

**QUEENSBOROUGH COMMUNITY COLLEGE
MATHEMATICS & COMPUTER SCIENCE DEPARTMENT**

COURSE OUTLINE

MA-321 MATHEMATICS IN CONTEMPORARY SOCIETY

Pre-requisite: MA-010 OR MA-013 OR SATISFACTORY SCORE ON CMAT OR COMPASS EXAMS

Hours: 3 Class Hours 1 Lab Hour 3 Credits

Course Description: Designed to provide students with mathematical ideas and methods found in the social sciences, the arts, and in business. Topics will include fundamentals of statistics, scatterplots, graphics in the media, problem solving strategies, dimensional analysis, mathematics in music and art, and mathematical modeling. EXCEL will be used to explore real world applications.

Curricula for which the course is required/recommended:

A.A. Degree Programs in Liberal Arts and Sciences

A.A.S. Degree Programs in Computer Information Systems (CIS), Management, Office Administration and Technology, Digital Art and Design, Massage Therapy, and Music Electronic Technology

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; use information management and technology skills effectively for academic research and lifelong learning.

Course Objectives/ Expected Student Learning Outcomes: Understand the important concepts of statistics used in the social sciences and business; apply problem solving techniques to solve everyday situations; recognize the use of mathematics in music and art; apply linear modeling; use and learn EXCEL to explore the above course material.

Text: USING AND UNDERSTANDING MATHEMATICS, 4th Ed.
By: Jeffrey Bennett and William Briggs
Pearson Addison-Wesley Publishers, Inc.

Lab manual: Microsoft Excel 2002, Introductory Concepts and Techniques
By: Gary B. Shelly, Thomas J. Cashman, James S. Quasney
Thomson Learning

Methods by which student learning will be evaluated:

The general guidelines for assessing grades are as follows:

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|--------------------------------|-----|
| ○ Examinations | 45% |
| ○ Laboratory Work, Assignments | 30% |
| ○ Final Examination | 25% |

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

Required attire: Any type of food or beverage in the computer lab is forbidden.

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>SUBJECT MATTER</u>	<u>SECTIONS</u>	<u>HOURS</u>
Fundamentals of Statistics: Surveys, sampling methods, types of statistical studies, questioning results of a study	5A-5B	4
Statistical tables, graphs, frequency tables, histograms, line charts, pie charts, time-series diagrams	5C	4
Graphics in the media, graphic distortion	5D	2
Correlation, causality	5E	2
Characteristics of Data: Mean, Median, Mode, Outliers, Shapes of Distributions	6A	3
Measures of Variation	6B	3
Normal distribution, statistical inference	6C-6D	5
Approaches to Problem Solving: Units, conversions	2A	2
Standardized units, problem-solving strategies	2B-2C	4
Mathematics and the Arts: Scales, octaves, exponential growth, perspective, symmetry, tiling, proportion, golden ratio	11A-11C	6
Functions and Modeling: Representing functions, domain, range, linear models	9A-9B	4
EXAMS		3
		Total 42

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.

LABORATORY SCHEDULE

<u>SUBJECT MATTER</u>	<u>SUGGESTED SECTIONS</u>	<u>HOURS</u>
<u>Creating Worksheets</u>		2
Creating a Simple Worksheet	E 1.06 - 1.36	
Finding Sums of Columns and Rows	E 1.40 - 1.55	
Using Formulas	E 2.09 – E 2.16	
Formatting Worksheets		
<u>Creating Graphs</u>		3
Bar Graphs, Line Charts, Pie Graphs, Other Graphs	E 1.37 - 1.40	
Scatter Diagrams, Correlation	E 3.43 – 3.59	
Using CORREL to Determine Correlation		
<u>Measures of Average and Variation</u>		4
Using Functions	E 2.16 – 2.25	
Using the AVERAGE, MEDIAN and MODE functions		
Using STDEV to Find Standard Deviation		
Using QUARTILE to Find the Five-Number Summary		
Using STANDARDIZE to Find Z-scores		
Using NORMDIST to Find Percentiles		
Using NORMINV to Find the 90 th , 95 th and 99 th Percentile		
<u>Problem Solving</u>		1
Solving Problems Easily with Excel		
<u>Mathematics of Music and Art</u>		2
<u>Exponential Growth in Musical Scales</u>	E 2.10	
Perspective and Symmetry in Art (Internet Project)		
<u>Linear Modeling</u>		1
<u>Using Scatter Diagrams to Graph Linear Functions</u>	E 3.43 – 3.59	
<u>Excel Exam</u>		1
		Total 14