Actuarial Mathematics I

The prerequisites for these lectures is a course in basic probability theory and a basic knowledge in measure theory.

The lectures offer an introduction to actuarial mathematics of life insurances.

Contents

- Elementary financial mathematics.
  Discussion of different ways to describe interest payments, the valuation of payment flows and the concept of the present value.

- Stochastic models of the risk insured and the insurance contract in the settings “one person under single risk”, “several persons under single risk” and “one person under competing risks”.

- Basic principles of premium calculation.
  The principle of equivalence for stochastic payment flows and the equivalence premium.

- The dynamics of the reserve process.
  Recursions for the reserve process in discrete time and Thiele’s integral equations in continuous time.

- Analysis of the loss process.
  Hattendorff’s theorem on the decomposition of the loss process into losses in different years and states of the policy.

References

