STEM Course Syllabus

COURSE: *MAT-110-XX*

COURSE TITLE: *Precalculus*

CREDITS: 4

INSTRUCTOR: _____

DAY(S) AND TIME(S): _____

LOCATION(S): _____

OFFICE HOURS: *Note: Adjunct faculty members are not required to keep regular office hours. You can set a time, list it as "by appointment," or remove this information from the syllabus.*

OFF. LOCATION: *You can use your classroom if there isn't another class coming in, or you can meet at one of the faculty workspaces around campus. A complete list of the workspaces can be found in your folder.*

EMAIL:

TELEPHONE: *You are not required to give your phone number to students. If you choose not to provide a number, you may delete this line from the syllabus. If you choose to give a phone number, it is advised that you do so through an application such as Google Voice rather than providing your personal phone number.*

COURSE DESCRIPTION

Provides the preparation necessary for students who intend to study calculus for science and engineering programs. Topics include the following: fundamentals of algebra, linear inequalities, functions and relations, polynomials, rational, exponential, and logarithmic functions, trigonometric functions, analytic trigonometry, analytic geometry, complex numbers, and discrete algebra, logic, and proof.

COURSE PREREQUISITE: MAT 100 OR MAT 106.

STUDENT LEARNING OUTCOMES

Upon successfully completing this course, students will be able to

- Define function, domain & range
- Distinguish between a relation and a function
- Graph elementary functions and combinations of elementary functions
- Solve applied problems using functions

- Work out applied problems involving slope and average rate of change
- Sketch the graph of exponential and logarithmic functions
- Simplify logarithmic expressions
- Recognize trigonometric identities
- Apply law of sine and law of cosine
- Determine whether a graph is symmetric with respect to the x-axis and the y-axis, and whether a function is even or odd nor neither
- Graph the transformation under translation, reflections, stretching and shrinking.
- Analyze Polynomial functions, and rational functions and sketch their graph.
- Solve problems involving exponential growth and decay, and compound interest.
- Simplify expressions such as

  $f^{-1}(g(x))$ *where* $f(x)$ *and* $g(x)$ *are functions of the form* $\sin x,\ \cos x, \tan x, \ln x$ *and* e^x

TEXTBOOK & SUPPLEMENTAL MATERIALS

Textbook: Precalculus Real Mathematics, real People, 7th edition,
by Larson, Hostetler and Edwards
ISBN:
Supplemental Materials:

- **The online home work is obligatory, and due by the next class meeting.**
- **Students are required to purchase the access code. Codes are available at the bookstore.**

  If there are supplemental materials required, you may list them here. Please also indicate how students should acquire these materials, as they will not be in the bookstore.

Book Purchase: *Your policy for the purchase of textbooks goes here. Here is an example of such a policy:*

Since we use these books extensively in and out of the class, you **must buy** them before our second meeting. In case you need to wait for the book voucher, it is your responsibility to find a way to make copies of the readings assigned from the books. Any student who has true financial need is eligible to apply for a book scholarship through the Office of the Dean of Students located at 70 Sip Avenue.

ATTENDANCE

Your attendance policy goes here. For your reference, the college policy is generally that a student may fail a course due to lack of attendance if s/he missed more than 6 hours of instructional time for a 3-credit course. You can choose to follow this policy or create your own.

GRADING POLICY

BREAKDOWN OF GRADING:

3 class Exam: ---------- -----60%
Final Exam:----------20%
Online Homework:----------20%

INCOMPLETE

An INCOMPLETE grade for the course is given under specific conditions when a student, because of serious and unexpected reasons, cannot complete the requirements of the course. For example, if a student did not attend the final because of illness his or her excuse must be verified by a physician. Other absences from other assigned activities must be made up at another appointed time. To arrange for an incomplete grade, the student must see the instructor before final exam, so proper documentations could established and submitted to Division and The office of Academic Affairs.

The grade scale for this class will be as follows:
This is a sample grading scale. You may adjust (within reason) to your own policy regarding grading. Note: At HCCC, we do not have a grade of C-.

100 – 94 = A	
93 – 90 = A-	79—77 = C+
89 - 87 = B+	76—70 = C
86—84 = B	69—60 = D
83—80 = B-	Below 60 = F

CELL PHONE USE POLICY

Please be aware that the cell phone is not allowed in class, however if you do need to keep it on for some reason such as a family emergency, inform your professor at the beginning of class.

MANDATORY USE OF HCCC EMAIL ADDRESS

Members of the HCCC community are required to check their official HCCC email address in order to stay current with College and course communications. All college business communication between faculty, students, and staff must be sent via an official HCCC email address. If an employee or student elects to forward or link his/her HCCC email to a separate and private account, that individual remains responsible for all material transmitted to that account. Employees of HCCC shall not be responsible for any material that remains undelivered, due to defects in the private non-HCCC accounts. Failure in the operations of private email accounts shall not be cause for excuse from communications between the student and the employee. Students that encounter difficulty with HCCC email should view the FAQ's section on the Portal.

DISABILITY SUPPORT SERVICES:

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Students with disabilities who believe that they might need accommodations in this class are encouraged to contact Disability Support Services at (201) 360-4157, as soon as possible to better ensure that such accommodations are implemented in a timely fashion. All disabilities must be documented by a qualified professional such as a Physician, Licensed Learning Disabilities Teacher Consultant (LDTC), Psychiatrist, Psychologist, Psychiatric Nurse, Licensed Social Worker or Licensed Professional Counselor, who is qualified to assess the disability that the student claims to have and make recommendations on accommodations for the student. All information provided to the Disability Support Services Program will be confidential between the program, professors involved with the student and individual student.

ACCESSIBILITY SERVICES

Hudson County Community College is committed to the creation of an inclusive and safe learning environment for all students. The Office of Accessibility Services is responsible for determining reasonable accommodations for students who encounter barriers due to disability (conditions can include but are not limited to: mental health, attention-related, learning, cognitive/developmental, vision, hearing, physical or health impacts). When the student completes the request process and reasonable accommodations are determined to be necessary and appropriate, an Accommodation Letter (Letter) will be provided. The student must provide the Letter to each course instructor. This should be done as early in the semester as possible as accommodations are not retroactive.

You can contact Accessibility Services by phone at 201-360-4157, by email at as@hccc.edu; visit their website at https://www.hccc.edu/student-success/personal-support/accessibility-services.html or visit them at 71 Sip Avenue, L010/L011, Jersey City, NJ and all information provided will be kept confidential.

ACADEMIC INTEGRITY

Academic Integrity Standards

Academic integrity is central to the pursuit of education. For students at HCCC, this means maintaining the highest ethical standards in completing their academic work. In doing so, students *earn* college credits by their honest efforts. When they are awarded a certificate or degree, they have attained a goal representing genuine achievement and can reflect with pride on their accomplishment. This is what gives college education its essential value.

Violations of the principle of academic integrity include:

- Cheating on exams.
- Reporting false research data or experimental results.
- Allowing other students to copy one's work to submit to instructors.
- Communicating the contents of an exam to other students who will be taking the same test.
- Submitting the same project in more than one course, without discussing this first with instructors.
- Submitting *plagiarized* work. *Plagiarism* is the use of another writer's words or ideas without properly crediting that person. This unacknowledged use may be from published books or articles, the Internet, or another student's work.

Violations of Academic Integrity

When students act dishonestly in meeting their course requirements, they lower the value of education for all students. Students who violate the college's policy on academic integrity are subject to failing grades on exams or projects, or for the entire course. In some cases, serious or repeated instances of academic integrity violations may warrant further disciplinary action.

Detailed information on the College's Academic Integrity policy may be found in the *HCCC Student Handbook*. The handbook also contains useful information for students on completing research projects and avoiding plagiarism.

Your personal policy for a violation of the College's academic integrity policy go here. You must include this information for your students.

OTHER

Any other information, policies, etc. that you feel a student needs to know can go here.

COURSE MATERIAL

sections	Topic	Home work
Chapter 1	Functions and Their Graphs	
1.1	Lines in The plane	7,8,9,11,15,17,23,25,33,34,35,37,49,50,63,65,67,70, 72,77,81,85,86
1.2	Functions	7,9,13,17,23,31,25,27,31,32,39,40,42,43,55,61,65,7 1,72,73,75
1.3	Graphs of functions	7, 9 , 13, 15, 17,19,21,23,25,31,32,33,35,37,39,44,47,55,57,58,59 ,61,63,65,67,73,77,81,83,87,89,99-104
1.4	Shifting reflections of Functions	5,7,11,13,15,17,19,20,21,23,31,33,35,41,47,48,49,5 1,53,55,58,59,61,73,75,7677,78,79
1.5	Combinations of Functions	7, 9,11,12,13,15,16,17,19,21,23,25,29,33,35,37,39,40, 41,43,45,47,48,50,52,53,55,57,58,59,61,62,63,67-70, 67,68,69,70,71,75,76,77,79,
1.6	Inverse Functions	7,9,13,15-18,19,23,25,27,29,30,33,35,39,41,43,45,47,49,56,57 ,58,60,61,63,67,69,71,73,77,79,91,92,93,95,99105,1 07,109,111,113,116,118,121,123,125,127
Chapter 2	Polynomial and Rational functions	
2.1	Quadratic Functions	11,13,15,17,23,25,27,29,31,33,35,37,39,40,41,42,45 ,47,49,51,55,57,63,64,65,66,67,68,69,70,71,75,
2.2	Polynomial Functions	9-16,17,19,23,25,27,29,31,37,39,41,45,59,61,63,67,75 ,77,81,83,85,87,89,95,109,110,
2.3	Real Zeros of Polynomial Functions	23,25,27,29,33,35,37,39,43,45,47,49,53,55,57,59,61 ,63, 65,67,71,73,75,79-828789,91,93,105,106,

2.4	Complex numbers	7,11,13,15,21,25,27,33,37,43,55,73,85
2.5	The fundamental theorem of Algebra	5,9,11,17,21,23,25,29,31,33,35,37,39,41,43,47,51,55,61,63,72,73,
2.6	Rational Functions and Asymptotes	5-10,5,7,11-16,17,23,25,29,30,31,33,34,37,43,45,4748
2.7	Graphs of rational Functions	5,7,9,11,13,17,19,21,27,29,31,33,35,37,39,41,42,43,45,4751,53,57,59,61,63,65,71,75,78,81,83,84
Chapter 3	Exponential and Logarithmic functions	
3.1	Exponential and Logarithmic Functions	86,7,9,11,17-20,21,25,27,29,37,45,47,49,51,53,57,59,75,77,80,81,82,83,84
3.2	Logarithmic Functions and Their Graphs	1 –21,23,25,27,31,33,35,37,41,43,45,47,49,51-67,81,87,89
3.3	Properties of Logarithmic Functions	1,2,3,5-12,21-24,37,39,45,47,51,53,55,63,69-8493,95,97,102
3.4	Solving Exponential and Logarithmic equations	7,9,11,15,17,19,27,33,37,41,47,51,53,83,85,87,89,93,97,99,109,113119,121,125
Chapter 4	Trigonometric functions	
4.1	Radian and Degree measure	11,12,13-23,25,27,29,30,31,33,35,37,41,43,45,47,49,51,53,55,57,59,61,63,65,67,69,71,73,75,77,79,81,83,85,87,
4.2	Trigonometric Functions	9,11,13,15,17,19,21,47,49,51,57,61,63,67,75,76,77,.
4.3	Right Triangle Trigonometry	7,9,11,21,23,33,35,3637-52,55,57,59,61,67,69,71,73-76,77,78,79,80,81,82,
4.4	Trigonometric Functions of any angle	11,13,15,17,23,27-3335,36,39,41,45,47,49,53,55,59,61,65,67,69,77,79,81,83,85,87,91,93,97,103,105,107,
4.5	Graphs of sine and Cosine functions	11,13,15,18,21-27,29,31,35,37,39,43,45,47,51,59,65,71,75,77,81,83,85,
4.6	Graphs of other trigonometric Functions	5-8,9,11,13,15,19,21,,25,29,35,37,41,43,45,47,49,51,61,63
4.7	Inverse Trigonometric Functions	14,15,16,23,37,41,45,47,49,55,63,67,73,77,,81,83,85,100,103,
4.8	Applications and Models	23,24,25,26,28,31,39,40,43,47,
Chapter 5	Analytic Trigonometry	
5.1	Using Fundamental Identities	7,9,11,13,15,23,25,31,35,39,41,43,45,51,61,65,
5.2	Verifying Trigonometric Functions	11,13,15,17,19,21,23,25,27,31,33,35,37,43,44,46,47,49,55,57,59,39,41,47-58,65,67,68,69,71,
5.3	Solving Trigonometric Equations	5,7,9,11,13,17,19,21,25,29,31,35,37,39,41,49,51,53,55,56,61,65,67,69-7295,101,102,103
5.4	Sum and Difference Formula	9,11,13,15,19,21,23,25,27,31-38,31,39,41,43,45,47,49-77,

5.5	Multiplying angle and Product to sum Formula	9,10,11,13,15,17,21,23,25,27,31,35,45,46