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

Module Handbook		
Module Name:	Actuarial Science (MAS61332)	
Module Level:	Bachelor	
Abbreviation, if applicable:	-	
Sub-heading, if applicable:	-	
Courses included in the module, if applicable:	-	
Semester/term:	3rd / Second Year	
Module Coordinator(s):	Darmanto, S.Si., M.Si.	
Lecturer(s):	Darmanto, S.Si., M.Si.	
Language:	Indonesian	
Classification within the curriculum:	Elective 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:	Introduction to Probability Theory (MAS62111)	
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.
	ILO6	The students are able to take appropriate decisions to solve the problems expertly, based on the information and data analysis.

	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 understand the fundamental concept of actuarial science, general purpose of Insurance, the basics of probability theory, expected value and the application in actuarial value calculation. (ILO1, ILO3, ILO5, ILO8)
	M2	Students understand the concept of mortality table construction: calculation of each columns and the symbols. (ILO1, ILO3, ILO5, ILO8)
	M3	Students understand the definition of annuity, correlation between annuity and interest rate, cash value and final value of annuity. (ILO1, ILO3, ILO5, ILO6, ILO8)
	M4	Students understand the concept of calculating actuarial value (premiums, compensation, and premium reserves) on various types of Life Insurance. (ILO1, ILO3, ILO5, ILO6, ILO8)
Contents:	1	General review of Actuarial Science and Insurance
	2	Probability theory and expected value overview, and the application in actuarial
	3	Construct mortality table: symbol, structure, and the like.
	4	Annuity
	5	Life Insurance: kinds and premium calculation
	6	Premium reserves and adjusted premium reserves
	7	Redemption value
Soft skill attribute:	Responsible, independently, and discipline	
Study/exam achievement:	Final score (NA) is calculated as follow: 5% Attitude, 20% Assignments, 20% Quizzes, 27.5% Midterm Exam, 27.5% Final 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. Sembiring, R. K. 1986. *Asuransi I*. Karunika, Jakarta.
	2. Sembiring, R. K. 1986. *Asuransi II*. Karunika, Jakarta.
	Support:
	1. Bowers, N.L., Gerber, H.U., Hickman, J.C., Jones, D.A., and Nesbit, C.J. 1997. Actuarial Mathematics. 2nd Edition. Casualty Actuarial Society
	2. Jordan Jr, C.W., 1967, Life Contingencies: The Society of Actuaries, Chicago, Illionis
	3. Larson, R.E & Gaumnitz, E., 1962, Live Insurance Mathematic, John Willey & Sons, Inc
	4. Promislow, S. D. 2006. Fundamental of Actuarial Mathematics. John Wiley and Sons, New Jersey.
	5. Futami, Takashi. 1993. Matematika Asuransi Jiwa: Bagian I. Incoporated Foundation, Tokyo.
	6. Futami, Takashi. 1993. Matematika Asuransi Jiwa: Bagian II. Incoporated Foundation, Tokyo.
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