**Course title : Financial Mathematics**

|  |
| --- |
| **Course Basic Information** |
| **Academic Unit:**  | Economic Faculty |
| **Course title:** | **Financial Mathematics** |
| **Level:** | Bachelor |
| **Course Status:** | Mandatory |
| **Year of Study:** | I |
| **Number of Classes per Week:** | 2+1 |
| **ECTS Credits:** | 4 |
| **Time /Location:** | Summer semester, Prishtina |
| **Teacher:** | Ajet Ahmeti |
| **Contact Details:**  | ajet.ahmeti@uni-pr.edu |
|  |
| **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;
 |
|  |
| **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 | 2 | 15 | 30 |
| Field Work |  |  |  |
| Test, seminar paper | 1 | 2 | 2 |
| Homework |  |  |  |
| Self-study (library or home) | 1 | 15 | 15 |
| Preparation for final exam | 4 | 1 | 4 |
| Assessment time (test, quiz, final exam) | 2 | 2 | 4 |
| Projects, presentations, etc.  |  |  |  |
| **Total** |  |  | **100** |
|  |
| **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%. |
|  |
| **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.
 |

|  |
| --- |
| **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.**Mobile/smart phones, and other electronic devices (e.g. iPods) must be turned off (or on vibrate) and hidden from view during class time.* *Laptop and tablet computers are allowed for quiet use only; other activities such as checking personal e-mail or browsing the Internet are prohibited.* |

**Note | If a student has more than 3 class assignements evaluated below 50% he/she loses the right on taking the final exam. Evaluation is done from 0-100 %.**