, 13, 15, 19, 23, 25, 29
3.5	2, 4, 6	1, 3, 7
5.1	10, 16, 32, 38, 46	7, 13, 21, 23, 25, 29, 33, 37, 41, 45, 47, 53, 55
5.2	10, 22, 32, 34, 46	1, 3, 9, 13, 21, 23, 25, 27, 35, 37, 39, 41, 45, 47, 73, 77
5.3	16, 20, 24, 42, 56	3, 7, 11, 13, 17, 19, 23, 27, 33, 35, 39, 45, 55, 57, 61
5.4	18, 38, 44, 56, 64	1, 7, 9, 13, 17, 21, 37, 39, 41, 45, 51, 57, 63, 65, 67, 71
5.6	12, 22, 30, 32, 36	3, 7, 13, 15, 23, 25, 27, 31, 35
6.1	10, 12, 16, 18, 20	3, 5, 7, 9, 11, 15, 17, 21, 25, 29
6.2	10, 18, 28, 36, 40	7, 9, 15, 17, 27, 29, 33, 35, 41
7.1	4, 18, 30, 38, 42	3, 7, 11, 15, 19, 23, 29, 33, 37, 39, 41
7.2	16, 24, 28, 34, 52	3, 7, 13, 15, 19, 23, 27, 31, 33, 35, 43, 49, 51
7.4	16, 34, 38, 44, 64	3, 7, 11, 15, 19, 21, 27, 31, 35, 37, 39, 41, 45, 63
7.5	4, 14, 20, 28, 38	3, 5, 13, 15, 17, 19, 23, 27, 31, 35, 39
7.6	8, 10, 26, 38, 44	7, 9, 11, 13, 26, 35, 37, 39, 43, 45
7.7	6, 16, 20, 26, 32	3, 5, 7, 9, 15, 17, 19, 25, 27, 29
7.8	4, 10, 14, 18, 30	1, 7, 13, 19, 23, 25
8.1	18, 50, 58, 70, 76	3, 5, 13, 17, 29, 31, 41, 45, 51, 57, 63, 65, 69, 73, 77
8.2	12, 16, 24, 26, 36	1, 11, 13, 17, 21, 23, 25, 35, 37
8.3	8, 12, 16, 32, 38	1, 3, 13, 25, 29, 35
8.4	16, 30, 44, 50, 60	3, 7, 13, 15, 23, 25, 29, 33, 37, 39, 47, 49, 67
8.5	4, 10, 32, 34, 38	1, 3, 5, 7, 11, 17, 19, 23, 27, 31, 33, 37, 41
8.6	22, 24, 26, 30, 46	3, 9, 13, 19, 23, 27, 29, 31, 39, 43, 49
8.7	2, 4, 22, 24, 38	3, 5, 11, 13, 25, 27, 31, 33, 35
9.1	6, 8, 16, 32, 40	1, 3, 5, 15, 19, 25, 27, 29, 33
9.2	30, 36, 62, 70, 74	5, 9, 13, 21, 25, 27, 29, 35, 45, 55, 57, 59, 67, 77, 79
9.3	22, 36, 38, 44, 52	5, 7, 13, 17, 21, 27, 29, 33, 41, 43, 49, 51, 55
9.4	40, 46, 56, 68, 72	3, 7, 15, 21, 29, 33, 39, 43, 47, 53, 55, 63, 67, 69, 73
9.5	12, 20, 24, 32, 40	7, 9, 11, 17, 19, 21, 23, 29, 35, 37
9.6	2, 12, 18, 24, 38	1, 5, 9, 11, 17, 19, 23, 25, 29, 33, 39, 41