Fall 9-1-2018

M 151.00: Precalculus

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M 151 (Precalculus)   Fall 2018

Section	MTWF	Room	Instructor (Click for Email)	Office	Phone
1	10 am	MATH 211	Regina Souza	Math 104	243-2166
2	11 am	MATH 211	Regina Souza	Math 104	243-2166

Walk-in Tutoring Centers: Math Learning Center (MLC) and Math@UC (click for location/hours).

Office Hours (for all instructors): TBA (it will be available on Moodle)

Course Coordinator: Dr. Souza: Room MATH 104, 243-2166, Email: Regina.Souza@umontana.edu
Office Hours for Dr. Souza: Mo, Wed: 2-2:50 pm; Tue: 4-4:50pm, Th: 10-10:50 am, or by appointment.

Text book:
 Functions Modeling Change 5E Custom eText for UM, by Connally, Wiley Custom (available at the bookstore). Click Vital Source if you'd prefer an EBook. (Do not buy the regular 5th edition, the UM Custom Edition includes an extra chapter in trigonometry.)

Graphing Calculator
A graphing calculator is required. Class demos will be given with a TI-83 or TI-84.

Course Description
Offered autumn and spring. Prereq., ALEKS placement >= 4. A one semester preparation for calculus (as an alternative to M 121-122). Functions of one real variable are introduced in general and then applied to the usual elementary functions, namely polynomial and rational functions, exponential and logarithmic functions, trigonometric functions, and miscellaneous others. Inverse functions, polar coordinates and trigonometric identities are included. Credit not allowed for both M 151 and M 121 or 122. Credit hours: 4

Learning Outcomes
Upon completion of this course students will be able to:
1. Demonstrate conceptual understanding of functions and solve problems using four different points of view: geometric (graphs, pictures), numeric (evaluation, tables), symbolic (formulas, trigonometric identities), and written (verbal descriptions and interpretations).
2. Be flexible and have the ability to choose between these points of view when solving problems such as evaluating functions; solving equations; identifying where a function is increasing, decreasing, positive, or negative; finding domain and range, intercepts, slope, vertex, concavity, symmetries, periodic behavior, end-behavior, and asymptotes.
3. Use similarity of triangles and symmetries of the circle to compute trigonometric ratios and to obtain basic relationships between them. Compute the values of special angles in degrees or radians. Choose between the Pythagorean theorem, law of sines or law of cosines when solving right or oblique triangles.
4. Create graphs when given a formula; write a formula when given a graph. Convert between Polar and Cartesian coordinates, plot points and graph polar equations.
5. Build new functions from existing ones: using transformations, composition, and the algebra of functions. Identify when a function has an inverse. Identify domain and range, graph and compute a formula for the inverse, when possible.
6. Describe real world situations using linear, quadratic, piecewise, polynomial, power, rational, exponential, logarithmic and trigonometric functions, and interpret functions and their parameters in real word contexts.

General Education Learning Outcome: Upon completion of the mathematical literacy requirement, a student will be able to apply effectively mathematical reasoning to a variety of applied or theoretical problems.

Course Content

1. *Graphs, Functions, Applications* (Function Notation, Linear Functions, Equations of Lines, Applications, Solving Linear Inequalities, Increasing, Decreasing, and Piecewise Functions, Algebra of Functions, Composition of Functions, Symmetry and Transformations; Quadratic Functions)
2. *Exponential and Logarithmic Functions* (Inverse Functions, Exponential and Logarithmic Functions and their Graphs, Exponential and Logarithmic Equations, Applications)
3. *Trigonometric Functions* (Trigonometric Functions and their inverses, Applications, Arc Length, Graphs, Identities (Sum, Co-function, Double-Angle), Trigonometric Equations, Polar Coordinates)
4. *Polynomial and Rational Functions* (Short-run Behavior, Graphs, Comparing Power, Exponential and Logarithmic Functions, Fitting Exponentials and Polynomials to Data, Applications.)

Grading Policies

Your course grade will be based on 4 midterm exams, a cumulative final exam and other activities. A tentative schedule was distributed in class and is available on Moodle.

Assignments	Points and Percentages
Four midterms (100 points each; Sept 14, Oct 5, Oct 21, Nov 20)	400 points (50%)
Other activities (homework, WeBWorK, quizzes, in-class activities, etc.)	200 points (25%)
Cumulative Final Exam (all sections Tuesday, Dec 11, 5:30-7:30 pm)	200 points (25%)

Grading scale:

$\geq 93\%$	$\geq 90\%$	$\geq 87\%$	$\geq 83\%$	$\geq 80\%$	$\geq 75\%$	$\geq 70\%$	$\geq 65\%$	$\geq 62\%$	$\geq 58\%$	$\geq 55\%$	$< 55\%$
A	A–	B+	B	B–	C+	C	C–	D+	D	D–	F

M151 must be completed **with a C- or better** to fulfill the math literacy requirement. Taking M151 with the Credit/NoCredit option will not fulfill the requirement.

Some Strategies to Complete This Course Successfully

- **Check you have the prerequisites:** you need an Aleks placement level 4, M02 $\geq$ 17, or consent of instructor.
- **Regular attendance:** give support to and get support from your classmates and instructor during class.
- **Read the textbook both before and after the topics are covered in class:** read the authors' introductory remarks to get a feel for the material, take the reading assessment if your instructor provides one, or use the ``Check Your Understanding" problems at the end of each chapter. Redo examples on your own and then compare your solution with the authors' approach. Read the ``Summary'' or create your own summary before you start your homework.
- **"Do math":** One of the best ways to learn mathematics is to do mathematics. Each class will have both written homework and online WeBWorK assignments. Expect at least 2 hours of work outside class every day.
- **Get some one-to-one interaction:** take advantage of your instructor's regular office hours (also available by appointment), meet with tutors or with your classmates at the Math Learning Center (in the Math building, Room Math 011) or Math@UC, create a study group or find a study partner. For some of us this is the most effective (and most fun) way to learn math.
- Use course webpages and login to the Moodle supplement for more information.

Some General University Policies

- **Make-ups:**   Exam make-ups will be given only under special circumstances (illness, UM-sponsored travel, family emergency, etc.) Please make arrangements as soon as you know you will miss an exam. Early finals (Dec. 10 or earlier on Tuesday, Dec. 11) will be given only under exceptional circumstances; and need the approval of the course coordinator.
- **Disabilities:** Students with disabilities are welcome to discuss accommodations with me. More information can be found at the website of the Disabilities Services for Students (DSS) (http://www.umt.edu/dss/). Disability Services now requires one week's notice for scheduling exams.
- Important Dates/Deadlines (click for links): Petitions to drop between October 29 and December 7 must be approved by the Dean of the student's major. Incompletes may be given only if a student has been in attendance and doing passing work up to 3 weeks before the end of the semester. See these and other policies in the student catalog.
- **Misconduct:** All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. See Student Conduct Code.