

COURSE NUMBER: **MTH 115**

SAMPLE SYLLABUS

COURSE TITLE: **Survey of Algebra and Trigonometry**

CREDIT HOURS: **4.0**

TEXTBOOK: **Blitzer, Algebra and Trigonometry (UB custom 3rd ed., or regular 3rd ed.) , Prentice Hall**

**NOTE: This document is published only as an indication of what is typically taught in this course. Instructors have the responsibility of deciding on topics to be omitted, additional topics to be included, and the emphasis, ordering, and pacing of presentation of topics.**

**Calculator:** **TI-30Xa Texas Instruments.** This non-programmable calculator is a *required purchase* for the students. **Its use must be allowed and encouraged throughout the course.** Its use on examinations should be allowed, while the use of any other calculator should not be allowed. Should students complain about not being able to use the calculator they already have (most likely a programmable graphing calculator), they should be reminded that this course is about learning how to do precalculus mathematics, not about how to get a machine to do precalculus mathematics.

**Description:** This is a precalculus course and covers topics from the NYS Regents Math B curriculum: **order, absolute value, inequalities, exponents, radicals, polynomials, rational expressions, solving systems of linear equations, quadratic equations and inequalities, functions (rational, logarithmic, exponential, trigonometric), graphing, trigonometric identities, and application problems throughout.** This fast paced course is designed to review Math B and prepare students for further courses in mathematics. Persons with three years of high school math, but with weak algebra skills should take ULC 147 before MTH 115. Persons who have had only two years of high school mathematics may take MTH 115 or may prefer to take a two semester sequence covering this material more thoroughly and at a more moderate pace: ULC 147 and ULC 148.

**Syllabus:** **The course should cover Chapters 1 through 6, (omitting Sections 3.6 -3.7, 4.5 and 6.4), and include also Sections 7.1, 7.2, 8.1, and 8.4. Please note that this constitutes more than 600 pages from the text. Instructors should take care in their presentation in order to be able to cover the entire body of material. There should be at least two (2) in-class tests and a final examination.** One possible arrangement to achieve this is as follows: (based on a 13-week semester; in the summer this would, of course, have to be pro-rated.)

<i>Week</i>	<i>Section</i>	<i>Topic</i>
1	P.1–P.6	Fundamental Concepts: Algebraic Expressions and Real Numbers, Exponents and Scientific Notation, Radicals and Rational Exponents, Polynomials, Factoring Polynomials, Rational Expressions.
2	1.2-1.5	Linear Equations and Rational Equations Models and Applications Complex Numbers Quadratic Equations
3	1.6-1.7, 2.1-2.3	Other Types of Equations Linear Inequalities and Absolute Value Inequalities Basics of Functions and Their Graphs More on Functions and Their Graphs Linear Functions and Slope
4	2.4–2.8	More on Slope Transformations of Functions Combinations of Functions: Composite Functions Inverse Functions Distance and Midpoint Formulas; Circles
5	*****	***** <b>Review and Test</b> *****
6	3.1–3.5	Quadratic Functions Polynomial Functions and Their Graphs Dividing Polynomials [Note: synthetic division may be omitted] Zeros of Polynomial Functions
7	4.1 - 4.4	Exponential Functions Logarithmic Functions Properties of Logarithms Exponential and Logarithmic Equations

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8	5.1–5.4	Angles and Radian Measure Right Triangle Trigonometry Trigonometric Functions of Any Angle Trigonometric Functions of Real Numbers: Periodic Functions
9	*****	***** <b>Review and Test</b> *****
10	5.5–5.8	Graphs of Sine and Cosine Functions Graphs of Other Trigonometric Functions Inverse Trigonometric Functions Applications of Trigonometric Functions
11	6.1–6.3, 6.5	Verifying Trigonometric Identities Sum and Difference Formulas Double-Angle, Power-Reducing, and Half-Angle Formulas Trigonometric Equations
12	7.1–7.2	The Law of Sines The Law of Cosines
13	8.1, 8.4	Systems of Linear Equations in Two Variables Systems of Nonlinear Equations in Two Variables

**NOTE 1:** It might be necessary to spend more time on the preliminary material (including such things as exponents and radicals) than is provided here. It would be a good idea to start the course with a diagnostic test in order to see what portions of the preliminary material (which one hopes is review) need to be covered in greater depth. It is possible to create such a diagnostic test to be taken online using the publisher’s material. (For example, there is a “Chapter Test” available on the ancillary website [www.prenhall.com/blitzer/](http://www.prenhall.com/blitzer/).)

Also, note that students can test themselves on their readiness for this course using the self diagnostic tests on the Department’s home page. (See [www.math.buffalo.edu/rur\\_index.html](http://www.math.buffalo.edu/rur_index.html)). There are two versions of tests referenced there, one from the University of New Brunswick and another from the University of Arizona.

**NOTE 2:** Instructors should tell students **early** about the Department Help Center in Room 107, Math Bldg.