NATIONAL UNIVERSITY OF ENGINEERING
COLLEGE OF ECONOMICS AND STATISTICAL ENGINEERING

STATISTICAL ENGINEERING PROGRAM

EC312 – FINANCIAL MATHEMATICS

I. GENERAL INFORMATION

CODE	: EC312 Financial Mathematics
SEMESTER	: 3
CREDITS	: 2
PREREQUISITES	: None
HOURS PER WEEK	: 5 (2 Theory - 2 Practice - 1 Laboratory)
CONDICIÓN	: Mandatory

II. COURSE DESCRIPTION

This course aims to channel the undergraduate student to develop mathematical models to interpret and solve the financial problems that often arise in the management of companies, investment agencies and entities of the banking and financial system.

III. COURSE OUTCOMES

1. Train the student for the valuation of financial transactions.
2. Ability to apply financial knowledge to practice.

IV. METHODOLOGY

The knowledge of the subject is acquired through the reasoned study of all the chapters of the course, as well as of the complementary didactic material that is made available to the students in class. In addition, students are required to carry out ongoing assessment and learning activities planned in the "evaluation activity schedule" and defined in the "evaluation system".

V. LEARNING UNITS

Chapter 1: Simple Interest
Introduction. Simple interest. Time frame. Accurate Interest and Ordinary Interest. Commercial standard. Present value. Rode. Rate changes. Equations of value.

Chapter 2: Compound Interest
Introduction. Simple interest and compound interest. Rode. Current value. Amount with rate changes. Equations of value.

Chapter 3: Discount
Introduction. Rational discount. Simple rational discount. Rational compound discount. Bank discount. Simple bank discount. Composite bank discount. Commercial discounts. Unit trade discount. Successive commercial discount.

Chapter 4: Fees
Introduction. Nominal rate and proportional rate. Effective rates. Equivalent fees. Relationship between effective rate and equivalent rate. Equivalence between rational and bank rate. Active and passive tax. Compensatory interest rate. Moratorium interest rate. Legal interest rate. Rate of inflation. Real rate. Devaluation rate. Continuous capitalization rates.

Chapter 5: Annuities
Introduction. Amount of overdue annuities. Present value of past due annuities. Amount of an advance annuity. Present value of an anticipated annuity. Deferred Annuities. Annuities at simple interest. Amount of an annuity at simple interest. Present value of a simple interest annuity.

Chapter 6: Perpetual Annuities
Introduction. Present value of a perpetual annuity past due. Present value of an anticipated perpetual annuity.

Chapter 7: Gradients
Introduction. Present value of annuities that vary in arithmetic progression. Present value of uniform gradients. Equivalences between uniform annuities and annuities that vary in arithmetic progression. Present value with annuities in geometric progression.

Chapter 8: Amortization
Introduction. Amortization funds. Repayment fund table. Amortization. Amortization table. Net present value. Observations on the VAN method. Internal rate of return. Observations on the IRR method. Straight Depreciation. Summation method of digits. Method of reduction of balances.

VI. GRADING SYSTEM

This course uses the Evaluating System “G”.

VII. BIBLIOGRAPHY

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- Ayres, Jr. Frank (1998). Financial Mathematics, 1998, Mc Graw Hill, Mexico
- Center for Research and Administrative Consultancies CICA. University of Antioquia, College of Economics. VIRTUAL COURSES WITH EMPHASIS IN NATIONAL AND INTERNATIONAL FINANCE. Web created by Fernando Franco Cuartas. Colombia.
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- Aragon bottle, Hernán. Financial Mathematics Ed. Eduardo de Habich UNI.

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