BEPP 454/STAT 454. BEPP 854/STAT 854
Applied Statistical Methods for Actuaries
Spring 2013

## Part I: Coverage Modifications and Simulation

**Instructor: Jean Lemaire**

**Textbook:** Klugman, Panjer, Willmot: Loss Models. From Data to Decisions, 2nd ed., 3rd ed., or 4th ed.

**Course pack** www.study.net. Answers to course pack exam questions can be found in www.soa.org (click on Education, Exams and Requirements, ASA, Exam C, Past Exam questions and solutions).

**Office hours:** Tuesdays, Thursdays 3:00-5:00. 3404 SH-DH

**Coverage Modifications**

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|---|---|---|
| Lesson 1<br>Jan 10 | Reinsurance | Course pack |
| Lesson 2<br>Jan 15 | Deductibles | K 8.2, K 3.1 |
| Lesson 3<br>Jan 17 | Deductibles | K 8.2 |
| Lesson 4<br>Jan 22 | Deductibles | K 8.2 |
| Lesson 5<br>Jan 24 | The Loss Elimination Ratio. Inflation | K 8.3 |
| Lesson 6<br>Jan 29 | Policy limits. Coinsurance | K 8.4, K 8.5 |
| Lesson 7<br>Jan 31 | Past exam questions | Course pack |

**Simulation**

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|---|---|---|
| Lesson 8<br>Feb 5 | The inversion method - continuous | K 21.1 |
| Lesson 9<br>Feb 7 | The inversion method - discrete | Course pack |
| Lesson 10<br>Feb 12 | Number of simulations | K 21.1 |
| Lesson 11<br>Feb 14 | Actuarial applications | K 21.2 |
| Lesson 12<br>Feb 19 | Past exam questions | Course pack |
| Lesson 13<br>Feb 21 | Open | |

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| Lesson 14<br>Feb 26 | Mid-term exam. You may have in class your class notes and a calculator. |

## Part II: Time Series Models

**Instructor:** **Paul Shaman**

**Textbook:** Bowerman, O'Connell, Loehler: Forecasting, Time Series, and Regression (4th Edition, Thomson)

**Office hours:** Tuesday, Thursday, 3-5, 444 JMHH

### Regression Modeling

| | | |
|---|---|---|
| Lesson 15<br>Feb 28 | Regression analysis by computer | JMP package |
| Lesson 16<br>Mar 12 | Simple regression model | Ch 3 |
| Lesson 17<br>Mar 14 | Multiple regression model | Ch 4 |
| Lesson 18<br>Mar 19 | Practical modeling, diagnostics | Ch 5 |
| Lesson 19<br>Mar 21 | Regression models for trends | Ch 6 |
| Lesson 20<br>Mar 26 | Trends and seasonality | Ch 6.3-6.4, Ch 7.1-7.2 |
| Lesson 21<br>Mar 28 | Exponential smoothing | Ch 8 |
| Lesson 22<br>Apr 2 | More exponential smoothing | Ch 8.4-8.5 |
| Lesson 23<br>Apr 4 | ARMA models | Ch 9.1-9.2 |
| Lesson 24<br>Apr 9 | Identification of a model | Ch 9.3-9.4 |
| Lesson 25<br>Apr 11 | Estimating an ARMA model | Ch 10.1-10.2 |
| Lesson 26<br>Apr 16 | Forecasting with ARMA models | Ch 10.3-10.4 |
| Lesson 27<br>Apr 18 | Review of Part II | |
| Lesson 28<br>Apr 23 | Midterm Exam (open textbook, one page notes, calculator) | |

Grade Part I: 40% assignments, 60% midterm exam.

**Final course grade: Average of part I and part II scores**