Boston Campus
8 Ashburton Place
Boston, MA 02108-2770
Phone: (617) 573 8000
www.suffolk.edu

SUFFOLK UNIVERSITY

Madrid Campus
Calle de la Viña, 3
28003 Madrid (Spain)
Tel: (34) 915 335 935
www.suffolk.es

MATH 104 - PRE-CALCULUS FOR MANAGEMENT AND SOCIAL SCIENCES (4 credits)

Prerequisites
One year of high school algebra and sufficient score in the Placement Test. Students with a low score in the Math Placement Test will typically take this course, since it is a basic course that serves as preparation for taking more advanced math courses.

Course Description
A selection of topics in algebra and elementary analytic geometry including (but not restricted to) properties of real numbers, linear equations and inequalities, polynomials, rational expressions, exponents and radicals, quadratic equations, functions, linear, quadratic and polynomial models, rational, exponential and logarithmic functions. Applications and graphs are stressed throughout the course.

Course Format
Each topic will be explained in the classroom, with examples and illustrations. Students are expected to pay attention in class and to participate in classroom activities, such as solving problems in group or presenting them on the board to the other students. After new material has been discussed in class, homework exercises corresponding to this material should be done individually and presented in the next class. Homework corrections are done on the chalkboard by the professor or students, either by volunteering or by request by the teacher.

The level of difficulty and type of exercises that you are asked to solve in exams are the same that you find in the homework from the textbook. Therefore, it is important that you study it and familiarize yourself with it. To encourage daily study of the material, short quizzes covering the homework assignments will be given at the beginning of most classes.

For students having difficulties with the material or falling behind the rhythm of the class, it is crucial to use office hours to recuperate. The teacher is always available for consultation, do not hesitate to approach with a difficulty, small as it may seem.

Course Objectives
1. To fulfill the math requirement that students should take.
2. To prepare students to take MATH 130 or MATH 134 after this course.
3. To present basic mathematical ideas and concepts that should be part of every person's knowledge.
4. To lessen students' fear of mathematics.
5. To learn the practical applications of the material that is being presented.

Course Evaluation
There will be a continuous evaluation based on your participation, homework presented, exercises and examinations. See the semester schedule below for more information. The following percentages indicate how the final grade is given:

Homework, quizzes and class participation	*15%*
Test 1	*15%*
Test 2	*15%*
Test 3	*15%*
Test 4	*15%*
Final Exam	*25%*

Each exam covers approximately one fourth of the course material. The final exam covers all course material and its questions are similar to questions in previous exams. In order to earn homework and class participation grade you must come prepared to class by having done the homework and engage during the class, for instance, solving problems on the board and participating actively in the proposed activities. There will be a short quiz daily with questions similar to homework problems for the day. It follows the grading policy:

Percentage	**Grade**	**Percentage**	**Grade**
93-100	A	70-74	C+
89-92	A-	65-69	C
85-88	B+	55-64	D
80-84	B	54 or less	F
75-79	B-		

Attendance, homework, making up for exams:
Students must be punctual for classes. If a student arrives late (5 minutes or more), the professor may refuse entry and mark you absent.

Attendance is mandatory. After two unjustified absences your final grade will be lowered by one half point for each unjustified absence (i.e., from "B" to "B-"). Any unavoidable absences must be suitably justified in writing (e.g. a doctor's note). If you have flu symptons, don't come to school and inform by e-mail. All work missed due to absence must be made up.

Before you enter the classroom, be sure you have solved all your businesses so that you do not have to leave in the middle of the class, which is always an undesirable interruption and, furthermore, it is not allowed. That includes taking care of all your physiological needs, bringing your own calculator, and a Kleenex or similar if you are having a cold and switching off your cellular phone. Thanks for your cooperation!

The homework must be presented in the classroom the day it is due in order to earn credit for it. There will **not** be make-up exams, although a justified absence in an exam will allow you to recuperate it during the final exam.

Required Text
Sullivan, Michael Brief Calculus. An Applied Approach. John Wiley & Sons, Inc., 8th edition.
The textbook and a scientific calculator must be brought to every class.

Course outline

1. Real Numbers
Classification of numbers;
Evaluating numerical expressions;
Working with the properties of real numbers.

2. Algebra Review
Graphing inequalities;
Absolute value and distance;
Domain of an expression;
Laws of exponents;
Square roots;
Scientific notation.
3. Polynomials and Rational Expressions
Recognizing special products;
Factoring polynomials;
Simplifying rational expressions.

4. Solving Equations
Equivalent equations;
Solving linear equations;
Solving quadratic equations by factoring;
Solving quadratic equations using the quadratic formula.

5. Intervals; Solving Inequalities
Interval notation;
Solving and graphing linear inequalities.

6. nth Roots; Rational Exponents
Working with *n*th roots;
Simplifying radicals;
Rationalizing denominators.

7. Lines
Rectangular coordinate system;
Graphing linear equations;
Slopes;
Line equations;
Solving linear problems;
Solving systems of two linear equations.

8. Functions and Their Graphs
Graphs of equations;
Intercepts and symmetries;
Function, domain and range;
Graphs of functions;
Even and odd functions;
Using graphs to determine intervals of increase and decrease and locating maxima and minima.

9. Algebraic Functions
Library of functions;
Quadratic functions and parabolas;
Quadratic applications: maximum or minimum value of a quadratic function;
Quadratic inequalities ;
Power functions;
Polynomial functions and end behavior;
Rational functions and asymptotes.

10. Exponential and Logarithmic Functions
Exponential functions and their graphs;
The constant *e*.
Solving exponential equations;
Models for exponential growth and decay;
Evaluating logarithmic functions;
Graph of logarithmic functions;
Natural logarithms;
Solving logarithmic equations;
Continuously compounded interest.