



MANAGEMENT, FINANCE AND ECONOMICS,

Course: Quantitative Finance

Academic Year: 2015/2016

Lectures:

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Aims:

- To develop the student's understanding of basic concepts and terminology of financial mathematics;
- To enhance the students ability to solve practical problems; and
- To understand the financial mathematical concepts necessary for other courses dealing with finance, insurance and investments.



Program:

Topics covered in the Quantitative Finance Course include:

- 1. Simple interest**
 - 1.1 Types of time and interest**
 - 1.2 Future value at simple interest**
 - 1.3 Present value at simple interest**
 - 1.4 Simple interest debt instruments**
 - 1.5 Equation of value**
 - 1.6 Equivalent time**

- 2. Discount interest**
 - 2.1 Comparing simple and discount interest**
 - 2.2 Discount applications – Treasury Bills**

- 3. Compound Interest**
 - 3.1 Compound interest – Future Value Formula**
 - 3.2 Nominal rates and effective interest**
 - 3.3 Finding the Compound rate**
 - 3.4 Finding the time for an investment to grow**
 - 3.5 Equations of Value to Find the unknown**
 - 3.6 Continuous compounding**

- 4. Ordinary Annuities**
 - 4.1 The future value of an ordinary annuity**
 - 4.2 The Present Value of an Ordinary Annuity**
 - 4.3 The Periodic Payment or Rent for an Ordinary Annuity**

- 5. Other Annuities Certain**
 - 5.1 Deferred Annuities**
 - 5.2 Perpetuities;**

- 6. Variable Payment Annuities**
 - 6.1 Arithmetic**
 - 6.2 Geometric**

- 7. Amortisation of Debts and Amortisation Schedules**

- 8. Investing in bonds**

- 9. Leasing**

- 10. Shares valuation**



Bibliography:

Gary. G. & Larry D. (2009), Mathematics of Interest Rates and Finance, Pearson, London;

Barroso, M. N.; Couto E. & Crespo, N. (2009) Cálculo e Instrumentos Financeiros, Escolar Editora, Lisboa.

Assessment:

- A) Intermediate Test (02.11.2015 to 06.11.2015): 30%;
- B) Mini Test in class (12/14/2015 to 12/18/2015): 20%;
- C) Regular Exam: 50% (minimum grade of 8.0);
- D) Extra Exam: 100% extra exam or extra exam 50% + 50% A and B.

Each test/exam is carried out without consultation. Graphical calculators or calculators with memory are not allowed during the exam or test.