INSTITUTE OF MATHEMATICS
College of Science
University of the Philippines Diliman

Math 164 Course Syllabus

A. Course Catalogue Description

Course Number	Math 164
Course Title	Mathematics of Life Contingencies
Course Description	Mathematical theory of life contingencies involving single-life functions; mortality; life annuities and insurances; reserves; the expense factor; population theory
Prerequisite	Math 150.1/equiv. and Math 162/equiv.
Course Credit	3 units
Number of Hours	3 hours/week

B. Course Content

I. Course Introduction and Orientation

II. Survival Models

    1. Future lifetime of an individual and the survival function

    2. Complete and curtate future lifetimes

    3. Force of mortality

    4. Probabilities with Fractional Ages

    5. Mortality models and common laws of mortality

III. Net Single Premiums

    1. Insurances payable at the moment of death

    2. Insurances payable at the end of year of death

    3. Relationship between the two insurance benefit schemes

    4. Varying benefit insurances

    5. Commutation table and the NSP table

IV. Life Annuities

    1. Continuous life annuities

    2. Discrete life annuities

    3. Annuities payable more than once a year

    4. Commutation notations for life annuities

    5. Apportionable annuities-due and complete annuities-immediate

V. Benefit Premiums

    1. The Equivalence Principle

    2. Fully continuous net level benefit premiums

    3. Fully discrete net level benefit premiums

    4. Semi-continuous net level benefit premiums

    5. Expense-loaded/gross premiums

VI. Benefit Reserves

    1. Loss random variable and the role of reserve in risk management

    2. Full net level benefit reserves

    3. Prospective and retrospective formulas

    4. Iterative formula for reserves (Fackler's method)

    5. Modified reserves

    6. Nonforfeiture options

For a more detailed syllabus, send an email request to ddapr@math.upd.edu.ph.