

## Course description

<b>Course abbreviation:</b>	KEM/AFIPV	<b>Page:</b>	1 / 4
<b>Course name:</b>	Computations in Finance and Insurance		
<b>Academic Year:</b>	2023/2024	<b>Printed:</b>	31.05.2024 15:28

<b>Department/Unit /</b>	KEM / AFIPV			<b>Academic Year</b>	2023/2024
<b>Title</b>	Computations in Finance and Insurance			<b>Type of completion</b>	Exam
<b>Long Title</b>	Computations in Finance and Insurance in English				
<b>Accredited/Credits</b>	Yes, 4 Cred.			<b>Type of completion</b>	Written
<b>Number of hours</b>	Lecture 2 [Hours/Week] Tutorial 1 [Hours/Week]				
<b>Occ/max</b>	Status A	Status B	Status C	<b>Course credit prior to</b>	YES
<b>Summer semester</b>	0 / -	0 / -	1 / -	<b>Counted into average</b>	YES
<b>Winter semester</b>	0 / -	0 / -	0 / -	<b>Min. (B+C) students</b>	10
<b>Timetable</b>	Yes			<b>Repeated registration</b>	NO
<b>Language of instruction</b>	English			<b>Semester taught</b>	Summer semester
<b>Optional course</b>	Yes			<b>Internship duration</b>	0
<b>Evaluation scale</b>	1 2 3 4			<b>Ev. sc. – cred.</b>	S N
<b>No. of hours of on-premise</b>					
<b>Auto acc. of credit</b>	Yes in the case of a previous evaluation 4 nebo nic.				
<b>Periodicity</b>	K				
<b>Substituted course</b>	KSO/AFIPV				
<b>Preclusive courses</b>	KEM/FIPV1				
<b>Prerequisite courses</b>	N/A				
<b>Informally recommended courses</b>	N/A				
<b>Courses depending on this Course</b>	N/A				

### Course objectives:

The aim of this course is to: introduce students to the basic concepts and used quantity in financial calculations, explain and present to students practical application of different interest types for calculations. Demonstrate to students the principle of time value of money and practical usage. Introduce students to different type of annuities and present the practical usage of calculations on examples. Demonstrate to students the principles of yield of investments calculations with the help of effective interest rate. Explain to students the process of project evaluation and demonstrate the usage of different evaluative criteria and their calculations. Present to students the usage of financial calculations in insurance systems for calculation different type of insurance rate.

### Requirements on student

Content, organization and requirements for credits of practice:  
Requirements are published in LMS Moodle (<http://moodle.fek.zcu.cz>).

1. Registration to the LMS Moodle and enroll to course FIPV1.
  2. Fulfillment of all quizzes to deadline.
  3. Presentation of example according to scheduling.
  4. Seminary assignment elaboration.
  5. Participation on final test.
  6. Overall assessment of all study activities minimally 90 % incl.
- Students can take part in only one final test and in one corrective test.

Content, organization and requirements for exam:

Students can pass examination paper after credits grand.

Written exam consists of calculations of exercises from lectures, practice and LMS Moodle. Exam consists of four tasks. Some of them have more parts.

Exam classification:

Percentage Classification: 90-100 = A, 70-89 = B, 50-69 = C, 0-49 = Fail.

### Content

The introduce to course.  
 Simple interest, simple discount, time value of money.  
 Compound interest, compound discount, other type of interest.  
 Annuities. Ordinary annuity.  
 General annuities and other annuities.  
 Amortization.  
 Projects evaluation.  
 Products of short-term markets.  
 Insurance calculations.

## Fields of study

e-learning (Moodle)

## Guarantors and lecturers

- **Guarantors:** Doc. RNDr. Mikuláš Gangur, Ph.D. (100%)
- **Lecturer:** Doc. RNDr. Mikuláš Gangur, Ph.D. (100%)
- **Tutorial lecturer:** Doc. RNDr. Mikuláš Gangur, Ph.D. (100%)

## Literature

- **Basic:** Radová, Jarmila; Dvořák, Petr.; Málek, Jiří. *Finanční matematika pro každého*. 7., aktualiz. vyd. Praha : Grada, 2009. ISBN 978-80-247-3291-6.
- **Basic:** CIPRA, T. *Praktický průvodce finanční a pojistnou matematikou*. Praha : Ekopress, 2005. ISBN 80-86119-91-2.
- **Basic:** ZIMA, P., BROWN, R. L. *Shaum's outline of theory and problems of mathematics of finance*. 2nd ed. New York : McGraw-Hill, 1996. ISBN 0-07-008203-0.
- **Extending:** GROB, H. L., EVERDING, D. *Finanzmathematik mit dem PC*. [1. Aufl.]. Wiesbaden : Gabler, 1992. ISBN 3-409-12900-6.

## Time requirements

### All forms of study

Activities	Time requirements for activity [h]
E-learning [dáno e-learningovým kurzem]	26
Presentation preparation (report) (1-10)	1
Preparation for an examination (30-60)	30
Preparation for comprehensive test (10-40)	10
Contact hours	39
<b>Total:</b>	<b>106</b>

## assessment methods

**Knowledge - knowledge achieved by taking this course are verified by the following means:**

Written exam  
 Portfolio  
 Seminar work  
 Individual presentation at a seminar

**Skills - skills achieved by taking this course are verified by the following means:**

Written exam

Test

N/A

**Competences - competence achieved by taking this course are verified by the following means:**

Written exam

Test

N/A

**prerequisite**

**Knowledge - students are expected to possess the following knowledge before the course commences to finish it successfully:**

Know commonly used basic mathematical operations, mathematical power, exponential and logarithmic functions.

Understand the solution of power, exponential and logarithmic equations. The advantage is the knowledge of basic iterative methods for determining the root of a nonlinear equation together with the ability of practical application of these basic iterative methods (soil interval, linear interpolation).

**Skills - students are expected to possess the following skills before the course commences to finish it successfully:**

Use e-learning systém

Apply high school mathematics

**Competences - students are expected to possess the following competences before the course commences to finish it successfully:**

N/A

**teaching methods**

**Knowledge - the following training methods are used to achieve the required knowledge:**

E-learning

Individual study

Students' portfolio

Interactive lecture

Discussion

**Skills - the following training methods are used to achieve the required skills:**

Interactive lecture

E-learning

Self-study of literature

**Competences - the following training methods are used to achieve the required competences:**

E-learning

Practicum

Self-study of literature

**learning outcomes**

**Knowledge - knowledge resulting from the course:**

Use orientation in the basic calculations calculations and quantitative methods in finance and insurance.

Apply methods and calculations in solving of practical problems in finance and insurance.

Evaluate, compare and select the suitable products of short-term money market and in the insurance area.

**Skills - skills resulting from the course:**

Apply basic techniques of financial computing.

Calculate interest, pensions, money market instruments.

Construct cash-flow of project and he can evaluate it.

**Competences - competences resulting from the course:**

N/A

Course is included in study programmes: