

**QUEENSBOROUGH COMMUNITY COLLEGE  
DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE**

**COURSE OUTLINE**

**MA-127      TECHNICAL MATHEMATICS II for VERIZON STUDENTS**

**Pre-requisite:** MA-114

**Hours:** 4 Class Hours                      **4 Credits**

**Course Description:** This is the second course of a two-course sequence in technical mathematics for Verizon Next Step students taken after completion of MA-114. The course emphasizes those concepts that will be needed in the students' telecommunications courses, including trigonometry, statistics, exponential and logarithmic functions, complex numbers, and an intuitive approach to the main ideas of calculus. Extensive use is made of a graphing calculator and mathematical software.

**Curricula for which the course is required/recommended:**  
A.A.S. Degree Program in Telecommunications Technology: Verizon

**General Education Objectives:** Use analytical reasoning skills to identify issues or problems and evaluate evidence in order to make informed decisions; reason quantitatively and mathematically as required in their fields of interest and in everyday life; integrate knowledge and skills in their program of study; communicate quantitative information effectively; use information technology skills effectively for academic research and lifelong learning.

**Course Objectives/ Expected Student Learning Outcomes:** Understand the important concepts and theories of algebraic, geometric, trigonometric, exponential and logarithmic functions, and statistics; apply them to solve problems in mathematics, engineering and other disciplines and communicate results to others orally and in writing; use graphing calculators and computer technologies in mathematical investigations.

**Text:** **BASIC TECHNICAL MATHEMATICS**, Ninth Edition  
By: Allyn J. Washington  
Addison Wesley, 2009

**Laptop Computer**  
**TI-84 Plus Calculator**

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**Methods by which student learning will be evaluated:**

The general guidelines for assessing grades are as follows:

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|---|-----|
| ○ Examinations, Assignments and Classroom Performance | 50% |
| ○ Group Projects                                      | 25% |
| ○ Final Examination                                   | 25% |

The distribution may be changed at the discretion of the individual instructor.

**Academic Integrity:** Academic honesty is taken extremely seriously and is expected of all students. All assignments must be the original work of the student (and partners or group, if applicable). All questions or concerns regarding ethical conduct should be brought to the course instructor. "It is the official policy of the College that all acts or attempted acts that are violations of academic integrity be reported to the Office of Student Affairs (OSA). At the faculty member's discretion and with the concurrence of the student or students involved, some cases, though reported to the OSA, may be resolved within the confines of the course and department. The instructor has the authority to adjust the offender's grades as deemed appropriate, including assigning an F to the assignment or exercise or, in more serious cases, an F to the student for the entire course." (Taken from the QCC Academic Integrity Policy, 2/14/2005.)

**NOTE:** *Any student who feels that he/she may need an accommodation based upon the impact of a disability should contact the instructor privately to discuss his/her specific needs. Please contact the office of Services for Students with Disabilities in Science Building, room 132 (718 631 6257) to coordinate reasonable accommodations for students with documented disabilities.*

	<u>TOPICS</u>	<u>SECTIONS</u>	<u>HOURS</u>
I.	<b>TRIGONOMETRIC FUNCTIONS OF ANGLE</b> Radian measure with applications	8.1-8.4	4
II.	<b>VECTORS AND OBLIQUE TRIANGLES</b> Graphical and Component Addition of Vectors Law of Sines. Law of Cosines. Applications. Lab: Exploring the Ambiguous Case	9.1-9.6	8
III.	<b>GRAPHS OF TRIGONOMETRIC FUNCTIONS</b> $y = a \sin (bx+c)$ & $y = a \cos (bx+c)$ $y=\tan(x)$ , $y=\cot(x)$ , $y=\sec(x)$ , $y=\csc(x)$ Lab: Exploring Graphs of $y = a \sin (bx+c)$ $y = a \cos (bx+c)$	10.1 – 10.4	4
IV.	<b>EXPONENTS AND RADICALS</b> Fundamental Operations with Integral and Fractional Exponents and Radicals. Applications. Solving Radical Equations	11.1 – 11.5 14.4	6
V.	<b>COMPLEX NUMBERS</b> Rectangular, Polar and Exponential Form.	12.1 – 12.6	4
VI.	<b>EXPONENTIAL &amp; LOGARITHMIC FUNCTIONS</b> Definition and Graphs of Exponential and Logarithmic Functions. Properties of Logarithms. Solving Exponential & Logarithmic Equations. Applications. Lab: Exponential Functions Lab: Logarithmic Functions	13.1 – 13.6	9
VII.	<b>INTRODUCTION TO STATISTICS &amp; PROBABILITY</b> Frequency Distribution. Numerical & Graphical Description of Data. Normal Curve. Standard Errors. Process Control. Regression. Lab: Line of Best Fit Lab: Statistics Project	22.1 – 22.6	12
VIII.	<b>INTUITIVE APPROACH TO CALCULUS</b> Average and Instantaneous Rate of Change. Slope of Secant & Tangent Lines. Concept of Limits. Area Under a Curve. Average Value of a Function. Lab: Secant and Tangent Lines Lab: Area Under a Curve	Instructor's Notes	6
	<b>EXAMS</b>		<u>3</u>
		<b>TOTAL</b>	<b>56</b>

The approximate hours per chapter are guidelines and are at the discretion of the instructor. The instructor is responsible for making assignments and scheduling examinations. The Final Exam date is scheduled by the Registrar.