

# Syllabus

## Pre-Calculus Mathematics

### Math 143 BC - Spring 2014

<b>Course Title</b>	Pre-Calculus Mathematics
<b>Credit Hours</b>	6
<b>Length of Course</b>	16 weeks
<b>Prerequisites</b>	Math 99 with a grade of C or better, or Placement Test, or Consent of Department Chairperson.
<b>Section</b>	143 BC (section number: 65520)
<b>Classes</b>	Monday, Wednesday, 9:30 AM – 12:20 PM in Room 3150
<b>Instructor</b>	Marta Hidegkuti e-mail: <a href="mailto:mhidegkuti@ccc.edu">mhidegkuti@ccc.edu</a> Office: Room 3824 D
<b>Office Hours</b>	Monday, Tuesday, Wednesday 12:30 PM – 1:45 PM (Room 3824 D) Tuesday, Thursday 8:30 PM – 9:30 PM (Room 3824 D) Thursday 12:30 PM – 1:45 PM (Math Center) or by appointment Some office hours may be cancelled or re-scheduled due to meetings.
<b>Web Sites</b>	All handouts and announcements will be available on the class's web site, at <a href="http://www.teaching.martahidegkuti.com/Math143/math143_sp14/Math143.html">http://www.teaching.martahidegkuti.com/Math143/math143_sp14/Math143.html</a> In case the web site is down, check at Blackboard. Please e-mail to <a href="mailto:mhidegkuti@ccc.edu">mhidegkuti@ccc.edu</a> if you notice broken links.
<b>Textbook Policy</b>	<b>Due to price consideration, students are welcome to use previous editions of the official textbook, which is</b> Precalculus, by James Stewart, Lothar Redlin, and Saleem Watson, 6th edition, Brooks/Cole, 2012; ISBN Number: 978-0-8400-6807-1 Most topics will be covered by handouts posted on the course's web site.

#### Calculator Policy

The use of a scientific calculator is strongly recommended. Students are expected to bring the calculator to class. The optimal calculator is **TI-30X II S**. The price of this model is between \$15 and \$20. Do NOT purchase a different calculator if it is significantly more expensive. Any calculator different from TI-30X II S has to be approved by the instructor first. If a calculator is able to compute symbolically, (f.e. that  $\sqrt{12} = 2\sqrt{3}$ ), then it is not allowed to be used during quizzes and exams. **During quizzes and exams, students are not allowed to use a graphing calculator. Students are not allowed to use a cell phone as a calculator any time during class.**

#### Supplements

The textbook is bundled with WebAssign. **The use of WebAssign is optional and will not be part of the course.** If students want to use WebAssign, they can log in at <https://www.webassign.net/login.html> and should use the course code **trumcollege 7861 3862**.

#### Important Dates

First class: Monday, January 13	Exam 3: Wednesday, April 2
Holiday, no class: Monday, January 20	Last day to withdraw from classes: Monday, April 7
Exam 1: Wednesday, February 12	Exam 4: Wednesday, May 7
Holiday, no class: Monday, February 17	End of Semester: Saturday, May 10
Exam 2: Wednesday, March 5	

#### Attendance Policy

Attendance is an essential part of the course. Regular attendance is expected of all students in the course. Attendance will be taken each class period. Students are expected to be on time and to attend the entire session. Please make every effort to arrive to class on time. If you are absent, you are responsible for all work and assignments covered in lecture that day.

#### No-Show Withdrawal (NSW)

Students who do not attend the first two class sessions will be withdrawn from the class by the instructor and issued an NSW.

#### Administrative Withdrawal (ADW)

Students will be administratively withdrawn at midterm if at least two of the following apply:

- 1 Less than 70% of quizzes and tests up to the midterm have been attempted.
- 2 Less than 50% of class sessions up to the midterm have been attended.
- 3 Student missed 4 consecutive classes.

#### Withdrawal from the course

Not attending classes does not constitute withdrawal from the course. After midterm, instructors can no longer drop students from the course. If students stop attending classes after the midterm, the instructor can only assign a grade of F. **If you no longer attend classes, it is essential that you stop by at the registrar's office and officially withdraw from the course to protect your average.** The last day for student initiated withdrawal is Monday, April 7. Before withdrawing from the course, students are encouraged to consult the instructor.

# Grading Policies

Students who register late are responsible for all course work they missed due to their absence.

## Grading Scale

Grading of all assignments, quizzes, and exams will be based on the following scale.

90-100: A      80-89: B      70-79: C      60-69: D      0-59: F

## Midterm Grade

The midterm grade will be the weighted average of the grades shown below with their weights.

Exam 1: 30%      Exam 2: 35%      Quizzes: 35%

Before determining the grade given for quizzes, the lowest two quiz scores will be dropped.

## Final Grade

The final grade will be the weighted average of the grades shown below with their weights.

Exam 1: 10%      Exam 3: 20%      Quizzes: 25%

Exam 2: 15%      Exam 4: 30%

Before determining the grade given for quizzes, the lowest three quiz scores will be dropped.

Please retain all class-related material until you receive your final grade for the course. The final exams will not be distributed. They will be kept by the instructor for a calendar year after the course and then they will be destroyed.

## Makeup Policy

**Without exception, there will be no making up quizzes.** Permission to make-up an exam is subject to the discretion of the instructor, and will be granted only in cases of emergency. If an absence is anticipated, the student should notify his/her instructor prior to the absence. Students need to present written documentation to make-up an exam. Without exception, students can only make up one exam in the course. All make-up exams will take place on Friday, May 2.

## Academic Integrity

The CCC has no tolerance for violations of academic integrity., Plagiarism and cheating of any kind are serious violations of these standards and will result, minimally, in the grade of F. All course work will be checked for academic integrity. In this course, the first violation will result in an F for the assignment; the second violation will result in course failure. Make-ups and revisions are not available after an infraction of academic integrity. For further information, please refer to the [student policy manual](#).

# General Information

## Class Room Etiquette

At all times, please treat the instructor, other students, and their opinions with respect. Before arriving to class, please **turn off all cell phones, pagers, and other loud devices. Please make every effort to arrive on time for class.** Please refrain from talking while the instructor is lecturing. If you need an extensive review (for example, due to absence) of material presented in class, please see the instructor during office hours. Valuable class time can not be spent on assisting one or a few students to the detriment of the entire class. Office hours are designated to address these problems.

**Eating is not allowed in the class rooms.** Students are allowed to eat only in designated areas such as the cafeteria or student lounge.

Repeated noises such as sniffing, moaning or sighing are generally normal behavior but are very distracting during quizzes and exams. Students are to refrain from making such noises during quizzes and exams. If there is a medical reason making that impossible, the instructor must be notified in advance so that arrangements can be made for a separate room for that student.

## Office Hours

Arrive to office hours prepared. If you have missed a class, be sure to obtain and read all class-related material (handouts, text book section, and class notes). Have a list of specific questions. If you need help with a problem, bring your work on the problem with you. After your questions are answered, please leave so that the next student can enter. Please do not bring food to the instructor's office.

## Contact

At all times, email is the fastest and most efficient method to contact the instructor. If you wish to contact the instructor about grades or attendance or other administrative issues via email, please use your CCC student account. FERPA (Family Educational Rights and Privacy Act) is a federal law that protects the privacy of student educational records:

[www.ed.gov/policy/gen/guid/fpco/ferpa/index.html](http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html). Faculty cannot reveal information about students, or discuss student records over the phone or unsecure e-mail. CCC student e-mail meets FERPA requirements.

If a student wants to receive class-related information via e-mail to an e-mail address different from the student ccc account, they must first complete a release form posted at <http://www.teaching.martahidegkuti.com/shared/resources/ferpa.pdf>.

If you are contacting me about an assignment, please be sure to include your full name in the message and identify the assignment. Please use grammatically correct sentences in your email with punctuation and correct capitalization.

Communications such as "can u pls reset my quiz thnx" are not acceptable in this course just as much as they will probably not be acceptable at your future job.

## Academic Support Services

**The Math Center** is a free service open to all students. The Math Center, located in Room 1220, is a place where students can do their homework, study for tests, and participate in group study sessions to gain a better understanding of the course material. The Math Center also serves credit level math classes during specific block times during the week. Visit the Math Center for more information.

**The Tutoring Center** is located in Room 162 in the Larry McKeon Administrative Building. Students are encouraged to seek help and guidance during the course. Students have already paid for this service as part of tuition fees. Please note: in order to receive tutoring, students need to sign up in advance. (773) 907- 4785

web site: <http://www.ccc.edu/colleges/truman/departments/Pages/Tutoring.aspx>

**The Student Success and Leadership Institute (SSLI)** is located in Room 162 in the Larry McKeon Administrative Building.. For students who need various other support services to achieve their educational goals. (773) - 907-4714,

web site: <http://www.ccc.edu/colleges/truman/departments/Pages/Career-Services.aspx>

**TRIO Student Support Services** is located in Room 162 in the Larry McKeon Administrative Building. For low-income students, first generation college students, or students with disabilities who need academic support: (773) 907 - 4797. Registration is required at the start of each semester.

web site: <http://www.ccc.edu/colleges/truman/departments/Pages/TRiO-Student-Support-Services.aspx>

**Disability Access Center** is located in Room 1428. The Center verifies needs pursuant to the American Disabilities Act (ADA), determines student academic accommodations, and issues accommodation letters. Registration is required at the start of each semester. (773) 907 - 4725, web site: <http://www.ccc.edu/colleges/truman/departments/Pages/Disability-Access-Center.aspx>

**The Wellness Center** is located in room 162 in the Larry McKeon Building. Services include: Personal, individual counseling, support groups, stress and time management coaching, referrals to community resources, special support for victims of relationship violence and sexual assault includes one-on-one counseling; safety planning; and referrals to medical care, legal services, and emergency child care. Contact: (773) 907-4786 for an appointment or information. Web site:

<http://www.ccc.edu/colleges/truman/departments/Pages/Wellness-Center.aspx>

**GradesFirst** is a student support system that will be used by faculty, advisors and tutors to help students achieve success in their classes. Use GradesFirst to schedule tutoring or advising appointments, or to see communications about your course progress generated by me or your other professors.

# Calendar of Events

Please note that the Calendar of Events is subject to change. Last revised: January 29, 2014

	Monday	Wednesday
Week 1	January 13 — Class 1	January 15 — Class 2
Week 2	January 20 — NO CLASS	January 22 — Class 3 <b>Quiz 1</b>
Week 3	January 27 — NO CLASS	January 29 — Class 4 <b>Quiz 2</b>
Week 4	February 3— Class 5 <b>Quiz 3</b>	February 5 — Class 6 <b>Quiz 4</b>
Week 5	February 10— Class 7 <b>Quiz 5</b>	February 12 — Class 8 <b>Exam 1</b>
Week 6	February 17 — NO CLASS	February 19 — Class 9 <b>Quiz 6</b>
Week 7	February 24 — Class 10 <b>Quiz 7</b>	February 26 — Class 11 <b>Quiz 8</b>
Week 8	March 3 — Class 12 <b>Quiz 9</b>	March 5 — Class 13 <b>Exam 2</b>
Week 9	March 10 — Class 14 <b>Quiz 10</b>	March 12— Class 15 <b>Quiz 11</b>
Week 10	March 17 — Class 16 <b>Quiz 12</b>	March 19 — Class 17 <b>Quiz 13</b>
Week 11	March 24 — Class 18 <b>Quiz 14</b>	March 26— Class 19 <b>Quiz 15</b>
Week 12	March 31 — Class 20 <b>Quiz 16</b>	April 2 — Class 21 <b>Exam 3</b>
Week 13	April 7 — Class 22 <b>Quiz 17</b>	April 9 — Class 23 <b>Quiz 18</b>
☀ ☀ ☀ April 14 – 20 Spring Break ☀ ☀ ☀		
Week 14	April 21 — Class 24 <b>Quiz 19</b>	April 23 — Class 25 <b>Quiz 20</b>
Week 15	April 28 — Class 26 <b>Quiz 21</b>	April 30 — Class 27 <b>Quiz 22</b>
Week 16	May 5 — Class 28	May 7 — Class 29 <b>Exam 4</b>
<b>May 10 — End of Spring 2014 term</b>		

Last day for student initiated withdrawal: Monday, April 7

# Course Information

**Catalogue Description:** Emphasizes the notion of a function as a unifying concept for the topics of college algebra and trigonometry. Families of functions and their characteristics include: polynomial functions; rational functions; exponential and logarithmic functions; and trigonometric functions; and applications involving problem-solving skills. Writing assignments, as appropriate to the discipline, are part of the course.

**Students the Course is Expected to Serve:** This course is intended for students who plan to major in mathematics, engineering, or science.

## Truman College General Education Goals:

Upon successful completion of this course, students will demonstrate the ability to

- think critically, abstractly, and logically.
- communicate effectively in written and oral forms.

## Course Objectives

Solve equations, inequalities, and systems of equations and inequalities of various types.

Solve geometry problems using methods of coordinate geometry.

Analyze the graphs of various families of functions.

Apply the models and characteristics of various families of functions to scenarios in order to solve real-world problems.

Demonstrate an understanding of trigonometric functions and their behaviors.

## Student Learning Outcomes

Upon satisfactory completion of the course, students will be able to:

Determine whether a number is real or not, and if so, if it is rational or irrational.

Solve equations, inequalities, and systems of equations of the following types: linear, quadratic, quadratic in form, polynomial, rational, radical, equations with absolute value, logarithmic, exponential, and trigonometric.

Solve equations over the complex numbers.

Apply the concepts of conics to a contextual (real-world) situation.

Apply the arithmetic-geometric means theorem to a contextual (real-world) situation.

Apply the concepts of arithmetic and geometric sequences to a contextual (real-world) situation.

Apply permutations and combinations to a contextual (real-world) situation.

Apply the concept of probability to a contextual (real-world) situation.

Prove trigonometric identities.

### Polynomial Functions:

Identify the characteristics of a quadratic function (i.e., vertex, axis of symmetry, and concavity).

Compute roots/zeros of a polynomial function by factoring techniques.

Estimate the roots/zeros of a polynomial function using graphs.

Solve polynomial inequalities.

Solve systems of linear equations using matrices and determinants.

Solve systems of linear inequalities.

Solve systems of non-linear equations.

### Rational Functions:

Simplify rational expressions using the division algorithm.

Identify points of discontinuity of a rational function.

Identify vertical/horizontal asymptotes and end behavior of rational functions.

Solve rational inequalities.

### Exponential and Logarithmic Functions:

Define exponential and logarithmic functions.

Simplify exponential and logarithmic expressions using their properties.

Solve exponential and logarithmic equations.

Formulate and apply exponential and logarithmic functions to a contextual situation.

### Trigonometric Functions:

Define the sine, cosine, tangent, and secant functions and their inverses, including the unit circle definition of these functions.

Solve trigonometric equations.

Apply right-angle trigonometry to a scenario.

Verify trigonometric identities.

Identify a trigonometric function from its graph.

Graph a trigonometric function using its properties (e.g., periodicity, amplitude, phase shifts, etc.).

Apply trigonometric functions to basic concepts of physics (e.g., velocity, pendulum movement, basic current).

**The following student learning outcomes (Characteristics of Functions) will be embedded as appropriate in the study of the family of functions listed above.**

Identify the domain and range of a function.

Determine intervals on which functions are decreasing/increasing, continuous/non-continuous, or piecewise.

Identify functions from multiple sources of information (i.e., verbal descriptions, graphs, equations, and tables of values).

Relate the effect of transformations (i.e., translations, rescaling, or reflections) on graphs of functions and their corresponding equations.

Perform operations (i.e., addition, subtraction, multiplication and division) on functions, including the composition of functions.

Decompose a function into a composition of two or more functions.

Formulate and apply a function to a contextual situation.

Determine the conditions under which a function has an inverse.

Identify the inverse of a function from multiple representations.

Reformulate a given function into various representations (i.e., verbal, graphical, algebraic, or tabular).

# Projected Course Outline:

Please note that this is just a plan and it is subject to change. The course's progress will be documented on the class's web site under '[Course Outline](#)'.

**Class 1:** Course Information ([Syllabus](#), [Textbook Information](#), [Calculator Information](#)), [Review of Equations](#), [Factoring A](#), [Fractions and Decimals](#)

Review on your own: [Exponents 1](#), [Simplifying Algebraic Expressions](#), [Graphing Straight Lines](#)

**Class 2:** Completing the square ([Part 1](#), [Part 2](#), [Part 3](#)), [Factoring 1](#), [Radical Expressions](#),

Review on your own: [Linear Word Problems](#)

**Class 3:** [The Pythagorean Theorem](#), [Completing the square - part 4](#), [Graph of a parabola 1](#),

Review on your own: [Quadratic Wordproblems](#), Solving systems of equations [by elimination](#) and [by substitution](#),

**Class 4:** [Writing equations of lines](#), [Graph of a parabola 2](#), Integer exponents ([Practice](#))

Review on your own: [Basic Percent Problems](#)

**Class 5:** [Similar Triangles](#), [Circles - Part 1](#), [Optimization 1](#)

**Class 6:** [Circles - Part 1](#), [Non-linear systems](#) (10.8), [Quadratic Inequalities](#), [Radical Equations](#)

**Class 7:** [Arithmetic Sequences](#), [Right Triangle Trigonometry](#)

**Class 8:** [The Quadratic Formula](#), [Famous Trigonometric Values](#), [Simplifying Trigonometric Expressions](#), [Rational Exponents](#)

**Class 9: Exam 1**

**Class 10:** [Arcs and Sectors in Circles](#), [Trigonometric Identities 1](#) (7.1), [Functions](#) (2.1)

**Class 11:** [Logarithms 1](#), [Domain of functions](#), [Computing Trigonometric Expressions](#)

**Class 12:** [Unit Circle Definition of Trigonometric Functions](#), [Symmetries of the Unit Circle](#), [Trigonometric Equations](#) (7.4)

**Class 13:** [Circles 2](#), [Basic functions and their graphs](#) (2.1, 2.2, 4.1, 4.2), [Graphing trigonometric functions](#) (5.3)

**Class 14 – Exam 2**

**Class 15:** [Logarithms 2](#) (4.4), [Trigonometric Equations 2](#) (7.4, 7.5)

**Class 16:** [Graphing Polynomials 1](#) (3.2), [Graphing Trigonometric Functions](#) (5.3), [Trigonometric Identities 2](#), [Reciprocal of a graph](#)

**Class 17:** [The sum, difference, and double angle formulas](#) (7.2, 7.3), [Division of polynomials](#) (3.3)

**Class 18:** [Exponential equations](#) (4.5), [Complex Numbers](#) (3.5)

**Class 19:** [Rational inequalities](#), [Another method](#), [Geometric Sequences](#) (12.3)

**Class 20:** Tangent lines to parabola ([by completing the square](#), [by discriminant](#))

**Class 21:** [Law of Sines](#) (6.5), [Limits at infinity](#) (13.1, 13.2)

**Class 22: Exam 3**

**Class 23:** Half-angle formulas (7.3), Law of Cosines (6.6), [Solving Triangles](#), [Graphing Polynomials 2](#) (3.2)

**Class 24:** [Inverse Functions](#), [Product-sum and sum-product identities](#) (7.3), [Geometric Series](#) (12.3)

**Class 25:** [Discontinuities of rational functions: Holes and vertical asymptotes](#) (3.7), [Trigonometric Equations 4](#)

**Class 26:** [Graphing rational functions](#) (3.7), [Graphing Trigonometric Functions](#) (5.3)

**Class 27:** Optimization in trigonometry, [Inverse Trigonometric Functions](#) (5.5), [Transformations](#) (2.5)

**Class 28:** [Inverse Trigonometric Expressions](#), Polar Form of Complex Numbers

**Class 29:** Final Review, Composing functions (2.7)

**Class 30: Exam 4**