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M 121.50C: College Algebra

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M121 Section 50C College Algebra Online
Department of Applied Arts and Sciences
Autumn 2018 Syllabus

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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 exam 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 immediately.

WHY DO WE STUDY ALGEBRA? There is intrinsic value in studying algebra. 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 their reasoning to your peers.

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. 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. If you keep up with the work, the subject makes sense and the challenges are manageable.

A NOTE ON ONLINE LEARNING: Online classes are different from face-to-face classes, as you will soon discover (unless you already have experience with the online format). You have to be self-motivated and responsible.

We have broken the class down into weekly blocks; we strongly recommend that you watch or read the appropriate lessons and make every effort to keep up with the homework. This course could easily take 12 hours per week of your time (if not more), so be sure to budget it. Once you fall behind, it can be extremely difficult to catch up.

We want to be crystal clear here: ***Online education, particularly in mathematics, is not for everybody.*** You have to be willing to struggle with the material and challenge yourself in order to progress. Of course we will respond to your questions and frame our answers as clearly as possible, but there is a frustration factor involved with that progress. Note also that because HW can be repeated four times and has some built-in assistance, it boosts your grade. The online quizzes and tests, however, tend to be more representative of your level of understanding. Only you know how comfortable you are with the material.

COURSE DESCRIPTION: M 121 - College Algebra (From <http://www.umd.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)

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.

MYLABSPPLUS HOMEWORK, QUIZZES, AND TESTS: 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 can be submitted up to three times until the unit closes. **NOTE** that 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. Late assignments are subject to a 20% late penalty. Late homework assignments can be submitted up until 5 PM on the last day of regular class meetings. You must keep up with the progression in order to succeed in this course.

There is an online chapter quiz for each of the chapters covered in class. Each quiz can be taken three times and the highest score is the recorded score.

There are four timed online tests, which are different from the quizzes in format. Tests are meant to give you an opportunity to demonstrate what you have learned, and are not intended to intimidate you. The online tests are similar to the tests we give in my face-to-face classes, but we allow extra time to allow for the inevitable computer issues that arise. We *strongly* suggest that you prepare for the online tests the same way you would for an in-class test: review your notes, write down any formulas you need or questions that often give you trouble for easy reference. Not only will this help you solidify your understanding for the test, but it will also help you prepare for the **final, which is an IN-CLASS exam.**

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

FINAL EXAM: There is a *mandatory* face-to-face final exam for this course. The final exam for this class is comprehensive and is worth 15% of your course grade. The exam will be given at Missoula College River Campus. You may have a page (8½" x 11") of notes (both sides) to assist you and, of course, your calculator (no TI-89 or -92). Because this is an online class, some students will not be able to take the final exam in the scheduled time and place; those students need to arrange for a proctor to administer the exam. More information about proctors will be provided during the semester.

TUTORING: Math tutoring is available for all UM students. Check for hours at the Learning Center at the Missoula College campus (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. 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 student's control.

Reasons that are not satisfactory include:

- forgetting to turn in a drop slip
- 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 all three 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).

M121 Online Fall 2018 Course Outline:

| Semester Week By Week Sections Covered | Online Test Date Range |
|---|---------------------------------------|
| Week 1: Aug 27 - Aug 31 §1.1, 1.2, 1.3 | |
| Week 2: Sept 4 – Sept 7 §1.3, 1.4 (Skip 1.5) | |
| Week 3: Sept 10 – Sept 14 §1.6, 1.7, 1.8 | Chapter 1 Test Opens September 12 |
| Week 4: Sept 17 – Sept 21 §2.1, 2.2 | Chapter 1 Test Closes September 22 |
| Week 5: Sept 24 – Sept 28 §2.3, 2.4 | |
| Week 6: Oct 1 – Oct 5 §2.5, 2.6 | Chapter 2 Test Opens October 01 |
| Week 7: Oct 8 – Oct 12 §3.1 | Chapter 2 Test Closes October 12 |
| Week 8: Oct 15 – Oct 19 §3.2, 3.3 | |
| Week 9: Oct 22 – Oct 26 §3.4, 3.5 | Chapter 3 Test Opens October 22 |
| Week 10: Oct 29 – Nov 2 3.5, 3.6 | |
| Week 11: Nov 5 – Nov 9 3.6 | Chapter 3 Test Closes November 13 |
| Week 12: Nov 12 – Nov 16 §4.1, 4.2 | |
| Week 13: Nov 19 – Nov 23 §4.2 §4.3 | Chapter 4 Test Opens November 16 |
| Week 14: Nov 26 – Nov 30 § 4.4 | |
| Week 15: Dec 3 – Dec 7 Review | Chapter 4 Test Closes December 7 |
| Final Exam- Face-to-Face at Missoula College December 10 – December 14 | TBA |