MATH 120: Intermediate Algebra

Instructor

Dr. Ariel Ramirez
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Office: LRC 172

Class Details

Tuesday/Thursday
Class Time: 12-1:15pm
Room: VAAS 129
MyMathLab Course ID:
ramirez63179

Office Hours

M/W 1:30-3pm (Math Center)
T/Th 2-3pm (Math Center)

"Laboratory Still Life 02" - Don Shank

Contents

Course Description

This course covers linear equations and inequalities, polynomials, factoring, exponents, radicals, fractional expressions and equations, quadratic equations, perimeters, areas of simple geometric shapes, and logarithms. Emphasis on problem solving skills (3 Credit Hours).

Prerequisites: Appropriate placement score or a grade of C or better in Math 100 or Math 022. Check with your adviser to make sure you meet the requirements.

Course Outcomes

In this course, we will explore linear functions, systems of linear equations, linear inequalities, polynomials and factoring, rational functions, and radical functions, and we will introduce exponential and logarithmic functions. A complete list of the Student Learning Objectives for this course is given at the end of this syllabus.

Instructional Methodology

A variety of approaches will be used including: discussion of concepts, problem solving, and group work. The primary role of the professor will be to facilitate the analysis of key concepts and illustrate multiple problem solving heuristics.

Course Materials

Textbook:
    "Developmental Mathematics," 2nd edition, by Sullivan, Struve, Mazzarella.

Required: Appropriate MyMathLab (MML) access code (do not purchase a generic code, in this case the code is book specific). You may purchase the 18-week access code for a lower price, but you *cannot* upgrade to the lifetime code once you purchase the restricted one.

Optional: You may "upgrade" your access by purchasing a hardcopy of the book directly from Pearson for an additional cost (between $50 and $60 before tax). There will be copies of the book on reserve for use in the library (you will not be able to take the book from the library home).

Other Requirements:
- Reliable access to a computer or tablet, and Internet. A computer (laptop or desktop) is recommended. Preferred browsers are Chrome, Firefox, or Safari. Preferred operating systems are Windows or Apple.

Other Requirements (continued):
- Administrative rights to download free software or plug-ins or add-ons on the computer you plan to use for this course. The first time you login to the MyMathLab (MML) homepage run the Installation Wizard to make sure you have all the appropriate software installed. Also, make sure you are allowing popups.
- Pearson account. If you have used any of the Pearson My Lab products before, you can use the same account you created the first time you used it. Otherwise, you can create an account when you register in MyMathLab (MML) for this class. Register by going to mymathlab.com.
- Access to UNM Learn. will use your UNM NetID to log into UNM Learn. You may access it directly via learn.unm.edu
- Standard or Scientific calculator. This cannot be an app on your cell phone.
- Adobe Reader (a free download), preferably version 11.0 or better.

Classroom Policies

Attendance / Participation

You are expected to be on time to each class and stay the entire class, have the necessary course materials on hand, and participate in the lecture and/or group activities to receive full credit for attendance each day.

Absences: I do not require you to give me any sort of documentation for missing up to 3 class days. Even if you miss class, you are still expected to complete the assignments posted in MML. You will only be excused for any in-class activity we did.

Here are the reasons I may drop you from the class:
- If you miss the first week of the semester.
- If you have 3 or more absences during the first three weeks of the semester.
- If you are not registered in MML and completing assignments by the end of the first week you are in the class.

If you added late, your counted absences start the day you registered for the class.

abcgallery.com – Internet's biggest art collection

"Gorge Improvisation" - Kandinsky 1914

EXPECTATIONS: Students are expected to conduct themselves in a polite, courteous, professional and collegial manner. **Cell phones must be set on silent and be out of sight during class. No food or drink is allowed in the computer labs.**

Time for This Course: Plan to spend a $minimum$ of 9 to 12 hours per week for this class. There is no guarantee you will pass if you dedicate this amount of time, you still need to learn the material and use your time wisely, but those who pass generally are the ones who spend the time needed to learn the material.

Homework

Homework is assigned nearly every week based on the 13 units in the course outline. Weekly assignments in MML must be completed not later than beginning of class of the next week for full credit. **Each homework assignment is worth 25 points**. This means you may miss one of the unit homework assignments, and your grade will not be affected. A 10% penalty may be incurred if your homework is late. You will not be able to go back to improve your grade after the due date.

Classroom Policies

Math Center Worksheets

Worksheets done in the Math Center, located in the Learning Commons, will be due no later than a week after they are assigned. These worksheets will help you practice and reinforce what has been covered in class. **Each worksheet is worth 15 points.**

There will be a maximum of **six** short worksheets (about every two weeks) available in the Math Center from opening Monday morning until closing Friday, and must be completed, checked and signed by a tutor, and turned in at the Math Center.
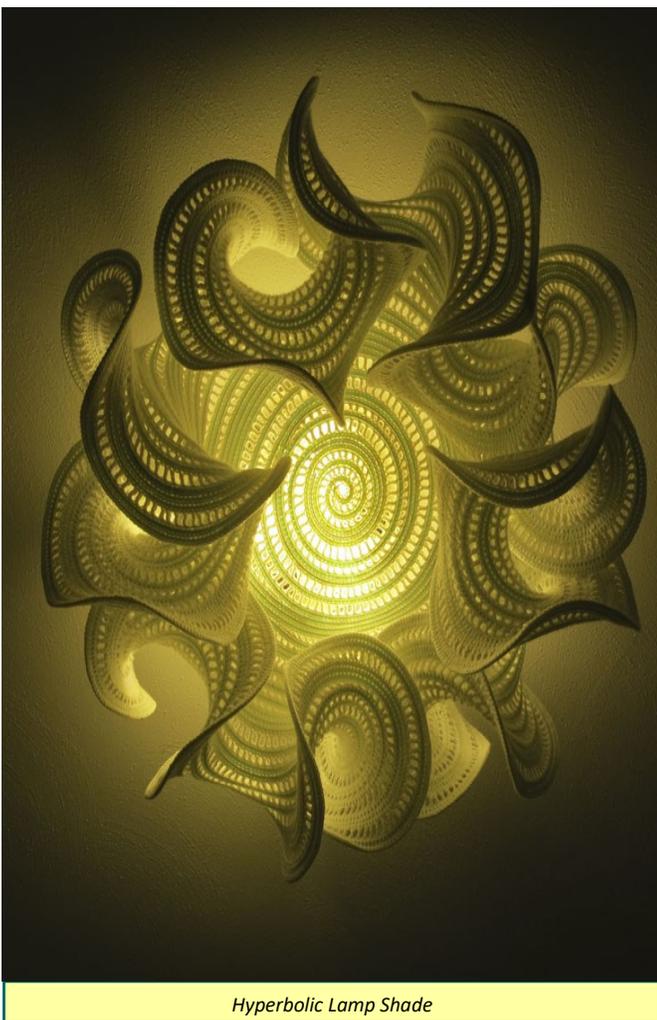
Hyperbolic Lamp Shade

Projects

During the semester, two projects will be assigned. If available, you may have some class time to begin or work on the project, but it will be designed for you to complete at home. If you are working on this project in groups, you must demonstrate that you contributed to the group answer. I also require *individual* submissions of the project, not one group paper. Each project will be worth 20 points toward your course grade.

Exams/Final Exam

There will be two exams during the semester that will be written exams given during class. These will correspond to the final exams for Math 101 and for Math 102 respectively. Each is worth 100 points. If you are ill or an unexpected event happens, and you cannot make it to the exam, you have one week to make it up.

Error Analysis and Resubmission of Exams: Once you have your graded exam back, I expect you to complete an error analysis on the problems you missed on the exam and rework them. This error analysis and resubmission will be due one week after I return the exams to the class. To earn back up to half the points missed, corrections need to be made on a <u>separate</u> sheet of paper. The correction paper is vertically divided in half: The problem must be reworked on the LEFT side of the paper, and the RIGHT side must contain your verbal explanation of what was done incorrectly on the quiz for that problem.

Support: If you are struggling in this course, do not be afraid to ask for help!

- Ask My Instructor: Please use the Ask My Instructor button in MyMathLab. This button is available in the computational assignments and in the quizzes and sends a message to my email with a link to the question. Do not just send the link, tell me where in the problem you are struggling.
- Office Hours: See my office hours listed at the beginning of this syllabus.
- Form study groups: You may work together with other members of our class.
- Free Tutoring: The Math Center at Valencia campus has free tutoring and open labs. Call 505-925-8907 for more information.
- Student Services: There are various services provided in our Student Services Department. See below about equal access. Also, we have a testing center, advising, and career placement available: <u>Valencia Student Services</u>

University Policies

Equal Access: In accordance with University Policy 2310 and the Americans with Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as I am not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Resource Center at 277-3506 for additional information.

If you need an accommodation based on how course requirement interact with the impact of a disability, you should contact me to arrange an appointment as soon as possible. At the appointment we can discuss the course format and requirements, anticipate the need for adjustments and explore potential accommodations. I rely on the Disability Services Office for assistance in developing strategies and verifying accommodation needs. If you have not previously contacted them I encourage you to do so.
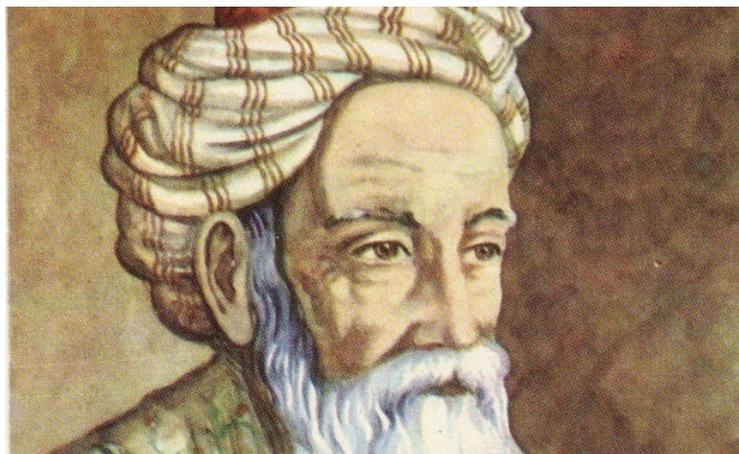
Omar Khayyam 1048-1131
Khayyam was an astronomer, astrologer, physician, philosopher, and mathematician. In 1070, he published *Treatise on Demonstration of Problems of Algebra and Balancing*. In it he showed that a cubic equation can have more than one solution. He also showed how the intersections of conic sections such as parabolas and circles can be utilized to yield geometric solutions of cubic equations.
<www.famousscientists.org/omar-khayyam/>.

If you are a Valencia campus student, contact Equal Access Services at Valencia Campus, Jeanne Lujan at (505)925-8910 or Valencia Student Services. If you are a main campus student you can receive documentation from the main campus Accessibility Resource Center. I will not guarantee accommodation without the appropriate documentation.

Collegial Behavior: Since I assume you are all adults, I will expect from you respectful adult behavior. Engaging in disruptive or unruly behavior could result in your being asked to leave, at which time you will be counted absent and a referral will be sent to the Associate Dean of Student Services. Continuing to behave in this way could result in your being dropped from the course. Disruptive or unruly behavior includes but is not limited to:
- texting or talking on your cell phone at any time during class,
- continually talking with your neighbor when we are not working on a group activity,
- working on homework from another class,
- reading material or watching media on a mobile device not related to this course or at a time that is inappropriate,
- refusing to participate in the class activities.

Academic Integrity
Having academic integrity is paramount to your success in any class. Plagiarism or cheating is not tolerated. Any instance of this will result in a grade of zero for that assignment. Here is the link to the UNM Academic Dishonesty Policy: https://policy.unm.edu/regents-policies/section-4/4-8.html.

The policy states:
Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or who otherwise fails to meet the expected standards.

University Policies (continued)

Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic Dishonesty is defined as:

"Academic dishonesty" includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.
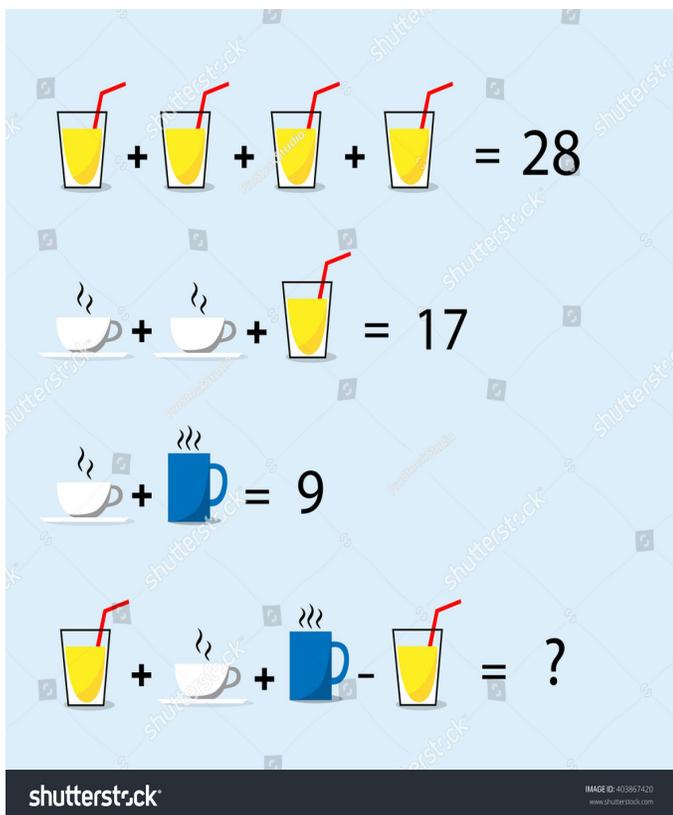
Title IX Statement: In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see pg. 15 - http://www2.ed.gov/about/offices/list/ocr/docs/qa-201404-title-ix.pdf). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu).

For more information on the campus policy regarding sexual misconduct, see: https://policy.unm.edu/university-policies/2000/2740.html

Grading

COURSE AVERAGES:

Attendance/Class Participation	70 points
Homework	300 points
Math Center Chapter Worksheets	90 points
Projects (2 of these, 20 points each)	40 points
Term Exam (two, 100 points each)	200 points
Cumulative Final Exam*	300 points
Total	**1000 points**

*You must score at least a 70% on the final exam *and* have a course average of 70% or better (700 or more total points) to earn a passing grade in the course.

GRADING SCALE:

Letter Grade	Final Exam score AND Course Weighted Average
A	70% or better **AND** 90% or better
B	70% or better **AND** 80% to 89%
C	70% or better **AND** 70% to 79%
CR	70% or better **AND** 70% or better
D	Any **AND** 60% to 69%
F	Any **AND** Less than 60%
NC	Any **AND** 69% or less

Math 120: Intermediate Algebra (Fall 2018) *(Course outline is subject to change)*

Week	Dates	Sections / Topics	Assignments
1	8/21-8/23 T/Th	Introduction *Unit 1:* Sec. 5.1, 5.2, 5.4, 6.1, and 6.2	
2	8/28-8/30 T/Th	*Unit 2:* Sec. 8.1, 8.2, 8.3, and 8.4	MML Unit 1 Homework due
	8/31 F	**Last day to add a course (5pm)**	
3	9/4-9/6 T/Th	*Unit 3:* Sec. 8.8	MML Unit 2 Homework due
	9/7 F	**Last day to drop a course without a grade (5pm)**	
4	9/11-9/13 T/Th	*Unit 4:* Sec. 9.1, 9.2, 9.3, 9.4, and 9.5	MML Unit 3 Homework due
5	9/18-9/20 T/Th	*Unit 5:* Sec. 11.1, 11.2, 11.3, 11.4, and 11.6	MML Unit 4 Homework due
6	9/25-9/27 T/Th	*Review* **Exam #1**	MML Unit 5 Homework due
7	10/2-10/4 T/Th	*Unit 6:* Sec. 9.6, 10.1, 10.2, 10.3, 10.4, and 10.5	
8	10/9-10/11 T/Th	*Unit 7:* Sec. 12.1, 12.2, 12.3, and 12.5 **Fall Break 10/11 (no class)**	MML Unit 6 Homework due
9	10/16-10/18 T/Th	*Unit 8:* Sec. 6.4, 15.1, 12.6, and 16.2	MML Unit 7 Homework due
10	10/23-10/25 T/Th	*Unit 9:* Sec. 16.5	MML Unit 8 Homework due
11	10/30-11/1 T/Th	*Review* **Exam #2**	MML Unit 9 Homework due
12	11/6-11/8 T/Th	*Unit 10:* Sec. 15.2, 15.3, 15.4, 15.5, and 15.8	
13	11/13-11/15 T/Th	*Unit 11:* Sec. 13.1, 13.2, 13.3, and 13.7	MML Unit 10 Homework due
14	11/20-11/22 T/Th	*Unit 12:* Sec. 14.1, 14.2, 14.3, and 14.4 **Thanksgiving Holiday 11/22 (no class)**	MML Unit 11 Homework due
15	11/27-11/29 T/Th	*Unit 13:* Sec. 14.7, 17.2, and 17.3	MML Unit 12 Homework due
16	12/4-12/6 T/Th	*Review*	MML Unit 13 Homework due
17	12/10	**Final Exam Week**	

Course Student Learning Outcomes

Upon successful completion of the course, students will be able to:

A. Demonstrate appropriate use of basic function language and notation.
    Communicate or present mathematical concepts using correct mathematical notation and terminology.
    Correctly use function notation and vocabulary related to functions.
    Determine function values for given domain values and determine domain values for given function values.
    Determine domains for specific functions.

B. Convert between equivalent forms of algebraic expressions.
    Simplify expressions using properties of exponents.
    Add, subtract, and multiply polynomials.
    Rewrite line equations in different forms (slope-intercept, point-slope, standard)
    Factor some types of polynomials.
    Simplify radical expressions.
    Simplify rational expressions.
    Rewrite exponential functions in logarithmic form and vice versa.

C. Solve single-variable equations of the types listed above.
    Solve for a single variable in a proportion.
    Solve for a single variable in a linear equation.
    Solve for a specified variable in a formula.
    Solve quadratic equations using factoring, quadratic formula, and the square root method.
    Solve equations containing rational expressions.
    Solve equations containing radical expressions.
    Solve absolute value equations in one variable.
    Solve exponential and logarithmic equations using equating bases.

D. Interpret and communicate algebraic solutions graphically and numerically.
    Determine equations for lines in the three forms – in particular slope-intercept and point-slope.
    Sketch the graphs of linear functions.
    Interpret slope in relation to variable coefficients and as a rate of change.
    Graph linear inequalities in one variable on a number line and write corresponding interval notation.
    Determine when linear equations represent parallel and perpendicular lines.
    Sketch graphs of quadratic functions.
    Sketch the graphs of exponential and logarithmic functions (without transformations).

E. Demonstrate contextual problem-solving skills that include setting up and solving problems, and interpreting solutions in context.
    Determine linear equations from application problems and solve.
    Set up a linear proportion from an application problem and solve.
    Analyze solutions to application problems and give them contextual meaning.
    Determine the three types of outcomes from a system of linear equations in the context of what the graphs look like (terminology about consistent/inconsistent or dependent/independent not emphasized)
    Determine a system of linear equations from an application problem and solve if possible.
    Find quadratic equations from application problems and solve.

F. Apply appropriate problem-solving methods from among algebraic, graphical, and numerical.
    Perform unit conversions.
    Solve linear inequalities in one variable.
    Simplify expressions written in scientific notation.
    Simplify multiplication and division problems using scientific notation.
    Apply solution methods learned to application problems.
    Solve systems of two linear equations graphically and algebraically.
    Perform operations with radical expressions.
    Perform operations with rational expressions.
    Solve absolute value inequalities in one variable.

Completing Math 120 meets the prerequisites for Math 129, Statistics 145, Math 121, and some science classes.