



MODULE DESCRIPTION

Module code	full-time studies:	Z-ZIP1-E-203
	part-time studies:	Z-ZIPN1-E-203
Module name	Financial Mathematics	
Module name in Polish	Matematyka finansowa	
Valid from academic year	2019/2020	

MODULE PLACEMENT IN THE SYLLABUS

Field of study	MANAGEMENT AND PRODUCTION ENGINEERING
Level of education	1st degree
Studies profile	General
Form and method of conducting classes	Full-time and Part-time
Specialisation	All
Unit conducting the module	Department of Mathematics and Physics
Module co-ordinator	Sylwia Hozejowska, PhD, DSc Krzysztof Grysa, PhD, DSc, ProfTit
Approved by:	Dariusz Bojczuk, PhD, DSc

MODULE OVERVIEW

Type of subject / group of subjects	Basic
Module status	Compulsory
Language of conducting classes	English
Module placement in the syllabus - semester	Semester II
Initial requirements	No requirements
Examination (YES/NO)	NO
Number of ECTS credit points	2

Method of conducting classes		Lecture	Classes	Laboratory	Project	Other
Per semester	full-time studies:	15	15			
	part-time studies:	9	9			

TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Category	Symbol	Learning outcomes	Assignations to the directional learning outcomes
Knowledge	W01	A student has advanced knowledge as regards time-related financial operations; in addition, a student knows such notions as: the rate of return, simple and compound interest, and a bill of exchange.	ZIP1_W01
	W02	A student has advanced knowledge as string payments and managing them, calculating their value at any period of time.	ZIP1_W01
Skills	U01	A student can use advanced knowledge to compare deposit interests in terms of their profitability and is able to calculate present and future value of string payments.	ZIP1_U12
	U02	A student can use advanced knowledge to analyse credit profitability individually and to analyse simple string annuities.	ZIP1_U12
Social competences	K01	A student understands the necessity of continuous improvement of his/her knowledge as regards financial mathematics.	ZIP1_K01
	K02	A student is ready to co-operate, communicate effectively, and act ethically as regards financial operations.	ZIP1_K04

TEACHING CONTENTS

Method of conducting classes	Teaching contents
Lecture	Simple interest, simple discounting, interest in advance. Bills of exchange. T-bills. Compound interest, continuously compounded rate. Periodic investment and string payments. Instalments – credit repayment. Credits with additional charge, with a delayed payment period. Rents, Internal Rate of Return (IRR). Net Present Value (NPV).
Classes	Simple interest, simple discounting, interest in advance. Bills of exchange. T-bills. Compound interest, continuously compounded rate. Periodic investment and string payments. Instalments – credit repayment. Credits with additional charge, with a delayed payment period. Rents, Internal Rate of Return (IRR). Net Present Value (NPV).

METHODS OF ASSESSING TEACHING RESULTS

Symbol	Methods of checking the learning outcomes (select X)					
	Oral exam	Written exam	Test	Project	Statement	Other
W01			X			X
W02			X			X
U01			X			X
U02			X			X

K01						X
K02						X

FORM AND CONDITIONS OF PASSING

Form of classes	Form of credit	Passing conditions
Lecture	Credit with grade	Completion of exercises.
Classes	Credit with grade	Obtaining at least 50% of the points from tests and individual work during classes.

STUDENT WORKLOAD

Balance of ECTS points												
No.	Type of student's activity	Student's workload										Unit
		full-time					part-time					
		Lc	C	Lb	P	O	Lc	C	Lb	P	O	
1.	Participation in the activities	15	15				9	9				h
2.	Other (consultation, exam)	2	2				2	2				h
3.	Number of hours of a student's assisted work	34					22					h
4.	Number of ECTS credit points which are allocated for assisted work	1,4					0,9					ECTS
5.	Number of hours of a student's unassisted work	16					28					h
6.	Number of ECTS credit points which a student receives for unassisted work	0,6					1,1					ECTS
7.	Work input connected with practical classes	25					25					h
8.	Number of ECTS credit points which a student receives for practical classes	1,0					1,0					ECTS
9.	Total number of hours of a student's work	50					50					h
10.	Punkty ECTS za modul <i>1 ECTS=25 hours</i>	2										ECTS

LITERATURE

- Mitsel A.A. (2012), *Basics of Financial Mathematics. A study guide*, Ministry Of Education And Science Of The Russian Federation, Federal State-Funded Educational Institution of Higher Vocational Education «National Research Tomsk Polytechnic University», Department of Higher Mathematics and Mathematical Physics
(https://portal.tpu.ru/SHARED/I/LEVCHENKOEa/eng/academic/prof_eng_en/Uchebnoe_posobie.pdf)

2. Department of Decision Sciences (2012), *Introductory Financial Mathematics*, University of South Africa (https://gimmenotes.co.za/wp-content/uploads/filebase/introductory_financial_mathematics_dsc1630/Study-guide.pdf)
3. Horst U. (2018), *Introduction to Mathematical Finance*, Department of Mathematics Humboldt, University Berlin (<https://www.applied-financial-mathematics.de/sites/default/files/main-student.pdf>)