BEPP 454/STAT 454. BEPP 854/STAT 854
Applied Statistical Methods for Actuaries
Spring 2014

This course has been approved by the Society of Actuaries for VEE Times Series credit. A grade of B- or better on the course (not on the Time Series exam) satisfies the requirement.

Part I: Time Series Models

Instructor: **Paul Shaman**
457 JMHH
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Office hours: Monday, Tuesday, and Thursday, 4:30-6

Class meets: TTh 12–1:20, in F365 JMHH

Website

I am using Canvas. You can gain access by going to https://wharton.instructure.com. All notes, homework assignments and data sets will be distributed and managed via the website.

Course Materials

Class notes will be posted throughout the quarter on Canvas. These will constitute the course teaching material.

Software

JMP 10 statistical software. If you don't already have this software, I *highly recommend* you buy it so that you have it on your own computer. We will use it extensively in class, and you will need to know how to read its output and use it for assignments and for reading class notes. When you install the software on your computer you will also have installed seven manuals and two cards for quick reference, all in pdf format.

A three-year JMP 10 license may be purchased for $59.95 at upenn.onthehub.com. Shorter term licenses are available from estore.e-academy.com. A six-month license costs $29.95 and a twelve-month license sells for $49.95. If you have a working earlier version of JMP, it will be sufficient.

Homework

There will be three homework assignments.

Lesson 1 Jan 16	Overview and introduction to JMP
Lesson 2 Jan 21	Review of simple regression
Lesson 3 Jan 23	Review of multiple regression
Lesson 4 Jan 28	Trends and seasonality
Lesson 5 Jan 30	Trends and seasonality
Lesson 6 Feb 4	Trends and seasonality
Lesson 7 Feb 6	ARMA models
Lesson 8 Feb 11	ARMA models
Lesson 9 Feb 13	ARIMA models
Lesson 10 Feb 18	ARIMA models
Lesson 11 Feb 20	Forecasting with ARIMA models
Lesson 12 Feb 25	ARCH and GARCH models
Lesson 13 Feb 27	Review of Part I
Lesson 14 Mar 4	Midterm Exam (open notes, calculator)

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

Part II: 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. JMHH 348

Coverage Modifications

Lesson 15 Mar 6	Reinsurance	Course pack
Lesson 16 Mar 18	Deductibles	K 8.2, K 3.1
Lesson 17 Mar 20	Deductibles	K 8.2
Lesson 18 Mar 25	Deductibles	K 8.2
Lesson 19 Mar 27	The Loss Elimination Ratio. Inflation	K 8.3
Lesson 20 Apr 1	Policy limits. Coinsurance	K 8.4, K 8.5
Lesson 21 Apr 3	Past exam questions	Course pack

Simulation

Lesson 22 Apr 8	The inversion method - continuous	K 21.1
Lesson 23 Apr 10	The inversion method - discrete	Course pack
Lesson 24 Apr 15	Number of simulations	K 21.1
Lesson 25 Apr 17	Actuarial applications	K 21.2
Lesson 26 Apr 22	Past exam questions	Course pack
Lesson 27 Apr 24	Open	
Lesson 28 Apr 29	Mid-term exam. You may have in class your class notes and a calculator.	

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