

Hong Kong Baptist University
Faculty of Science
Department of Mathematics

Title (Units): **STAT 3820 LIFE INSURANCE AND LIFE CONTINGENCIES**
 (3,2,1)

Course Aims: To introduce the theory of life insurance and life contingencies with application to insurance problems. Students will learn some of the major issue in the field of actuaries.

Prerequisite: BUS 1150 Mathematics for Business and BUS 1160 Statistics for Business; or
 STAT1131-2 Statistical Methods and Theory I & II

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Learning Outcomes (LOs):

Upon successful completion of this course, students should be:

No.	Learning Outcomes (LOs)
	Knowledge
1	Able to understand application of interest and annuities
2	Able to understand nature of life insurance
3	Able to understand theory of mortality and application of life table.
4	Able to understand relationship among life annuities, life insurance and premiums
	Skills
5	Able to evaluate the value of money
6	Able to calculate the present value and accumulate value of annuities
7	Able to apply life table to calculate probabilities related to mortality
8	Able to calculate value of life annuities, life insurance and premiums for some basic life insurance contracts
	Attitude
9	Able to apply basic knowledge of interest, annuities and life insurance to real life

Assessment:

No.	Assessment Methods	Weighting	Remarks
1	Continuous Assessment (assignments)	30%	Assignments are designed to measure students understanding of the theory of Life insurance and contingencies.
2	Final Examination	70%	Final Examination is designed to see how far students have achieved their intended learning outcomes especially in the Knowledge domain. Students should have a thorough understanding of the knowledge and apply them correctly in different context to do well in the exam.

Learning Outcomes and Weighting:

Content	LO No.	Teaching (in hours)
I. Theory of Interest and Annuities	1, 5, 6, 9	10
II. Nature of Life Insurance	2, 9	6
III. Measurement of Mortality	3, 7	6
IV. Life Annuities	8, 9	6
V. Life Insurance	8, 9	6
VI. Premiums	8, 9	6

Textbook:

D.L. Long and G.A. Morton, Principles of Life and Health Insurance, 2nd Ed., Life Management Institute LOMA, Atlanta, Georgia, 1988.

References:

C.W. Jordan, Jr., Life Contingencies, The Society of Actuaries, (Latest edition)

R.W. Batten, Life Contingencies - A guide for the Actuarial Student, Prentice Hall, New Jersey, 1990.

N.L. Bowers, et al, Actuarial Mathematics, Society of Actuaries, Schaumbury, Illinois, 1997.

Course Content in Outline:

	<u>Topic</u>	<u>Hours</u>
I.	Theory of Interest and Annuities A. Effective rates of interest and discount B. Present value C. Force of interest and discount D. Amount and present value of annuities E. Types of annuities	10
II.	Nature of Life Insurance A. Economic purpose of life insurance B. Basic principles of life insurance C. Types of contracts - nature and use D. Selection, classification & treatments of risks	6
III.	Measurement of Mortality A. The survival function B. Mortality tables C. The force of mortality D. Some famous laws of mortality	6
IV.	Life Annuities A. Pure endowments B. Life annuities payable once a year C. The effect of varying interest and mortality rates	6
V.	Life Insurance A. Insurance payable at the end of the year of death B. Relations between insurance and annuities	6
VI.	Premiums A. Annual premiums for insurance and deferred annuities B. Fractional premiums C. Analysis of the endowment premium	6