

MASAAI MARA UNIVERSITY

SCHOOL: Business and economics

COURSE NAME: Business Mathematics II

COURSE CODE: BBM 108

LECTURER: OGEGA JAPHETH.

COURSE OUTLINE

Purpose of the course

The unit is intended to develop the learner's mathematics knowledge and skills. They will acquire competence that would enable them enhance their effectiveness and efficiency in handling quantitative and qualitative data in business

Course Description

Set theory, Matrix and determinants, Application of matrices, Linear Programming, Limits and continuity, differentiation, application of derivatives in business, Partial differentiation, economic application of partial derivatives, integration, interests and annuities, index numbers simple determination and their uses: The concept of inflation. Taxation; purpose, principle types and calculation of personnel income taxes, Pay - As - You - Earn.(PAYE). Value added Tax (VAT), stock exchange ; Stock shares, bonds, stock Market ratios, shares value.

UNIT OBJECTIVES

By the end of this unit the learner should be able to:-

1. Develop mathematical skills and use them independently
2. Develop interest and curiosity in Quantitative analysis
4. Recognize the need for relevance and importance of mathematics in their field of study

COURSE CONTENT

WEEK ONE

1. Set theory

Definition of sets, Methods of set representation of, Finite and infinite sets, Universal set, The null set or empty set, Equal or equivalent sets, Complement of a set, Intersection and union, Set Operations And Some Laws Of Set Theory,

WEEK TWO

The Venn Diagram

The Venn Diagram, Mutually exclusive or disjointed sets, Some Laws of Set Algebra, Solving Problems Using Venn Diagrams

WEEK THREE

2. Matrix algebra

Application of matrix algebra to input-output analysis and elementary Markovian process Properties of matrices, Equal Matrices, Column Matrix or column vector, Row matrix or row vector Transpose of a Matrix.

WEEK FOUR

- CAT 1

WEEK FIVE

OPERATION OF MATRICES

Square Matrix, An identity of unity matrix operation on matrices

Matrix addition and subtraction, Multiplying a matrix by a number, Matrix, multiplication Multiplication of two vectors, Multiplication of two matrices, The determinant of a square matrix, Inverse of a matrix, Cramers Rule in Solving Simultaneous Equations, Probability Transition Matrices (Brand switching), INPUT – OUTPUT ANALYSIS, MARKOV CHAINS/PROCESSES, Applications of Markov Chains in Business

WEEK SIX

Linear Programming

Definition of Linear programming, Application of linear programming, Steps in solving linear, programming problems(problem formulation), Solving linear programming problems,

WEEK SEVEN

Graphical Methods

Graphical solution, Assumption made in linear programming, Special cases in linear programming, SIMPLEX METHOD

WEEK EIGHT

- CAT 2

WEEK NINE

Calculus

Limits and continuity, differentiation, application of derivatives in business, Partial differentiation, economic application of partial derivatives, integration profit function, Cost function and demand function.

WEEK TEN

5. Interests and annuities

- Index numbers and determinations of their uses.
- The concept of inflation

WEEK ELEVEN

6. Taxation

Purpose of taxation

principle types and calculations of PAYE. (Pay - As - You - Earn)

Value added tax (VAT)

WEEK TWELVE AND THIRTEEN

7. Stock Exchanges

- Stock shares
- bonds

- stock market ratios
- shares value

WEEK FOURTEEN

Exams.

Teaching methodology

The course will utilize the following approaches

- Lectures
- Group/Class presentations
- Assignments

ReverenceS

1. Paul F. Velleman (2009) Business statistics 8th edition McGraw - Hill International publishers
2. Google notes