Syllabus

Pre-Calculus Mathematics
Math 143 GH - Spring 2016

Course Title	Pre-Calculus Mathematics
Credit Hours	6
Length of Course	16 weeks
Prerequisites	Math 99 with a grade of C or better, or Placement Test, or Consent of Department Chairperson.
Section	143 GH (section number: 61296)
Classes	Tuesday, Thursday, 9:30 AM – 12:15 PM in Room 3150
Instructor	Marta Hidegkuti e-mail: mhidegkuti@ccc.edu Office: Room 3812
Office Hours	Monday, Tuesday, Wednesday, Thursday 8:30 AM – 9:00 AM in Room 3812 Monday, Wednesday 3:00 PM – 4:30 PM Room 3812 Tuesday, Thursday 12:30 PM – 1:30 PM Room 3812 or by appointment Some office hours may be cancelled or re-scheduled due to meetings.
Web Sites	All handouts and announcements will be available on the class's web site, at http://www.teaching.martahidegkuti.com/Math143/math143_sp16/Math143.html In case the web site is down, check on Blackboard. Please e-mail to mhidegkuti@ccc.edu if you notice broken links.
Textbook Policy	The Mathematics Department has selected a free (also called open source) textbook. This textbook is Precalculus, An Investigation of Functions, written by David Lippman and Melonie Rasmussen (edition 1.4) and can be downloaded freely at the link http://www.opentextbookstore.com/precalc/1.4/Precalc.pdf. Students will also need an intermediate algebra book. Most topics will be introduced using handouts posted on the class's web site/

Supplements
Some of the quizzes will take place online, at www.MyOpenMath.com. The use of MyOpenMath is free and it will be a mandatory part of the course. Students can enroll in the MyOpenMath course using the Course ID **10030** and enrollment key **Math143GH_sp16**.

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.**

Important Dates
First class: Tuesday, January 19
Exam 1: Thursday, February 11
Exam 2: Thursday, March 10
Exam 3: Thursday, April 14
Last Day for Student Initiated Withdrawal: Monday, April 18
Exam 4 (same as the Final Exam): Thursday, May 12
End of Semester: Sunday, May 15

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 exam have been attempted.
2. Less than 70% of class sessions up to the midterm exam 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 18. Before withdrawing from the course, students are encouraged to consult the instructor.

Quizzes and Quiz Reviews

In this class, there will be two types of quizzes.

Online Quizzes: Quizzes 0, 1, 3, 5, 6, 7, 9, 11, 12, 13, 15, 17, 18, 19, and 21 will be taken online, using MyOpenMath. The deadline for the online quizzes will be 11:30 PM on the night before the class as shown on the Calendar of Events. After the deadline passed, the link to the quiz will no longer be available. To practice for online quizzes, students are provided with online Quiz Reviews that can be repeated many times. These reviews cover the necessary course material and also prepare the students to give answers in the format in which MyOpenMath will accept it as correct. MyOpenMath is a free service and some of its aspects are frustrating. Students will always get credit for a correct answer. If a student thinks that their work was incorrectly marked wrong on a quiz, they should immediately notify the instructor by e-mailing to mhidegkuti@ccc.edu. The e-mail must contain the student's name, and also the quiz number and the number of the problem in question.

In-class Quizzes: Quizzes 2, 4, 8, 10, 14, 16, 20 and 22 will take place during classes on Thursdays. To prepare for these quizzes, students will be provided written quiz reviews.

Grading Policies

Students who register late are responsible for all course work they missed due to their absence. **All assessments (quizzes and exams) will be cumulative.**

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: 40% Quizzes: 30%

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 2: 15% Exam 3: 25% Exam 4: 30% Quizzes: 20%

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 6.

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 and chewing gum are not allowed in the class rooms. Students are allowed to eat only in designated areas such as the cafeteria or student lounge. Writing or drawing on the tables or otherwise marking them are prohibited.

Repeated noises such as sniffling, 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. 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.

Academic Support Services

The Math Center is located in Room 1776 and 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

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.

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.
Prove statements by induction.

Polynomial Functions:

Identify the characteristics of a quadratic function (i.e., vertex, axis of symmetry, and concavity).
Compute roots/zeroes of a polynomial function by factoring techniques.
Estimate the roots/zeroes 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 only a projected outline and is subject to change. As changes occur, they will not be denoted here. The actual progress of the course will be documented in a separate document titled 'Course Outline'. Look for this on the class's web site. Last revised: January 13, 2016.

	Tuesday	Thursday
Week 1	**Class 1 – January 19** Simplifying Algebraic Expressions, Review of Equations, Factoring A, Exponents 1, Graphing Lines, Fractions and Decimals	**Class 2 – January 21** Completing the Square - 1, 2, 3, Factoring 1, Radical Expressions, Linear Word Problems
Week 2	**Class 3 – January 26** The Real Number System, The Pythagorean Theorem, Graph of a Parabola - 1, Completing the Square – Part 4, Systems of Equations – Substitution, Elimination, Word Problems 2 **Quiz 0, Quiz 1** online due Monday, January 25 at 11:30 PM	**Class 4 – January 28** The Quadratic Formula, Writing Equations of Lines, Graphical Solutions, Linear Inequalities, **Quiz 2 -** in class
Week 3	**Class 5 – February 2** Nonlinear Systems, Graph of a Parabola - 2, Integer Exponents, Basic Percent Problems **Quiz 3** online due Monday, February 1 at 11:30 PM	**Class 6 – February 4** Optimization, Quadratic Inequalities, Complex Fractions **Quiz 4** in class
Week 4	**Class 7 – February 9** Circles - Part 1, Intersections, Similar Triangles **Quiz 5** online due Monday, February 8 at 11:30 PM	**Class 8 – February 11** **Exam 1**
Week 5	**Class 9 – February 16** Right Triangle Trigonometry, Rational Exponents **Quiz 6** online due Monday, February 15 at 11:30 PM	**Class 10 – February 18** Trig Function Values of Famous Angles, Simplifying Trig Expressions, Logarithms 1
Week 6	**Class 11 – February 23** Basic Exponential and Logarithmic Equations, Trigonometric Identities 1, Functions **Quiz 7** online due Monday, February 22 at 11:30 PM	**Class 12 – February 25** Basic Functions and Their Properties, Arcs and Sectors in Circles, Radical Equations, Computing Trigonometric Expressions **Quiz 8** in class
Week 7	**Class 13 – March 1** Rotational Angles, Radian Measure, Unit Circle Definition of Trigonometric Functions **Quiz 9** online due Monday, February 29 at 11:30 PM	**Class 14 – March 3** Symmetries of the Unit Circle, Trigonometric Equations 1, Circles 2 **Quiz 10** in class
Week 8	**Class 15 – March 8** Review for Exam 2, Trigonometric Identities 2, Trigonometric Equations 2, **Quiz 11** online due Monday, March 7 at 11:30 PM	**Class 16 – March 10** **Exam 2**

	Monday	Wednesday
Week 9	**Class 17 – March 15** Logarithms 2, Rational Expressions **Quiz 12** online due Monday, March 14 at 11:30 PM	**Class 18 – March 17** Proof of The Sum Formulas, The Sum, Difference, and Double Angle Formulas, Factoring 2
☀ ☀ ☀ Spring Break – March 21-27 ☀ ☀ ☀		
Week 10	**Class 19 – March 29** Trigonometric Equations 3, Trigonometric Equations 4, Graphing Trigonometric Functions **Quiz 13** online due Monday, March 28 at 11:30 PM	**Class 20 – March 31** Rational Inequalities, Domain of Functions, Exponential Equations **Quiz 14 -** in class
Week 11	**Class 21 – April 5** Trigonometric Identities 4, Tangent Lines (compl. square, discriminant), Law of Sines **Quiz 15** online due Monday, April 4 at 11:30 PM	**Class 22 – April 7** Law of Sines, Limits at Infinity - 1 **Quiz 16 -** in class
Week 12	**Class 23 – April 12** Review for Exam 3, Law of Cosines (Solving Triangles), Half-Angle Formulas, Graphing Polynomials 1 **Quiz 17** online due Monday, April 11 at 11:30 PM	**Class 24 – April 14** **Exam 3**
Week 13	**Class 25 – April 19** Inverse Functions, Division of Polynomials, Trigonometric Equations 5, Vectors 1 **Quiz 18** online due Monday, April 18 at 11:30 PM	**Class 26 – April 21** Limits at Infinity - 2, Transformations on Graphs, Inverse Trigonometric Functions
Week 14	**Class 27 – April 26** Inverse Trigonometric Expressions, Vectors 2 Reciprocal of a Graph, Graphing Polynomials - 2 **Quiz 19** online due Monday, April 25 at 11:30 PM	**Class 28 – April 28** Product-Sum and Sum-Product Identities, Discontinuities of Rational Functions **Quiz 20 -** in class
Week 15	**Class 29 – May 3** Graphing Rational Functions, The Reminder Theorem, Graphing More Trig Functions, Vectors 3 **Quiz 21** online due Monday, May 2 at 11:30 PM	**Class 30 – May 5** Complex Numbers, The Fundamental Theorem of Algebra **Quiz 22 -** in class
Week 16	**Class 31 – May 10** Induction, Final Review	**Class 32 – May 12** **Exam 4**
End of Semester: Sunday, May 15		

Last day for student initiated withdrawal: Monday, April 18