



University at Buffalo *The State University of New York*

Thomas J. Edwards Learning Center

ULC 148 – Precalculus Intermediate Algebra & Trigonometry – 4cr – SPRING 2019

Instructor: _____

Office: **213 or 215** Baldy Hall – North Campus

Email: _____

Office Hours: _____

Class Time(s) and Location(s)

ULC 148-____ (Reg._____) Day of the Week: _____ Time: _____ Location: _____

Class Time(s) and Location(s)

ULC 148-____ (Reg._____) Day of the Week: _____ Time: _____ Location: _____

Pre-Requisite: ULC 147 or equivalent

Credit: ULC 148 satisfies the Math and Quantitative Reasoning requirement for the UB Curriculum.

If you have taken a more advanced math course for credit (e.g. MTH 121, 141) or MTH 115, you are not eligible to take this course

Course Description

This course reviews pre-calculus algebra and trigonometry, emphasizing functions (transformations, combinations, and composite functions). Topics include graphing and applications of linear, inverse, quadratic, polynomial and rational functions; limits and the derivatives; exponential and logarithmic functions and applications; and trigonometric functions emphasizing sine and cosine.

Core Learning Outcomes

Upon completion of this course, students will be able to master the algebraic and trigonometric tools and higher-order thinking skills necessary for success in future mathematics courses while building confidence in their mathematical abilities. Students will gain an increased knowledge of the topics of algebra and trigonometry and learn how these can be applied to solve problems.

By the end of this course students should be able to:

- Understand how to graph polynomials (including quadratics), rational, exponential, logarithmic and trigonometric functions by determining roots, end behavior, x-intercept, y-intercept, asymptotes etc. where appropriate
- Apply the appropriate properties of logarithmic expressions to simplify expressions and solve equations.
- Model data sets to predict future outcomes
- Evaluate trigonometric function of any angle (exact value where applicable) in radians and degrees by applying appropriate identities and/or formulas
- Verify trigonometric identities by applying appropriate identities
- Solve trigonometric equations by using appropriate identities and/or formulas
- Find limits using tables, graphs, and properties of limits
- Determine the continuity of a function at a point using limits

Students will be assessed through classwork, homework, quizzes, and exams.

Course Materials

MyMathLab: **MANDATORY** online access code that includes the electronic version of the textbook (e-text)

Textbook: (optional hard copy version) Algebra and Trigonometry, **5th UB Custom Edition**, Robert Blitzer (2017).

Additional resources can be found on UBLearns.

Calculators: A non-programmable, non-graphing calculator is a **required purchase** for this course. Its use will be allowed and encouraged throughout all aspects of this course. **Any calculators more advanced, will not be allowed.** It is the responsibility of the students to check with the instructor that the calculator they have is appropriate for the course. (Recommended: **TI-30Xa, TI-30X IIS, Casio FX-300**)

Course Requirements

Assignments: (See Assignments on UBLearns or MyMathLab for details and dates)

Attendance: Attendance in all classes is required and will be taken every day. Students may be justifiably absent from classes due to religious observances, illness documented by a physician or other appropriate health care professional, conflicts with university-sanctioned activities documented by an appropriate university administrator, public emergencies, and documented personal or family emergencies. The student is responsible for notifying the instructor in writing with as much advance notice as possible. Instructors may determine a reasonable amount of coursework that should be completed in order to make up the student's absence. Students are responsible for the prompt completion of any alternative assignments.

Grading Policy: Your final grade will be broken down in one of the following ways.

<u>Option A</u>		<u>Option B</u>
70%	Three in-class Examinations	40%
30%	Homework, Quizzes, Miscellaneous	30%
N/A	Cumulative Final Exam	30%

Final course grades will be determined by the following breakdown:

A	93.0-100.0	B+	87.0-89.9	C+	77.0-79.9	D+	67.0-69.9
A-	90.0-92.9	B	83.0-86.9	C	73.0-76.9	D	60.0-66.9
		B-	80.0-82.9	C-	70.0-72.9	F	0-59.9

NOTE: Quizzes, homework, and the "other" portions comprise 30% of your final grade. It would not be beneficial to neglect these assessments as they may make or break the grade you receive in this class.

Examination: There will be three one-hour, in-class exams and a three-hour *optional* comprehensive final exam during finals week. The material that will be tested on the exams will be taken from the text, class notes, homework problems and class handouts. Review sheets may also be provided as a *study guide*; however, it will be necessary to study homework, class notes, and quizzes in preparation for all exams. In addition, optional outside-of-class review sessions may be held for review of material. A grade of zero (0) will be assigned for any examination missed unless suitable documentation is provided to the instructor **within 24 hours of the exam being given**.

As a supplement to exams, a minimum of 6 quizzes will be graded throughout the semester. A grade of zero (0) will be assigned for any quizzes missed and no make-up quizzes will be given. All dates will be announced in class and posted on UBLearns.

Homework: Assignments will be given on a regular basis. You will probably need to spend around 6 hours per week doing homework and reading assignments. Intensive studying just before an exam (cramming) will not compensate for daily preparation. If you are unable to devote at least 6 hours per week outside of class, you are advised not to take the course. Unless otherwise noted by your instructor, you are encouraged to work with others as frequently as possible on material for this class.

UB Portfolio: If you are completing this course as part of your UB Curriculum requirements, please select an 'artifact' from this course that is representative of your learning and upload it to your UBPortfolio (powered by Digication) account. Templates have been created for this purpose. Artifacts include homework assignments, exams, research papers, projects, lab reports, presentations, and other course materials. Your final UB Curriculum requirement, UBC 399: UB Curriculum Capstone, will require you to submit these 'artifacts' as you process and reflect on your achievement and growth through the UB Curriculum. For more information, see the UB Curriculum Capstone website: <https://www.buffalo.edu/ubcurriculum/capstone.html>.

Incomplete Grades: A grade of incomplete means that an event has occurred that is preventing the student from completing the coursework needed to earn a grade. There are two conditions for receiving an incomplete. First, there must be some extreme circumstance that justifies the "I" grade, and second, **the student must be passing the course**. It should be understood that if a student meets these two conditions, they will only be allowed to finish the coursework that they were unable to complete. An "I" grade does not erase grades on exams, quizzes, homework, etc. that were completed before the "I" grade is issued. Students have only one semester to complete the course. Final arrangements must be made with the Department's Director.

Participation: You will be expected to participate in class. Learning is an active, not passive endeavor. Group work may also be used extensively throughout the course, so you will be expected to interact with your fellow classmates. Evaluation of the student in this category will be left up to the individual instructors' discretion.

<p>CELL PHONES: Use of cell phones and text messaging are strictly prohibited in class. If you receive an emergency call, please step into the hallway to answer the call and return to class ASAP.</p>
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Academic Integrity

As defined in the Undergraduate Catalog, academic dishonesty consists of cheating, fabrication, facilitating academic dishonesty, and plagiarism. Instances of this include submitting someone else's work as your own, submitting your own work completed for another class without permission, or failing to properly cite information other than your own. The list above is not all inclusive. Any form of academic dishonesty will not be tolerated, and any sign of academic dishonesty will be reported to the appropriate University officials.

The University has a responsibility to promote academic integrity and develop procedures to effectively deal with academic dishonesty. Any form of academic dishonesty will be handled in accordance with the UB Undergraduate Policy regarding academic integrity. The Academic Integrity policy can be viewed here: <https://catalog.buffalo.edu/policies/integrity.html>

Any form of plagiarism will result in a grade of "F" for that assignment. Any second form of plagiarism will result in a grade of "<F>" in the course.

Reasonable Accommodation

If you have a disability and may require some type of instructional and/or examination accommodation, please inform Instructor early in the semester so that we can coordinate the accommodations you may need. If you have not already done so, please contact the Accessibility Resources office. The office is located at 60 Capen Hall and the telephone number is (716) 645-2608.

<https://www.buffalo.edu/administrative-services/policy1/ub-policy-lib/reasonable-accommodation.html>

The MATH PLACE: Beginning the **second** week of classes, **FREE** tutoring is available in the Math Place **located in Baldy Hall, Room 211**. Hours of operation will be posted on the web site: <http://arts-sciences.buffalo.edu/ulc> . Experienced tutors as well as instructors will be available to assist students with any material related to the ULC classes. All students are encouraged to take advantage of this valuable **FREE** resource.

Any student maintaining a grade below a "C" in the course is expected to visit the Math Place at least 2 hours per week.

Important Dates: SPRING 2019 Semester

Monday, January 28

Spring 2019 classes begin

MONDAY, February 4

LAST DAY TO DROP/ADD COURSES

Monday, March 18 to Saturday, March 23

SPRING RECESS

Monday, March 25

Classes Resume

FRIDAY, April 19

LAST DAY TO RESIGN WITH "R" GRADE

Friday, May 10

Last Day of Classes

Saturday, May 11 and Sunday, May 12

Reading Days

Monday, May 13 through Saturday, May 18

SEMESTER FINAL EXAMINATIONS

COURSE OUTLINE:

****Approximate timing for the topics below will be announced in UBLearn****

Chapters P-2: Topic Review*

Chapter 3: Polynomial and Rational Functions

- 3.1 – Quadratic Functions
- 3.2 – Polynomial Functions and Their Graphs
- 3.3 – Dividing Polynomials: Remainder and Factor Theorems
- 3.4 – Zeros of Polynomial Functions

- 3.5 – Rational Functions and Their Graphs
- 3.6 – Polynomial and Rational Inequalities
- 3.7 – *Modeling Using Variation**

Chapter 4: Exponential and Logarithmic Functions

- 4.1 – Exponential Functions
- 4.2 – Logarithmic Functions
- 4.3 – Properties of Logarithms

- 4.4 – Exponential and Logarithmic Equations
- 4.5 – Exponential Growth and Decay: Modeling Data

Chapter 5: Trigonometric Functions

- 5.1 – Angles and Radian Measure
- 5.2 – Right Angle Trigonometry
- 5.3 – Trigonometric Functions of Any Angle
- 5.4 – Trigonometric Functions of Real Numbers: Periodic Functions

- 5.5 – Graphs of Sine and Cosine Functions
- 5.6 – Graphs of Other Trigonometric Functions
- 5.7 – Inverse Trigonometric Functions
- 5.8 – Applications of Trigonometric Functions

Chapter 6: Analytic Trigonometry

- 6.1 – Verifying Trigonometric Identities
- 6.2 – Sum and Difference Formulas
- 6.3 – Double-Angle, Power-Reducing, and Half-Angle Formulas*

- 6.4 – Product-to-Sum and Sum-to-Product Formulas*
- 6.5 – Trigonometric Equations

Chapter 7: Additional Topics in Trigonometry*

- 7.1 – *The Law of Sines*
- 7.2 – *The Law of Cosine*

- 7.3 – *Polar Coordinates*
- 7.4 – *Graphs of Polar Equations*

Chapter 8: Introduction to Calculus*

- 8.1 – *Finding Limits Using Tables and Graphs*
- 8.2 – *Finding Limits Using Properties of Limits*

- 8.3 – *Limits and Continuity*
- 8.4 – *Introduction to the Derivative*

*These topics/chapters will be included at the discretion of the instructor.