	Universitas Brawijaya **Faculty of Mathematics and Natural Sciences** **Department of Statistics / Bachelor Statistics Study Programme**

Module Handbook		
Module Name:	Financial Mathematics (MAS62331)	
Module Level:	Bachelor	
Abbreviation, if applicable:	-	
Sub-heading, if applicable:	-	
Courses included in the module, if applicable:	-	
Semester/term:	2nd / First Year	
Module Coordinator(s):	Darmanto, S.Si., M.Si.	
Lecturer(s):	Dr. Eni Sumarminingsih, S.Si., M.M.	
	Darmanto, S.Si., M.Si.	
	Luthfatul Amaliana, S.Si.,.M.Si.	
	Nur Silviyah Rahmi, S.Si., M.Stat	
Language:	Indonesian	
Classification within the curriculum:	Compulsory Course	
Teaching format / class per week during semester:	3 × 50 minutes	
Workload:	2.5 hours lectures, 3 hours structural activities, 3 hours individual studies, 16 weeks per semester, and total 136 hours per semester 4.5 ECTS	
Credit Points:	3	
Requirements:	Mathematics (MAS61111)	
Learning goals / competencies:	**General Competence (Knowledge):**	
	ILO1	The students are able to master basic scientific concepts and statistical analysis methods applied on computing, social science, humanities, economics, industry and life science.
	ILO3	The students are able to manage, analyze, and complete the real case using statistical method on computing, social humanities, economics, industry and life science that helped by software, then present and communicate the results.
	ILO5	The students are able to apply logical, critical, systematic, and innovative thinking independently when applied to science and technology that contain humanities values, based on scientific principles, procedures and ethics with excellent and measurable results.

	ILO8	The students are able to apply and internalize the spirit of independence, struggle, entrepreneurship, based on values, norms, and academic ethics of Pancasila in all aspects of life.
	Specific Competence:	
	M1	Students are able to understand the concept of interest (simple and compound), the interest rate, cash value (present value) and final value (accumulation) of the interest rate, and apply it to the corresponding real cases (ILO1, ILO3, ILO5, ILO8).
	M2	Students are able to understand the concept of cash flow, cash flow assessment, and generalization of cash flow (ILO1, ILO3, ILO5, ILO8)
	M3	Students are able to understand the concept of a definite annuity: cash value and accumulation are paid on time, delayed, and paid p-times and are able to prove analytically the relationship between them and are able to communicate the relationship verbally (ILO1, ILO3, ILO5, ILO8) .
	M4	Students are able to apply the concept of annuity to the real case of amortization (debt payment scheduling) and depreciation with the effect of inflation or without the influence of inflation (ILO1, ILO3, ILO5, ILO8)
Contents:	1	The concept of interest
	2	Interest Rate Theory
	3	Basic Compound Interest Functions
	4	Annuity Nominal Interest Rate Paid p-times
	5	Discounted Cash Flow
Soft skill attribute:	Responsible, independently, and discipline	
Study/exam achievement:	Final score (NA) is calculated as follow: 7.5% Attendance, 20% assignment, 37.5% Quiz, 35% Midterm Exam Final index is defined as follow: A : > 80 - 100 B+ : > 75 - 80 B : > 69 - 75 C+ : > 60 - 69 C : > 55 - 60 D+ : > 50 - 55 D : > 44 - 50 E : 0 - 44	
Forms of media:	LCD and Projector	

Learning methods:	Lecture, assessment, and group discussion
Literature:	Main:
	1. S.G. Kellison, The Theory of Interest,2nd ed., 1991, Irwin/McGraw-Hill Co., Boston
	2. Lesmana, D. C. 2016. Matematika Keuangan Elementer: Seri Pendidikan Aktuaris. Indonesia. Departemen Matematika, FMIPA, IPB.
	Support:
	3. R. Cissel, Mathematics of Finance, 3rd ed., 1969, Houghton Mifflin Co.,Boston. 4. F. Ayres, Mathematics of Finance, Schaum' s, 1963, Mc Graw Hill. 5. M.M. Parmenter, Theory of Interest and Life Contingencies, with Pension Applications. 1999. Acted Publications: Winsted. 6. Sihotang J, 2003, Matematika Bisnis, Graha Ilmu, Yogyakarta. 7. Frensidy B, 2006, Matematika Keuangan, Penerbit Salemba Empat, Jakarta. 8. Wibisono Y, 1999, Manual Matematika Ekonomi, Gadjah Mada University Press, Yogyakarta.
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