

# Announcement SoSe 2022

## Lecture in Actuarial Science

### Stochastic models for tariff calculation, loss reserving and reinsurance and their applications

Dr. Gerhard Quarg

**Area: / Modulnr.:** Actuarial Science / MA5736

**Course Structure:** Lecture: 2h

**Content:** Stochastic models for tariff calculation, loss reserving and reinsurance; basics: parameter estimation and model validation, individual model and collective model; tariffs: determination of tariff classes by cluster analysis, selection of tariff variables using test statistics, premium calculation in structured tariffs with maximum likelihood; loss reserving: properties of loss reserving methods as incremental loss ratio, chain ladder, Bornhuetter/Ferguson, uncertainty of the loss reserve, calculation of the mean squared error of prediction; risk sharing and reinsurance: reasons, forms, consequences for the loss variables, pricing, optimality considerations.

**Prerequisite:** MA0009 Introduction to Probability and Statistics, MA3405 Insurance Mathematics 1 (helpful: MA2409 Probability Theory)

**Literature:** **Heinz-Willi Goelden, Klaus Hess, Martin Morlock, Klaus Schmidt, Klaus Schröter:** Schadenversicherungsmathematik. Springer, (2016)  
**Thomas Mack:** Schadenversicherungsmathematik. Vol.28. Verlag Versicherungswirtschaft.(1997)  
**Wüthrich, M. and Merz, M. (2008).** Stochastic Claims Reserving. Wiley, New York.

**Certificate:** Exam, 3 CP

**Location/ Lecture/Exercises:** **Fridays** from 8:30 to 10:00 in **Room 2.02.01**, Parking 11, 85748 Garching