

Department of Mathematics, Computer & Information Science

## PRECALCULUS FOR BUSINESS AND ECONOMICS MA 2080 • SYLLABUS FALL 2024

 Professor: Frank Sanacory

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 Course Web Site: sanacory.net
 Office Hours: W 10:00AM – 12:00noon, TR 4:30PM-5:00PM

**ΤΕΧΤΒΟΟΚ**: College Mathematics for Business, Economics, Life Sciences and Social Sciences, 14th Edition, by Barnett, Ziegler, Byleen and Stocker, Pearson 2019, ISBN-13: 978-0-13-467414-8.

**PREREQUISITES**: A grade of C or better in College Algebra, MA 1020.

**COURSE DESCRIPTION**: The study of linear, quadratic, exponential and logarithmic functions and their graphs; systems of equations and an introduction to matrices; applications in the fields of business and economics.

**COURSE OBJECTIVES**: The main goal of this course is to provide the student with the basic concepts of functions and the mathematical maturity needed for learning business calculus. The course is a survey of mathematical analysis techniques used in the fields of business and economics.

**COURSE EVALUATION & GRADING:** Your grade will be based on exams, quizzes, homework and class participation. There will be a cumulative final exam.

### **COURSE EVALUATION:**

Final Test	350
Three Tests	300
Classwork/Quizzes	80
Homework Online and Written Homework	250
Participation/Presentation/Study Points	50

Makeup Tests is granted only for those with serious verifiable emergency with documentation. Exemplary demonstration of your learning-evidenced by active participation in class discussions both withing and outside the classroom, as well as exceptionally strong performance in the final exam-may warrant a grade higher than what is numerically indicated.

A = [94, 100]	B + = [87, 89]	C + = [77, 79]	D + = [67, 69]	F = [0, 59]
A- = [90, 93]	B = [84, 86]	C = [74, 76]	D = [64, 66]	
	B- = [80, 83]	C- = [70, 73]	D- = [60, 63]	

### **CALCULATOR:** No calculator is allowed.

TUTORIAL: Drop-in tutorial is available in the Mathematics Learning Center in the Library.

### ACCOMMODATIONS FOR STUDENTS WITH SPECIAL NEEDS:

If you have or suspect you may have a physical, psychological, medical or learning disability that may impact your course work, please contact Stacey DeFelice, Director, The Office of Services for Students with Disabilities (OSSD), NAB, 2065, Phone: 516-628-5666, Fax (516) 876-3005, TTD: (516) 876-3083. E-mail: defelices@oldwestbury.edu.

The office will help you determine if you qualify for accommodations and assist you with the process of accessing them. All support services are free and all contacts with the OSSD are strictly confidential. SUNY/Old Westbury is committed to assuring that all students have equal access to all learning activities and to social activities on campus.

### Writing Center

Visit the Writing Center for help brainstorming or organizing your ideas or for feedback on a draft. You can make an appointment for an online session at <u>https://oldwestbury.mywconline.com</u>. Phone: (516) 876-3093

## **Counseling & Psychological Wellness**

There may be times when personal stressors interfere with your academic performance or your life. If you or someone you know at this college is experiencing mental health challenges, contact the <u>Counseling and Psychological Wellness Services</u> at 516-876- 3053. They are located in the Student Union, Lower Level, Suite 100, open Monday to Friday, 9am to 5pm. We also offer free and confidential telehealth via video chats or phone conversations. Contact us at couselingcenter@oldwestbury.edu.

The National Suicide Prevention Lifeline also offers help 24/7, at 1-800-273-8255.

### Title IX, Sexual Discrimination, Harassment and Violence

SUNY Old Westbury prohibits sexual discrimination, harassment and violence, and will promptly respond to all complaints. Confidential resources and support is available. To report or get more information visit <u>https://www.oldwestbury.edu/title-ix</u>. Contact the Title IX coordinator, Campus Center I-211, Phone:516-876-3179, or University Police at 516-876-3333.

**RESPECT:** No cell phones in class and no texting.

FINAL EXAM: Will be held December 18, 2023 in our regular classroom at the regular class time.

# TOPICS TO BE COVERED

## **1: LINEAR EQUATIONS AND GRAPHS**

1.1 Linear Equations and Inequalities

1.2 Graphs and Lines

1.3 Linear Regression

## **2: FUNCTIONS AND GRAPHS**

2.1 Functions

2.2 Elementary Functions: Graphs and Transformations

2.3 Quadratic Functions

2.4 Polynomial and Rational Functions

2.5 Exponential Functions

2.6 Logarithmic Functions

## **3: MATHEMATICS OF FINANCE**

3.1 Simple Interest

3.2 Compound and Continuous Compound Interest

3.3 Future Value of an Annuity; Sinking Funds

3.4 Present Value of an Annuity; Amortization

## 4: SYSTEMS OF LINEAR EQUATIONS; MATRICES

4.1 Review: Systems of Linear Equations in Two Variables

4.2 Systems of Linear Equations and Augmented Matrices

4.3 Gauss-Jordan Elimination

4.4 Matrices: Basic Operations

4.5 Inverse of a Square Matrix

4.6 Matrix Equations and Systems of Linear Equations

4.7 Leontief Input-Output Analysis

## **5: LINEAR INEQUALITIES AND LINEAR PROGRAMMING**

5.1 Linear Inequalities in Two Variables

5.2 Systems of Linear Inequalities in Two Variables

5.3 Linear Programming in Two Dimensions: A Geometric Approach

## 6: LINEAR PROGRAMMING: THE SIMPLEX METHOD

6.1 The Table Method: An Introduction to the Simplex Method

- 6.2 The Simplex Method: Maximization with Problem Constraints of the Form
- 6.3 The Dual Problem; Minimization with Problem Constraints of the form

6.4 Maximization and Minimization with Mixed Problem Constraints

## 7: LOGIC, SETS, AND COUNTING

7.1 Logic

7.2 Sets

7.3 Basic Counting Principles

7.4 Permutations and Combinations

## 8: PROBABILITY

8.1 Sample Spaces, Events, and Probability

8.2 Union, Intersection, and Complement of Events; Odds

8.3 Conditional Probability, Intersection, and Independence 8.4 Bayes' Formula

8.5 Random Variables, Probability Distribution, and Expected Value