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M 121.01C: College Algebra

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Textbook: *Precalculus: Functions & Graphs, 4th Edition*
   Mark Dugopolski
   Available as an e-book through MyLabsPlus

WELCOME TO COLLEGE ALGEBRA! M121 is a one-semester three-credit course, intended to strengthen your algebra skills. Its main focus is the study of functions and their inverses: polynomial, rational, exponential, and logarithmic. If you really understand how some of the basic concepts make our number system work, I think you will be able to appreciate not only how useful, but also how beautiful and elegant mathematics can be.

PLACEMENT in M121 is based on your individual mathematics assessment (ALEKS level 4) or successful completion of M095 (Intermediate Algebra). College Algebra (M121) and College Trigonometry (M122) together satisfy the same degree requirements as Precalculus (M151). Credit is not allowed for both M121 and M151.
   Be certain that you are enrolled in the proper math class at the beginning of the semester. You may not be able to switch into a more appropriate class after the first week. If you have any concerns about your placement see me <u>immediately</u>.

WHY DO WE STUDY ALGEBRA? There is intrinsic value in studying algebra, much of which is relevant to the real world. Algebra requires you to learn how to see patterns, how to generalize these patterns into rules, and most importantly how to make connections and solve problems. You also learn valuable communication skills when explaining your reasoning to your peers. The truth is mastering algebra is also like doing push-ups. There's nothing about push-ups that you're going to need to know later in life or that you would have to employ in some way on a job. But the fact remains: push-ups make your body stronger. And in just that way, algebra makes your brain stronger. (Adapted from *To Learn the Value of Algebra, Just Ask an Eighth Grader*: http://www.huffingtonpost.com/ryan-hall/post_3732_b_1749256.html)
   This course has been designed for you, the student. Your willing participation is essential if you plan to succeed in this course. If we can have a motivated, friendly, and enthusiastic class, we will be able to try new things and have a good time while we all learn together.

KEY TO SUCCESS: It is impossible to stress strongly enough how important it is for you to be diligent in your study habits. Pay attention and cultivate a positive attitude! No matter how you feel about studying math, personal responsibility and a solid work ethic are great attributes to be able to claim as your own. You are an important part of this class — you can make it lively and interesting or silent and boring. Develop a positive working relationship with your classmates and instructor. If you keep up with the work, the subject makes sense and the challenges are manageable. If you feel threatened by math, practice some of the techniques used to reduce math anxiety.

COURSE DESCRIPTION: M 121 - College Algebra (From http://www.umt.edu/catalog/cat/cas/math.html)
Offered autumn and spring. Prereq. M 095 (MAT 100) or ALEKS placement ≥ 4. Intended to strengthen algebra skills. The study of functions and their inverses; polynomial, rational, exponential, and logarithmic functions. Credit not allowed for both M 121 (MATH 111, MAT 118), and M 151 (MATH 121, MAT 120).

LEARNING GOALS: Upon successful completion of the course, students will be able to:
1. Use factoring to solve, find zeros or x-intercepts of polynomial, rational polynomial, and algebraic equations or functions.
2. Solve linear, quadratic, and rational exponential and logarithmic equations and be able to use each of these to model and solve applied problems.
3. Solve absolute value equations and inequalities and express solutions of inequalities in interval notation.
4. Identify relations vs. functions; use function notation; identify domain, range, intervals of increasing/decreasing/constant values; algebraically and graphically identify even and odd functions.
5. Find zeros, asymptotes, and domain of rational functions.
6. Evaluate and sketch graphs of piecewise functions and find their domain and range.
7. Use algebra to combine functions and form composite functions, evaluate both combined and composite functions and their graphs, and determine their domains.
8. Identify one-to-one functions, find and verify inverse functions, and sketch their graph.
9. Graph linear, polynomial, radical, rational, exponential, logarithmic and circular equations.

COURSE CONTENT:
1. Equations, Inequalities, and Modeling (Equations in One Variable, Constructing Models to Solve Problems, Equations and Graphs in Two Variables, Linear Equations in Two Variables, Quadratic Equations, Linear and Absolute Value Inequalities)
2. Functions and Graphs (Functions, Graphs of Relations and Functions, Families of Functions, Transformations, and Symmetry, Operations with Functions, Inverse Functions, Constructing Functions with Variation)
3. Polynomial and Rational Functions (Quadratic Functions and Inequalities, Zeros of Polynomial Functions, The Theory of Equations, Miscellaneous Equations, Graphs of Polynomial Functions, Rational Functions and Inequalities)
4. Exponential and Logarithmic Functions (Exponential Functions and Their Applications, Logarithmic Functions and Their Applications, Rules of Logarithms, More Equations and Applications)

CLASS ATTENDANCE: Attendance is not part of your final grade in M121, but no one can teach you if you are not in class engaged and ready to learn. Come to class and come prepared. Do your homework regularly; don't fall behind. You will be more successful if you study every day rather than try to cram. You cannot expect to succeed in this course if you miss several classes; important information may be shared at any time that may not be posted on MyLabsPlus.

University of Montana policy states:

Students who are registered for a course but do not attend the first two class meetings may be required by the instructor to drop the course. This rule allows for early identification of class vacancies to permit other students to add classes. **Students not allowed to remain must complete a drop form or drop the course on the internet (**http://cyberbear. umt. edu**) to avoid receiving a failing grade.** *Students who know they will be absent should contact the instructor in advance.*

Students are expected to attend all class meetings and complete all assignments for courses in which they are enrolled. Instructors may excuse brief and occasional absences for reasons of illness, injury, family emergency, or participation in a University sponsored activity. (University sponsored activities include for example, field trips, ASUM service, music or drama performances, and intercollegiate athletics.) Instructors shall excuse absences for reasons of military service or mandatory public service.

CALCULATOR: A graphing calculator is required for M121; the Department of Applied Arts and Sciences recommends and uses Texas Instruments models TI-83 or TI-84 (regular or plus editions). Calculators with symbolic manipulation capabilities (e. g. TI-89, TI-92) will not be allowed in testing situations. Be sure to check out the Pearson TI calculator tutorial under Tools for Success on MLP!

MYLABSPLUS HOMEWORK and QUIZZES: MyLabsPlus is an innovative way for you to do homework with immediate feedback. Every section of the M121 text covered in class has a corresponding assignment in MyLabsPlus. Homework questions can be submitted up to three times until the assignment closes. There is a chapter quiz for each of the chapters covered in class; each quiz can be taken twice and the highest score is the recorded score. **NOTE:** these assignments and chapters are open for specific times and in a specific order. Check the MyLabsPlus calendar frequently to be sure you are keeping current with your assignments. You must keep up with the progression in order to succeed in this course. *Late homework is subject to a 20% penalty.* Late homework assignments can be submitted up until 5 PM on the last day of regular class meetings.

You can find the MyLabsPlus icon at the top of the my.umt.edu page: http://my.umt.edu/.

TESTS: There will be four tests given over the course of the semester. The scheduled dates are shown on the Course Outline and are *not* flexible. If arrangements for making up a test have not been made within a week, the test grade is automatically set to zero. You are allowed to use a calculator and <u>one</u> 8½"x11" page of notes (front and back). **You are not permitted to use a cell phone**.

Corrected tests will be returned within one week after the test date. If you have questions regarding the grading of your test, please wait until after class to discuss it.

FINAL EXAM: The final exam for this class will be given in class during finals week. You are allowed to use a calculator and <u>one</u> 8½"x11" page of notes (front and back). **You are not permitted to use a cell phone**. The final exam is optional for any student who has an A in the course on the last day of classes.

TUTORING: Math tutoring is available for all UM students. Check for hours at the Learning Center at the Missoula College campus (AD 06; 243-7826) and at math@Mansfield (Mansfield Library) on the Mountain Campus: http://www. umt. edu/math/MLC/default. htm.

REASONABLE ACCOMMODATIONS: Students with disabilities may request reasonable modifications. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. For more information, please consult http://www.umt.edu/disability. Examples of reasonable accommodations include extra time or use of a quiet room for tests and/or quizzes. To qualify for reasonable accommodations you must provide a letter from DSS. You are responsible for making the necessary arrangements with DSS (for the Mountain Campus) or the ASC (for the Missoula College campus). If you have any questions, please contact me.

ACADEMIC CONDUCT: All students must practice academic honesty as defined by the Student Conduct Code, available at http://www.umt.edu/vpsa/policies/student_conduct.php Academic misconduct is subject to an academic penalty by the instructor and a disciplinary sanction by the university.

GRADE OPTION: M121 must be completed with a grade of C- or better in order to contribute towards satisfying the UM Math Literacy requirement. Auditing M121 or taking it with the C/NC option will not fulfill the requirement.

GRADING POLICIES:
> Your final grade will be computed as follows:
> MyLabsPlus homework: 20%
> MyLabsPlus quizzes: 25%
> Tests: 40%
> Final exam: 15%

Letter grades correspond to numerical scores according to this plan:

A	B	C	D	F
90-100%	80-89%	70-79%	60-69%	Below 60%

DROPPING AND ADDING COURSES OR CHANGING SECTIONS, GRADING OR CREDIT STATUS:
Students are expected, when selecting and registering for their courses, to make informed choices and to regard those choices as semester long commitments and obligations. **Documented justification is required for dropping courses by petition**. Some examples of documented circumstances that may merit approval are: error in registration, accident or illness, family emergency, or other circumstances beyond the student's control. Reasons that are not satisfactory include forgetting to turn in a drop slip and protecting a student's grade point average The opportunity to drop a course for the current term ends on the last day of instruction before scheduled final exams. Dropping a course taken in a previous term or altering grading option or audit status for such a course is not allowed. The only exceptions are for students who have received a grade of NF (never attended).

INCOMPLETES: A grade of incomplete will only be considered when <u>all</u> <u>three</u> of the following are true:
1.   The student has been in regular attendance and passing up to three weeks before the end of the academic semester.
2.   Factors beyond the student's control make it impossible to complete the course on time.
3.   The instructor and the student agree that there is a reasonable probability that the student will be able to make-up the work required to complete the course and specific arrangements are drawn up and signed by both.
A student who receives an incomplete has one calendar year to resolve the incomplete (I) before it automatically reverts to a failing grade (F).