

**NEW YORK CITY COLLEGE OF TECHNOLOGY**  
**The City University of New York**

**DEPARTMENT:** Mathematics

**COURSE:** MAT 1315

**TITLE:** Technical Mathematics II

**DESCRIPTION:** An intermediate and advanced algebra course. Topics include Quadratic equations, Exponents Radicals, Exponential and Logarithmic functions, Trigonometric functions, Vectors, Complex numbers, Statistics Intro to Calculus (optional).

**TEXT:** *Basic Technical Mathematics*, Ninth Edition, Washington  
*Mathematics for Electricity and Electronics*, Third Edition, Kramer

**CREDITS:** 4

**PRE-REQUISITES:** MAT 1215

1. Testing/Assessment Guidelines:
2. Two two hour exams
3. A project using PowerPoint and Excel
4. A one session Final Examination

A graphics calculator and laptop are supplied to the students by Verizon.

**Learning Outcomes**  
**for**  
**MAT 1315 Technical Mathematics II**

1. Students will be able to solve
  - Linear and quadratic equations.
  - Exponential equations
  - Systems of equations
  
2. Students will be able to perform operations with and be able to simplify polynomial, rational, complex, exponential and logarithmic expressions.
  
3. Students will be able to apply their knowledge of algebra and trigonometry to solve verbal problems.
  
4. Students will be able to
  - Solve problems involving right and oblique triangles.
  - Solve trigonometric equations.
  - Solve vector problems.
  - Graph Sine and Cosine functions.
  
5. Students will understand
  - Mean, median, mode and standard deviation
  - Solve elementary statistics problems.

**Ma 315 COURSE INFORMATION Fall 2012**    Prof. A. Kramer

**Text:**    *Basic Technical Mathematics* by A. Washington and  
                  hand outs from *Mathematics for Electricity and Electronics* by Arthur Kramer

**Tests:** There will be two class tests, a computer project and a final examination.

**Computer Project** (counts as one test): A computer project done by teams of two or three using some of the mathematics in the course and EXCEL and POWERPOINT. All reports should contain an introduction with an overview and a discussion of the concepts with examples and diagrams or pictures. Categories are:

1. A Statistics study from work or experience (See Exercises p 617, 621, 630 marked **W** in the text)
2. Further study in one of the following areas: Statistics (Process Control or Regression), Trigonometric Graphs, AC circuits, Exponential and Logarithmic Functions, Linear Regression, Linear Programming. Include an explanation of the concepts and five or more worked out examples.
3. A Historical study of a major contributor explaining their contribution to Telecommunications, e.g. Alexander Graham Bell, Guglielmo Marconi etc, History of Fiber Optics, Wireless Communications etc.
4. An application that uses the mathematics in the course, e.g. a topic in electronics, physics, astronomy, finance etc.

Choose one of the above categories by Sept.25. Speak to me for ideas and submit an outline to me by Oct. 8 . ***Project is due Nov. 27.*** Extra points for early completion and/or oral presentation.

**Homework (All problems are odd unless indicated)**

Any starred problems can be submitted for one extra test point

Other ways to earn test points are shown at the bottom.

**Exponents (Review):** Wash: p316/11-33; p320/5-15, 33-39

**Trigonometric Functions:** Wash: p234/15-21    Kramer: 17.3/ 1-17, 23-41, 43, 47, 51, 44\*, 48\*, 52\*

**Alternating Current:**

Kramer(Review - Do graphs on EXCEL) Exercise 18.1/1-9, 13-19, 25,27, 26\*,28\*; 18.3/7,11, 15, 19, 23, 25, 33-39, 41-55, 57, 59, 40\*, 58\*, 60\*; 18.4 / 1-7, 11-17, 23, 25, 27, 24\*, 26\*, 28\*

**Exponential and Logarithmic Functions:**

Kramer: 23.1/ 1-43, 47, 49, 48\*, 50\*; 23.2/(Use EXCEL)1-7, 13-17, 21-27, (22-28even)\*

Kramer: 23.3/1-13, 15-25, 29-43, 59-65, 87, 91, 93, 92\*, 94\*; 24.1/ 1-9, 23, 24, 25, 27, 26\*, 28\*  
24.2/1- 15, 17-25, (18-24even)\* 24.3/ 1-15, 21-35, 43-55, 59, 61, 60\*, 62\*

**Complex Vectors and AC circuits:**

Kramer: 20.1/1-9, 23-27; 20.2/7-13, 25-29, 45, 42\*, 46\* , 20.3/21-27, 39-47; 20.4/15-21, 25-31,47,48\*

Kramer: 21.1/23-27, 31-35, 39-43, 47, 49, 48\*, 50\*; 21.2/23-27, 31-35, 39-43, 47, 49, 48\*, 50\*;  
21.3/1- 9, 11-17, 29, 31, 30\*\*, 32\*\*

**Statistics and Linear Regression:**

Wash: p616/1, 3, 5, 7, 9, 29; p620/1, 2, 4, 7, 11, 15, 33, 34, 37, 38, 44\*; p625/1, 5, 9, 13, 15, 25, 26\*;

P630/ 9-20(all); p640/1, 3, 4, 7, 9, 13, 15, 17, 14\*

**Extra Test Points:**

1-2 pts for each starred problem handed in correctly

1-2 pts for each problem explained on the board

1 pt for each mistake found in the book or on the board

1-8 pts for correcting mistakes on a test: F (8), D (6), C (4), B (2), A (1)