2020

Math 120BC – Precalculus

Virginia Thompson
CUNY York College

City University of New York – York College
Mathematics and Computer Science Department
Course Syllabus
Spring 2020

Course Information	**Teacher Information**
Course: Math 120BC – Precalculus	Instructor: Prof. Virginia L. Thompson
Mode of Instruction: f2f	Teaching Philosophy
Credits & Hours: 4 hrs ; 4 cr.	Email Address: vthompson@york.cuny.edu
Class Time: 10am-11:50am	Phone number: 718-262-2548
Class Room Location: AC 1E05	Office & Office hours: AC 2D03; M,W 9am-9:50am

* office hour also by appointment * email response time is usually within 24 hours

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Course Description:
Students will explore advanced topics in algebra, functions and graphs, inverse functions, composite functions, polynomial and rational functions, trigonometry, exponential and logarithmic functions.

Course Narrative:
Precalculus is often among the first mathematics courses students take in college if pursuing a STEM related field. In the precalculus course, students will be introduced to various mathematical concepts that will help prepare them for higher level mathematics courses they will need for their major. This course uses free textbooks and other free digital media students can interact with. Students will have opportunities to contribute to educational resources, and not just being consumers of it. Specifically, they will engage in creating supplementary materials collaboratively in small group assignments with their classmates. The end result project will be shared openly with future students, allowing them to make use of and revise the material for the student community.

Pre-requisites: Math 102 (Intermediate Algebra) or placement

Text Book:
Precalculus ; OpenStax (openly licensed free textbook)
ISBN-10 1938168348

Student Learning Outcomes:

1. Students will simplify as well as solve various kinds of equations, such as polynomial, rational, radical, exponential, logarithmic and trigonometric.
2. Students will analyze and solve simple real-world application problems involving linear and/or quadratic function models.
3. Students will graph common functions (such as a parabola, cubic, square root, line, reciprocal, identity, exponential and more) as well has shift them horizontally, vertically and reflect them with respect to the x and y axis.
4. Students will recognize the equations of circles and write these in standard form.
5. Students will obtain information from the graph of a function such as stating the domain and range; stating the intervals where the function is increasing, decreasing or is constant; located any maximum/minimum values; stating intervals where the function is positive or negative; horizontal, vertical and oblique asymptotes and more.
6. Students will be able to perform operations on functions including composition, difference quotients, and inverses.
7. Students will express graphically the behavior of rational functions near asymptotes and at infinity using the concept of the limit.
8. Students will apply techniques for finding zeros of polynomial functions.

9. Students will use the unit circle to define the six trigonometric functions.
10. Students will solve right triangles. They will be able to draw a sketch in an applied problem when necessary.
11. Students will be able to prove trigonometric identities.
12. Students will be able to apply addition and subtraction, double-angle and half-angle formulas.

Ancillary Learning Objectives

- Students will participate in collaborative learning
- Students will engage in personalized online homework for the course and receive immediate feedback results
- Students will pre-read and remark on course readings through annotation technology in an open space for others to read and comment

Required Software:

- MyOpenMath (MOM) ;
- Perusall

The course materials such as textbook, video links, online problem sets and other digital media will be accessed via MyOpenMath. This course will also use the Perusall website where students can pre-read and remark on course readings for others to read and comment on before coming to class in order to be better prepared for the lesson. Both MOM and Perusall are browser based, hence can be accessed anywhere by the use of a computer with internet access, particularly at York college computer labs. Students will be provided instructions on how to get logged on during the first week of class.

Attendance & Participation:
Students are expected to arrive promptly to each class. If a student misses a class, it is their responsibility to find out what materials were covered. Students are expected to attend class regularly, complete all the required assignments and actively engage in activities. Attendance will be taken at all class sessions. Assignment feedback turnaround time: Usually within 48 hours after the due date (not including weekends).

Other Course Requirements

Homework: Students will be given homework in order to practice concepts learned. Students can view the homework, as well as the due dates via MyOpenMath (MOM) by clicking on each weekly module. Points will get deducted from the final score if homework is not submitted.

Exams: Three exams will be given in-class (no make-ups) based on concepts learned. In addition to this, the class will end with a cumulative departmental final exam.

Tentative In-class Exam dates (No make ups):

Exam 1 – February 26th
Exam 2 – March 25th
Exam 3 – April 29th
Final Exam – (Cumulative – Uniform Departmental Exam) - date will be announced

Grading Policy Breakdown:

Homework (MOM)	10%
Homework (Perusall)	5%
Exam 1	15%
Exam 2	15%
Exam 3	15%
Student Collaboration Final Project	10%
Final (Cumulative – Uniform Departmental Exam)	30%

**Note: For more information about the Student Collaboration Final Project, see the "Start Here" module in MyOpenMath. The due date will be announced.

Teacher Evaluations:
Student evaluation of teachers is now sent to the student's York College email addresses during the latter part of the semester. More will be said about this in class when the time comes.

Schedule of Topics

The following table outlines the topics that will be covered in class as part of the course and a timeline for their completion. Please note that this is a tentative outline that is subject to change as the semester progresses if needed.

Week	Weekly Readings / Topics
1	Introduction to the class ; Algebra Essentials, Polynomials; Rational Expressions; Solving Equations ; Complex numbers ; Radical Expressions
2	Interval Notation Rational Exponents; Distance and Midpoint Formula; Graphs of Equations in Two Variables; Intercepts and Symmetry,
3	Lines, Circles
4	Functions; Composite functions; The Graphs of Functions; Properties of Function
5	Library of Functions ; Piecewise Defined Functions; Graphing techniques; Linear functions and their Properties, Quadratic functions and their Properties
6	Polynomials Functions and Models; Properties of Rational functions;
7	The Graph of Rational Functions; The real zeros of polynomial functions
8	1 to 1 functions, inverse functions ; Exponential functions
9	Logarithmic functions ; Properties of Logarithms
10	Spring Break
11	Logarithmic and Exponential Equations ; Properties of Trigonometric Functions;
12	Graphs of Sine and Cosine Functions; More Trigonometric Graphs
13	Trigonometric Equations; Trigonometric Identities
14	Sum and Difference Formulas; Double Angle and Half Angle Formula
15-16	**Review for the final exam**

Important Policies

Policy on Academic Integrity, Cheating and Plagiarism.
Academic Dishonesty is prohibited in The City University of New York and is punishable by penalties, including failing grades, suspension, and expulsion. Academic dishonesty includes cheating and plagiarism. This policy will be strictly adhered to. Students can familiarize themselves with this policy by downloading a copy of it in pdf form at http://york.cuny.edu/president/legal-compliance/legal-affairs/cuny-legal-policies-procedures/Academic-Integrity-Policy.pdf/view

Students with Disabilities
Students with documented disabilities are entitled to receive accommodations, including extra time on exams, test, projects and assignments. The office of Services for Students with Disabilities is located within the Counseling Center in AC 1G02. For more information, go to: http://www.york.cuny.edu/student-development/ossd

Student support resources on campus

The following offices and programs are available on campus to support students as needed. Please note that this is not an exhaustive list and other programs and offices do exist. When unsure you can conduct a search on the **York College website** located at www.york.cuny.edu or access the **York College Bulletin** (also searchable) online at http://york.cuny.edu/search?SearchableText=york+bulletin

The **Collaborative Learning Center** located in the library (AC-1C18) offers tutoring for students in various subjects. Tutoring is free to students who schedule appointments with tutors at times that fit their schedule. If you are having difficulty in the course you are strongly advised to use this resource. The academic achievement center can also be reached by phone at (718) 262-2303.

The **Math Learning Center** at York College provides various resources for York Students. The center provides a friendly environment with educated and knowledgeable Tutors to help students with their Math classes. Some of the services and resources available to students at the MLC include: One-on-one tutoring in Math courses; Group sessions; Class materials for most Math courses and Laptops preloaded with all CAS Math programs students may need to complete assignments. Register online for tutoring at: **www.yorkcollege.mywconline.com**. For information, go to Room 3E07 or call 718-262-2710.

For a complete listing of **Tutorial Services** visit the web: www.york.cuny.edu/student/tutoring/ where you would see that a variety of tutorial programs are offered on campus.

The **Academic Computing and Educational Technology Center** provides technical support for students in utilizing Blackboard, the CUNY portal, York e-mail and other programs. There is a help desk located in the G-Wing of the Library (located on the 3rd floor). The IT help desk can also be reached by phone at (718) 262-5300 or via e-mail at helpdesk@york.cun.edu. Additionally the center runs technology workshops for students. More information can be found online at http://york.cuny.edu/it/acet/academic-computing-and-educational-technology/

Computer Labs - A large number of Internet-capable computers are assigned to College-wide computer labs, specialized departmental labs, learning centers and the Library. The Classroom Building (C201) houses a College-wide drop-in computer lab.