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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 Limits  9.2 Continuity  9.3 Rates of change and derivatives  9.4 Derivative formulas  9.5 The product rule and Quotient rule  9.6 Chain Rule and the power rule  9.7 Using Derivative Formula  9.8 Higher Order Derivatives |
| **Chapter Ten** | **Applications of Derivatives**  10.1 Relative Maxima and Minima  10.2 Concavity , points of Inflection  10.3 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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