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|  | Untitled**Department of Applied Mathematics****Math for administration Syllabus****Second Semester 2023/2024** |

**Course Name: Math for administration**

**Instructors: Mr Jasem Badran**

**Textbooks:**

**For all chapters except chapter 3 the following book is used:**

 **Mathematical Applications for the Management, Life and Social Sciences,**

**Edition: 10th**

**Author: Harshbarger / Reynolds**

**For chapter 3 the following book is used:**

**Elementary Linear Algebra**

**Edition: 6th**

**Authors: Larson/Flavo**

**Course Evaluation:**

**- Midterm Exam: 35%**

**- Assignments (two assignments): 20%**

**- Final Exam: 45%**

**Course Outline:**

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| **Chapter** | **Contents** |
| **Chapter One** | **Linear Equations and Functions** Review: Sets(Natural, Integer, Rational, Irrational, Real Numbers)Intervals(closed , open and infinite intervals)1.1 Solutions of Linear Equations and Inequalities 1.2 Functions (definition of function, domain of function ,operations with functions, composite functions)1.3 Linear Functions (linear function ,intercepts**,** slope of a line,slope-intercept form**,** parallel lines, perpendicular lines,equations of a line,slope-intercept form, forms of linearequations)1.5 Solutions of Systems of Linear Equations  (substitution, Elimination)1.6 Applications of Functions in Business and Economics (Example1,Example2, Example4) |
| **Chapter Two** |  **Quadratic and Other Special Functions** 2.1 Quadratic Equations: Quadratic Formula 2.2 Quadratic Functions: Parabolas 2.3 Business Application Using Quadratics----2.4 Special Functions (polynomial, rational, absolute value function) |
| **Chapter Three** | **3) Matrices** 3.1 Matrices (Section 2.1 from the second book)3.2 Addition, Subtraction and Multiplication of Matrices (Section 2.2 from the second book)3.4 Determinant , Inverse of a Square Matrix and Cramer’s Rule (Section 2.3, Section 3.1, Section 3.3, Section 3.5 from the second book)3.5 Applications of Matrices (Section 3.5 from the **first** book) |
| **Chapter Five** | **5) Exponential and Logarithmic Functions** 5.1 Exponential Functions 5.2 Logarithmic Functions and Their Properties 5.3 Solutions and Applications of Exponential and Logarithmic Functions  |
| **Chapter Nine** | **Derivatives**9.1 Limits9.2 Continuity9.3 Rates of change and derivatives9.4 Derivative formulas9.5 The product rule and Quotient rule9.6 Chain Rule and the power rule9.7 Using Derivative Formula9.8 Higher Order Derivatives |
| **Chapter Ten** | **Applications of Derivatives**10.1 Relative Maxima and Minima10.2 Concavity , points of Inflection10.3 Optimization in Business and Economics(Example1, Example2, Example3)10.4 Applications of Maxima and Minima (Example1, Example2) |
| **Chapter Twelve** | **Indefinite Integrals**12.1 Indefinite Integrals |
| **Chapter Thirteen** | **Definite Integrals**13.1 The definite integrals with their properties |
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