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| New York City College of Technology | Mathematics Department Office: N711  |
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# MAT 1375 Pre-Calculus (4 cr) Spring 2019

## **D580 Course Meetings:** MW 2:00 – 3:50PM (N717) **Email:** ehalleck@citytech.cuny.edu

## **Instructor:** Ezra Halleck **Phone:** (718) 260-5931

## **Office Hours:** MW 1-1:50 and by appt **Office:** N726

**Text:** *Precalculus* 2e, by Thomas Tradler and Holly Carley

Free PDF and link to inexpensive print: websupport1.citytech.cuny.edu/faculty/ttradler/precalculus.html

**Graphing Calculator:** TI 83, 84 or Inspire with 84 faceplate.

**Course Description:** A study of functions including polynomial, radical, rational, trigonometric, exponential and logarithmic functions. Also studied are connections to vectors and complex numbers; trigonometric equations; trig identities involving sum, double and half-angle formulas; Binomial Theorem and progressions.

**Prerequisite:** MAT1275 College Algebra with Trig or appropriate placement score.

**Course Specific Student Learning Outcomes:** At the end of the semester, students will be able to

1. Determine the domain and range of a given function.
2. Find the sum, difference, product, quotient, and composition of functions.
3. Determine the effects of basic operations on graphs of functions.
4. Determine the inverse of a function algebraically and/or graphically, if it exists.
5. With the aid of a calculator, determine the roots and relative extrema of polynomials.
6. Sketch the graphs of polynomial, rational, exponential, and logarithmic functions.
7. Solve absolute value, polynomial, rational, trigonometric, exponential, and logarithmic equations algebraically and/or graphically.
8. Solve polynomial, rational and absolute value inequalities.
9. Find the amplitude, phase shift, and period of trigonometric functions.
10. Use trigonometric identities such as the half- and double-angle formulas as a tool in the solution of trigonometric equations.
11. Write a complex number in rectangular and polar forms.
12. Multiply and divide two complex numbers in polar form.
13. Find the magnitude, direction angle and/or the horizontal, and vertical components of a vector.
14. Find the nth term and nth partial sums of arithmetic and geometric sequences and series.
15. Find specific terms of a binomial expansion using the Binomial Theorem**.**

**General Education Student Learning Outcomes:**

1. Understand and employ both quantitative and qualitative analysis to solve problems.
2. Employ scientific reasoning and logical thinking.
3. Communicate effectively using written and oral means.
4. Use creativity to solve problems.

**Attendance:** Your webwork writeups, submitted at the BEGINNING of class, serve as your attendance.

**Cell phones:** Please turn *off* orplace on *vibrate* and out of sight.

**Academic honesty:** You are encouraged to work in groups on homework, but be able to explain *anything* you turn in. During an exam, showing someone else your work is cheating; you will be treated in the same way as the person who copies. It is your responsibility to cover your work.

**Attendance:** Your homework, submitted at the BEGINNING of class, serves as your attendance.

**Cell phones:** Please turn *off* orplace on *vibrate* and out of sight.

**Set enough time aside each week:** You are expected to spend **8 hours** (2 hours per classroom hour) outside the classroom each week reading the text, doing homework and preparing for exams.

***Time* problems?** Here is a **damage control priority list:**

1. *Read the section prior to the class in which it is covered.* This reading will facilitate your understanding and participation in class.
2. *Attempt at least some of the homework problems immediately after class,* so that you know how much of the class you understood.
3. *Take advantage of office hours:* If you are unable to attend the scheduled hours, make an appointment.
4. *Make use of the Learning Center(s) (approximately 9AM-8PM, M-Th, shorter hours on F & Sat):* While some of the tutors are advanced undergraduate students, many are adjunct faculty.
5. The math dept. often arranges for advanced math students to provide tutoring. Stay tuned for more info.

**Grade components**

**Openlab (part of class participation 5%):** **Use first name, last initial for screen name, e.g. JimP, if your name is Jim Poe.** Your grade will be 2 for perfunctory, 3 for significant, 4 for deep thought & effort.

**NOTE, you will be making exactly TWO postings**; all other contributions are comments on other postings.

1. Join the openlab and make a posting by **Sa 2/9** explaining how mathematics relates to your career (include a photo of yourself with an aspect of mathematics and/or your career in the background).
2. Make a 2nd posting by **Sa 3/9** focusing on a graph which appears in a newspaper. You must include a short summary of the newspaper or magazine article, a reproduction of the graph and a description of how the graph was used in the article. Make sure that you have provided a link to the original article.
3. You will be paired with another student. By **Sa** **4/13**, comment on and make suggestions for improvement on the other student’s posting as well as create a word problem based on his/her graph.
4. By **Sa 5/11**, respond to the comment by editing your original post (please acknowledge the change in your edit). Solve the word problem that your partner has created.
5. Finally, by **Sa 5/18**, comment on your original posting on blackboard, summarizing your overall experience in the course and writing once again on how you think mathematics relates to your career.

**Project (15%):** As indicated in the schedule, there are various class days devoted to a semester project. You are expected to complete any parts not done in class.

**Webwork (20%):** Consider these to be online quizzes. Each student gets a unique set of problems. If you don't submit the written work to support your answers, you get no credit

**Midterm Exams (15% each):** There are 2 as noted in the schedule. If you miss an exam and have a valid (medical issue or family emergency), then you may take up to one (1) makeup exam done during my office hours. You have one week from your return date for the makeup and it will receive an automatic 10% points off from your score to encourage you to do all possible to take the exam on its appointed date.

**Final Exam (30%):** A sample exam is available electronically on the department website as well as in printed form in the department office (N711). If you miss the final exam and have been failing the course, you will receive an F (or WU if you have >3 absences). Otherwise, if you have a documented illness or emergency, you will have an opportunity to take a makeup final exam in mid-January for a small fee (exact date TBA).



**Grade scale:**

93 – 100 A 77 – 79.9 C+

90 – 92.9 A- 70 – 76.9 C

87 – 89.9 B+ 60 – 69.9 D

83 – 86.9 B 0 – 59.9 F

80 – 82.9 B-