

# Math 106: University Math II

## University of Oregon, Fall 2013

### Introduction:

Welcome to University Math II. The prerequisite for this course is Math 95 or a satisfactory placement test score. Note, Math 105 does not count as a prerequisite for this course. Statistics courses also do not meet the prerequisite.

University Math II is the second in a series. Math 105-6-7 can be taken in any order that you like. In Math 106 we will focus on finance, logarithmic and exponential functions, and geometry. Depending on time, we may also cover a brief introduction to number theory.

### Required Material:

- Stapler
- Pencils and erasers
- Lined paper free of frayed edges
- Scientific Calculator with at least three memory slots
- Textbook: *Mathematics: A Practical Odyssey, 7<sup>th</sup> Edition. Johnson and Mowry.* This book is also available in paperback form with the title: *University Math I and II, Math 105/106, 3<sup>rd</sup> ed.* Either text will work fine (they are the same!).
- Access to Microsoft Excel (directing given will be for a Excel 2010 for the PC)
- University Email/Blackboard access. (Required to check this daily)

**Course Goals:** Gain facility with several applications of mathematics in "real world" context including the finance of interest-bearing loans, geometry, and exponential and logarithmic expressions, as well as number theory (if time).

A successful student should:

- Accurately solve algebraic equations including quadratic and trigonometric ones.
- Identifies what finance formula to use for each type of word problem including simple interest, compound interest, annual yield, annuities, simple interest amortized loans, finance charges, credit cards, car loans, add-on interest loans.
- Solve for unknowns in the different finance equations
- Accurately and efficiently use their calculator
- Solves logarithmic and exponential equations.
- Identifies and applies exponential and logarithmic properties.
- Solves problems involving logarithmic scales such as earthquakes, decibel ratings, etc.
- Knows and applies basic geometry formulas for area, surface area, and volume and how to apply them to different word problems and given figures.
- Applies algebra concepts to geometry
- Identifies the trigonometric functions including sine, cosine, tangent, cotangent, arctangent, arcsine, arccosine. Solves word problems and equations involving these functions.
- Converts units for both standard and nonstandard units. (For example: Egyptian units from ancient Egypt)
- Solves special triangles without the use of a calculator.

- Solves problems involving similar and congruent triangles. Can do basic proofs involving congruent triangles.
- Uses illustrations to explain why the basic area formulas work for rectangles, triangles, trapezoids, and parallelograms.
- Identifies shape categories such as rectangles, rhombus, parallelogram, etc. Can give several identifications for shapes such as a square is a type of rectangle and a type of rhombus.
- Solves word problems using the conic sections.
- Identifies foci using the equation of an ellipse, circle, and hyperbola.

**A note about assignments:**

Besides homework, quizzes, and exams, I like to assign a project for 106 dealing with simple interest amortized loans. This gives students a greater context for the finance discussion and helps them better understand the use of formulas and how to apply them to a real world situation. Any instructor wanting to use my project should email me and I'll be happy to share it.

**Grading:**

One possible grading scheme is as follows:

97-100: A+	77-80: C+
92-97: A	72-77: C
90-92: A-	70-72: C-
87-90: B+	67-70: D+
82-87: B	62-67: D
80-82: B-	60-62: D-

Homework	15%
Quizzes	10%
Project	5%
Midterms	40% (20% each)
Final	30%

These are the homework assignments I have assigned in the past: All problems are in the back of the given section. Start early! Worksheets will be assigned along with these homework problems.

<b>Section</b>	<b>Required</b>	<b>Recommended</b>
8.1	4, 8, 18, 20, 24, 28, 34, 42	All Odds
8.2	6, 8, 12, 14, 16, 18, 22, 30, 34	All Odds
8.3	8, 13, 18, 24	
8.4	4, 6, <b>7, 8</b> , 12, 14, 18	All Odds
8.5	6, 10, 12, 16, 20, 28, 34, 36, 38, 44	All Odds
8.7	2, 6, 8, 10, 14, 18	All Odds
5.1	2, 8, 12, 16, 18, 22, 34, 38, 42	All Odds
5.2	4, 8, 14, 20, 26, 30, 36, 42, 50	All Odds
5.3	2, 12, 14, 22, 24, 26, 28, 30, 35	All Odds
5.4	6, 8, 13, 14, 18, 34, 38, 46	All Odds
5.5	10, 12, 14	9-15
5.6	4, 8, 10, 14	All Odds
10.0A	10, 14, 26, 28, 34, 36, 42, 48, 58	All Odds
10.0B	2, 10, 20, 28, 32, 38, 44, 50, 54, 68, 72, 74	All Odds
10.1	4, 8, 10, 18, 19, 27, 30	All Odds
10.2	4, 6, 10, 14, 20, 24, 28, 30	All Odds
10.3	4, 8, 16, 20, 24, 26, 28, 30, 32	All Odds
Ch 10 Review	None	1-29
TAXES	TBA	TBA