**Course code**: ECAS 0121 **Title**: Business Mathematics

**Course Outline**

This course focuses on an integrated treatment of mathematics and covers major topics such as algebra, calculus, optimization, and modelling techniques with an emphasis on application in economics. This paper is a pre-requisite for some higher level economics and finance courses. This course assumes a minimal background in mathematics and aims to give the students an introduction to each topic.

**Course objectives:**

This course enables student teachers to:

* explain and use equations,
* state the formulae, and mathematical expressions and relationships in a variety of contexts
* Be able to explain and do some differentiation
* Solve some problems using the chain, quotient rule etc.
* Appreciate the basic terms in the areas of business calculus and financial mathematics
* Independently solving of business problems
* . Understand linear programming, transportation models and their application to business

**Learning Outcomes:**

 Upon successful completion of this course learners should be able to:

* apply the knowledge in mathematics (algebra, matrices, calculus, optimization) in solving business problems
* demonstrate mathematical skills required in mathematically intensive areas in commerce such as Finance and Economics
* do critical thinking, modelling, and problem solving skills in a variety of contexts

**Teaching and learning strategies**

The teaching and learning strategies will comprise of the following

* Interactive lectures
* Brainstorming
* Role play
* Self-learning
* Group activities
* Panel discussions
* Case studies
* Problem solving
* Researching and exploring

**Course delivery mode**

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| **Interactive Lectures** | **Tutorial /Seminars** | **Assignments /Practical** | **Portfolio** | **Self-Study** | **Group field project** |
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**Course Content:** Business Mathematics

* Functions
* Limits
* Basic differentiation
* Basic interest account (simple and compound interest rates)
* Chain calculus
* Use graphical methods to resolve linear programming problems
* Define the limiting value of a function.
* Apply the limiting value of the slope of tangent line.
* Define the continuity of a function.
* Differentiate a function from first principles.
* State the formula for differentiation of a function, of products and quotient functions. Differentiate simple algebraic,
* Obtain second derivative of a function.
* Explain the condition for turning point of a function.
* Distinguish between maximum values of a function of 2nd degree.
* Explain limiting value of a function.
* *Solve problems involving differential calculus. Sketch the maximum and minimum points of functions of 2nd degree.*

*State the conditions for the maximum points and minimum simple multivariate function of three independent variables.*

* Apply the above in concepts to: Marginal concepts. Finding optimum cost, and Solving cost and profit problems in finance.

**Course assessment mode**

* Continuous Assessment

Presentations, assignment, test, quizzes, etc. - 30%

Portfolio (product/showcases, evaluation, electronic products, process portfolio) - 10%

* End of Semester Examination - 60%

**References**

**Schaum’s Outline of Mathematical Methods for Business and Economics Edward T. Dowling, Ph.D.**

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