Module Description of Insurance Mathematics

Module Name	:	Insurance Mathematics
Module Level	:	Bachelor
Code, if applicable	:	23H01131103
Subtitle, if applicable	:	-
Courses, if applicable	:	Insurance Mathematics
Semester(s) in which the module is taught	:	5 (Fifth Semester)
Module coordinator(s)	:	Prof. Dr. Aidawayati Rangkuti, MS.
Lecturer(s)	:	Prof. Dr. Aidawayati Rangkuti, MS. Ainun Mawaddah Abdal, S.Si.,M.Si.
Language	:	Bahasa (Indonesian language)
Relation to curriculum	:	Elective course in third year for Bachelor degree in Mathematics
Type of teaching/teaching method	:	Lecturing, Small Group Discussion, Cooperative Learning, Self-Directed Learning
Contact hours	:	150 minutes lectures per week, 180 minutes structured activities per week, and 180 minutes independent study per week
Workload	:	Total workload is 135 hours per semester which consists of 40 hours per semester for Learning and Teaching, 47.5 hours per semester for Self-Study, and 47.5 hours per semester for Structured Works
Credit points	:	3 (4.8 ECTS)
Requirements according to the examination regulations	:	Students are required to attend at least 80% of the total meetings which is recorded via the attendance menu at https://sikola-v2.unhas.ac.id/, complete all mandatory assignments, and obtain permission from the lecturer to participate in the written examination.
Recommended prerequisites	:	Statistical Methods
Module objectives/intended learning outcomes	:	After the completion of this module, the student will be able to: CLO 1. apply mathematical methods, data management, analysis, and interpretation based on mathematical and statistical concepts; CLO 2. apply statistics to build models, implement probability laws, and develop applications in business, industry, health, demography, and programming, as well as prepare reports and presentations; CLO 3. adapt to society and the workplace, communicate effectively, collaborate in teams, and take responsibility.

<table>
<tr><td></td><td></td><td>The following is the mapping of the ILO and the CLO of this course:
<table>
<tr><th></th><th>ILO 3</th><th>ILO 7</th></tr>
<tr><td>CLO 1</td><td>X</td><td>X</td></tr>
<tr><td>CLO 2</td><td></td><td>X</td></tr>
<tr><td>CLO 3</td><td>X</td><td>X</td></tr>
</table></td></tr>
<tr><td>Content</td><td>:</td><td>Insurance Mathematics is an elective subject that provides understanding and development This elective course provides a comprehensive introduction to the mathematical foundations of insurance, focusing on the principles, models, and calculations used in life insurance, annuities, and premium determination. Students will develop the skills required to apply mathematical and statistical methods to real-world problems in the insurance industry.</td></tr>
<tr><td>Study and examination requirements</td><td>:</td><td>Study and examination requirements:
Students must attend 15 minutes before the class starts.
Students must switch off all electronic devices.
Students must inform the lecturer if they will not attend the class due to sickness, etc.
Students must submit all class assignments before the deadline.
Students must attend the exam to get final grade.</td></tr>
<tr><td>Exams and assessment formats</td><td>:</td><td>Participants are marked based on their performance in theory: Report (70%), and Assignments (30%).

Assignments assess student's ability to apply concepts independently, while Reports measure analytical and writing skills. Altogether, these components account for 100% of the final grade.

Students are marked based on their percentage of points obtained and based on the following grade scale:
<table>
<tr><th>Percentage of Achievement</th><th>Grade</th><th>Conversion Value</th></tr>
<tr><td>85 – 100</td><td>A</td><td>4.00</td></tr>
<tr><td>80 - <85</td><td>A-</td><td>3.75</td></tr>
<tr><td>75 - < 80</td><td>B+</td><td>3.5</td></tr>
<tr><td>70 - < 75</td><td>B</td><td>3.0</td></tr>
<tr><td>65 - < 70</td><td>B-</td><td>2.75</td></tr>
<tr><td>60 - < 65</td><td>C+</td><td>2.5</td></tr>
<tr><td>50 - < 60</td><td>C</td><td>2.00</td></tr>
<tr><td>40 - < 50</td><td>D</td><td>1.00</td></tr>
<tr><td>< 40</td><td>E</td><td>0.00</td></tr>
</table></td></tr>
<tr><td>Reading list</td><td>:</td><td>1. Bowers, Newton L., et al. 1997. Actuarial Mathematics. Second Edition. The Society of Actuaries. United States of America.</td></tr>
</table>

		2. Gupta, A.K. and Varga, T., 2013. An introduction to actuarial mathematics (Vol. 14). Springer Science & Business Media. 3. Gerber, H.U., 2013. Life insurance mathematics. Springer Science & Business Media. 4. Cunningham, R.J, et al. 2006. Model for Quantifying Risk (Second Edition). ACTEX Publication.Inc. United State of America. 5. Takashi Futami, 1993. "Actuarial Mathematics Part I" Co, LTD, Tokyo, Japan
Last revision date	:	July 28th, 2025