**SYLLABUS: Financial Mathematics**

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| **Course Basic Information** | | | |
| **Academic Unit:** | Economic Faculty | | |
| **Course title:** | **Financial Mathematics** | | |
| **Level:** | Bachelor | | |
| **Course Status:** | Mandatory | | |
| **Year of Study:** | 1styear, 2 ndsemester | | |
| **Number of Classes per Week:** | 2+1 | | |
| **ECTS Credits:** | 4 ECTS | | |
| **Time /Location:** | Economic Faculty | | |
| **Teacher:** | Nimete Berisha; Ajet Ahmeti | | |
| **Contact Details:** | [nimete.berisha@uni-pr.edu](mailto:nimete.berisha@uni-pr.edu); [ajet.ahmeti@uni-pr.edu](mailto:ajet.ahmeti@uni-pr.edu) | | |
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| **Course Description:** | Through this course students will be introduced to:   * Understanding and calculating simple interest and compound interest; * decursive vs. anticipative compounding; * decursive vs. anticipative ways of annuity calculation; * Loans, loan amortization; * Loan amortization schedule, Amortization schedule control; * Loan conversion; * Loan consolidation; * Investment profitability | | |
| **Course Goals:** | Through this course students will be introduced to:   * Understanding and calculating simple interest and compound interest; * decursive vs. anticipative compounding; * decursive vs. anticipative ways of annuity calculation; * Loans, loan amortization; * Loan amortization schedule, Amortization schedule control; * Loan conversion; * Loan consolidation; * Investment profitability | | |
| **Expected Learning Outcomes:** | **Upon course completion students shall:**   * be able to demonstrate skills in solving problems; * know how to use quantitative techniques in analyzing managerial decisions; * be able to show increased level of critical thinking and reasoning skills; * have sufficient theoretical and practical knowledge in the implementation of simple and compound interest; * have sufficient theoretical and practical knowledge in decursive and anticipative compounding; * have sufficient theoretical and practical knowledge in decursive and anticipative ways of annuity calculation; * have sufficient theoretical and practical knowledge on loans and loan amortization; | | |
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| **Student Workload (should be in compliance with student’s Learnign Outcomes)** | | | |
| **Activity** | **Hours** | **Day/ Week** | **Total** |
| Lectures | 2 | 15 | 30 |
| Theory/ Lab Work/Exercises | 1 | 15 | 15 |
| Practical Work |  |  |  |
| Consultations with the teaher | 1 | 15 | 15 |
| Field Work |  |  |  |
| Test, seminar paper | 1 | 2 | 2 |
| Homework | 1 | 15 | 15 |
| Self-study (library or home) | 1 | 15 | 15 |
| Preparation for final exam | 2 | 3 | 6 |
| Assessment time (test, quiz, final exam) | 1 | 2 | 2 |
| Projects, presentations, etc. |  |  |  |
| **Total** |  |  | **100** |
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| **Teaching Methods:** | Lectures, exercises during class using different materials, one project work in group of 2-3 students (independent work), individual homework | | |
| **Assessment Methods:** | Individual assignments completed in class 30%; Individual assignments completed at home 30%;  Exam 40%. | | |
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| **Primary Literature:** | 1. Ajet Ahmeti. Matematikë financiare , Prishtinë 2017. 2. Faton M Berisha, Muharrem Q. Berisha,   Matematikë për biznes dhe ekonomiks,  Prishtinë 2007 | | |
| **Additional Literature:** | 1. Alpha,C. Chiang,Fundamental methods of Mathematical Economics, McGraw-Hill International Edition,third Edition 1984. 2. Edward T. Dowling, Introduction to Mathematical Economics, McGraw-Hill, 2001 3. Eugene Don, Joel Lerner, Basic Business Mathematics, McGraw-Hill, 2000. | | |

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| **Designed teaching plan** | | |
| **Week** | **Title of the lecture** | **Exercises** |
| **Week 1:** | * **Ratios and proportions** * **Percentage calculation** | Problem solving |
| **Week 2:** | * **Simple interest calculation** | Problem solving |
| **Week 3:** | * **Compound interest calculation** | Problem solving |
| **Week 4:** | * **Decursive compounding** * **Calculation of capital value added** * **Decursive compounding factor**   **Conform norm of interes**   * **Initial capital value calculation** | Problem solving |
| **Week 5:** | * **Periodic deposits** * **Depositing at the beginning period depositing at the end of calculating period** * **Iterative methods for calculating the interest rate** * **Application of iterative method for calculating interest rate in continuous compounding** | Problem solving |
| **Week 6:** | * **Variable periodic deposits** * **Harmonization of deposits with capitalization periods** | Problem solving |
| **Week 7:** | **Periodic rent**   * **Dekursiv rent .Cakculation of rents and mizës** * **Aantisipativ rent . Calculation of rent and mizës** * **Calculation of interest rate by using the iterative method** | Problem solving |
| **Week 8:** | **Loans. Loan amortization**   * **Loans with equal annuities** * **Calculation of loan and annuity** * **Calculating installments when the loan and annuity are known** * **Calculation of the loan paid** | Problem solving |
| **Week 9:** | **Preparing amortization plan**   * **Amortization plan** * **Amortization plan control** | Problem solving |
| **Week 10:** | * **Rounded annuity loans** * **Amortization plan** * **Amortization plan control** | Problem solving |
| **Week 11:** | **Amortization of loans with variable annuities**   * **Do annuities increase or decrease according to arithmetic progression** * **Do annuities increase or decrease according to geometric progression** | Problem solving |
| **Week 12:** | **Amortization of loans with equal annuities**   * **Calculation of installment and annuity. Amortization plan** * **Calculation of paid and remaining debt** * **Loans divided into bonds** * **Bond payment according to nominal value. Amortization plan** | Problem solving |
| **Week 13:** | * **Loan conversion** * **Loan consolidation** | Problem solving |
| **Week 14:** | * **Loan amortization in anticipative compounding** * **Amortization of loans with equal annuities** * **Amortization plan with equal annuities** * **Amortization plan with rounded annuities** | Problem solving |
| **Week 15:** | **Review of profitability of investment**   * **The equivalent annual cost method** * **General method for determining the effectiveness of investment** | Problem solving |
| **Academic Policies and Code of Conduct** | | |
| We start and finish class on time.  Tools used during class must be cleaned and stored away at the end of class. | | |