Polytechnic Institute of Santarém (Portugal)

Management and Technology School

ERASMUS

APLLIED MATHEMATICS FOR BUSINESS

Schedule
2 hours per week, 15 weeks
Semester 2

ECTS : 3

Isabel Maria Cândida Duarte and Tiago Miguel Dias Domingues

Objective

The primary objective of applied mathematics for business is to prepare students to subsequent work in other courses and to make them as comfortable as possible in an environment which increasingly makes use of quantitative analysis.

The course will provide an informal and non-intimidating introduction to mathematical principles, techniques, and applications most useful for students in business.

Evaluation

The evaluation will be determined as follows: 20% homeworks and group exercises, and 80% for the final test.

Meeting occasions and contact

We will be present to receive the students in days/hours of our schedule. We can also be contacted at isabel.duarte@esg.ipsantarem.pt, tiago.domingues@esg.ipsantarem.pt.

Languages

Classes will be lectured in English.

Erasmus
Applied Mathematics for Business

Module I – Introduction to mathematics

Linear Equations and Functions

- Solution of Linear Equations in One Variable
- Functions
- Linear Functions
- Graphs and Graphing Utilities
  Graphs Solutions of Linear Equations
- Solutions of Systems of Linear Equations:
  Three-Variable Systems of Equations
- Applications of Functions in Business and Economics

Exponential and Logarithmic Functions

- Exponential Functions
- Logarithmic Functions and Their Properties
- Solution of Exponential Equations;

Derivatives

- Limits
- Continuous Functions: Limits at Infinity
- Average and Instantaneous Rates of Change: The Derivative
- The Product Rule and the Quotient Rule
- Higher-Order Derivatives
- Applications of Derivatives in Business and Economics

Definite Integrals: Techniques of Integration

- Area Under a Curve
- The Definite Integral: The Fundamental Theorem of Calculus
- Using Tables of Integrals
- Integration by Parts
- Area Between Two Curves
- Applications of Definite Integrals in Business and Economics

Module II – Statistics

Exploratory data analysis

- Population and sample
- Types of data and variables
- Organization of data
- Location and dispersion measures
- Graphs
- Manipulation of data using SAS Studio

Statistical Inference

- Estimation
- Hypothesis testing: parametric and non-parametric view
- Linear regression
- Applications using SAS Studio

Bibliography

Haeussler, E., Paul, R. And Wood, R.J. (2021) *Introductory Mathematical Analysis for Business, Economics and the Life and social Sciences*. 11th Edition. Pearson.

Barnett, R.A., Byleen, K.E., Ziegler, M.R. and Stocker C.J.(2018). *Calculus for Business, Economics, Life Sciences, and Social Sciences*. 14ht Edition. Prentice Hall.

Budnick, F. S. (1993) *Applied Mathematics for Business, Economics and the Social Sciences*. 4th Edition. McGraw-Hill.

Ross, S.M. (2005) Introductory Statistics. Academic Press.

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