



University at Buffalo The State University of New York

Thomas J. Edwards Learning Center

ULC 148 – Precalculus Intermediate Algebra & Trigonometry – 4cr – SPRING 2022

Instructor: _____

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

Email: _____

Office Hours: _____

Mode of Instruction: In Person

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, MTH 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 UBLeans.

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 more advanced calculators 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**).

Technology: To effectively participate in this course, regardless of mode of instruction, the University recommends you have access to a Windows or Mac computer with webcam and broadband. Your best opportunity for success in the blended UB course delivery environment (in-person, hybrid, and remote) will require these minimum capabilities listed on the following

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 as follows:

60% Three in-class Examinations
15% Cumulative Final Exam
10% Quizzes
10% Homework
5% Attendance/Participation

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

Examination: There will be three one-hour, in-class exams and a three-hour 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. **The final exam is mandatory. If the final exam is not taken, you will receive an F in the class.**

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 save it in a safe location with a clear title. 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. Artifacts include homework assignments, exams, research papers, projects, lab reports, presentations, and other coursework. 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.

CELL PHONES: Use of cell phones and text messaging are strictly prohibited in class.

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, using resources which are not permitted for an assignment, quiz, or exam, 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. The ULC department is pursuing the fullest penalties for academic dishonesty. This means that **as a default, the penalty pursued for academic dishonesty will be failure of the course.** Any instances of academic integrity will be processed through the Office of Academic Integrity, and may result in **a notation of academic dishonesty on the student's transcript.** 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>

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 which will be operating in person, in **Baldy 211** during the Spring 2022 semester, Mondays-Thursdays from 10am-6pm. Additionally The Math Place will offer virtual hours via Discord on Sundays, 2pm-8pm. 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. More information can be found on the web site: <http://arts-sciences.buffalo.edu/ulc.html>.

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

Additional Resources

Additional free tutoring resources can be found at the Tutoring and Academic Support website:

<https://www.buffalo.edu/studentsuccess/tutoring.html>

We highly recommend that students visit the Academic Resources and Updates for Students page on the Academic Affairs website, found here: <https://www.buffalo.edu/academicaffairs/academic-resources.html>

The Student Success Gateway website has a wealth of information and resources which students will find valuable:

<https://www.buffalo.edu/studentsuccess.html>

Important Dates: Spring 2022 Semester

Monday, January 31, 2022	Classes Begin
Monday, February 7, 2022	Last Day to Drop/Add Classes
Friday, April 22, 2022	Last day to Resign Classes
Monday, March 21 – Saturday, March 26, 2022	Spring Recess
Friday, May 13, 2022	Last Day of Classes
Thursday, May 19, 2022 (Times vary by instructor)	Cumulative Final Exam (administered remotely)

COURSE OUTLINE:

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

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 – Trig. 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 discretions of the instructor