

# Introduction to probability with R, fall 2011

## Introduction to Probability, Fall 2011

### Lecturer

Ali Amiryousefi

### Scope

3cu.

### Lectures

#### *Week 37:*

Monday 9-12 and 15-18 in room B119

Tuesday 9-12 in room B321

Friday 9-12 and 15-18 in room CK111 and B321, respectively.

#### *Week 38:*

Monday 9-12 and 15-18 in room B119

Tuesday 9-12 in room B321

#### *Week 42:*

Monday 9-12 and 14-17 in room CK108 and CK107, respectively.

#### Notes

\*Only the material of the weeks 37 and 38 will appear on the exam.

\*Last session will be devoted to *your* questions and reviewing the key concepts.

### Prerequisites

Elementary Calculus

### Course Diary

12.09.2011: *1. Combinatorial Analysis*; Sections: 1, 2, 3, 4, 5.

12.09.2011: *2. Axioms of Probability*; Sections: 1, 2, 3, 4, 5, 6, 7.

13.09.2011: *3. Conditional Probability and Independence*; Sections: 1, 2, 3, 4, 5.

16.09.2011: *4. Random Variables*; Sections: 1, 2, 3, 4, 5.

16.09.2011: *4. Random Variables*; Sections: 6, 7, 8.1, 8.2, 8.3, 9.

19.09.2011: *5. Continuous Random Variables*; Sections: 1, 2, 3, 4.

19.09.2011: *5. Continuous Random Variables*; Sections: 5, 6.1, 6.2, 6.3, 6.4, 7.

20.09.2011: *6. Jointly Distributed Random Variables*; Sections: 1, 2, 4, 5.

17.10.2011: *8. Limit Theorems*; Sections: 1, 2, 3, 4. *10. Simulation*; Sections: 1, 2.1, 2.2, 3.

17.10.2011: *9. Additional Topics in Probability*; Section: 2.

### Self-Study Parts

Chapter 3: Examples 4f and 5f.

Chapter 4: 4.6.1.

Chapter 5: 5.4.1, 5.5.1.

Chapter 6: Examples 1f, 3e, 3f, 5c, and 5d.

#### Notes

\*There will be one bonus question contributing to one point of the exam relating to these parts.

\*Studying these parts will help you in doing the exercises.

### Exercises

Chapter 1: 21, 22, 23, 27, 2T, 5T, 8T, 9T, 13T.

Chapter 2: 15, 28, 56, 11T, 16T, 20T.

Chapter 3: 21, 35, 52, 59, 66, 69, 73, 15T, 22T, 30T.

Chapter 4: 26, 30, 31, 38, 43, 57, 80c, 4T, 8T, 9T, 10T, 13T, 19T, 27T, 28T.

Chapter 5: 3, 7, 10, 13, 18, 19, 21, 25, 26, 28, 30, 31, 36, 38, 1T, 2T, 7T, 10T, 12T, 13T, 25T, 28T, 26T, 15T, 16T.

Chapter 6: 2, 8, 9, 13, 23, 24, 41, 39, 43, 51, 54, 12T, 14T, 20T, 19T.

## Solutions

[chap-1.pdf](#)

[chap-2.pdf](#)

[chap-3.pdf](#)

[chap-4.pdf](#)

[chap-5.pdf](#)

[chap-6.pdf](#)

Notes

\*The 'T' indicates the Theoretical whereas the other numbers without suffixes are Problems.

\*Solutions to the exercises should be handed in no later than 17.10.2011; 9:15 AM.

\*Solutions to these exercises will be posted online after the due date of delivery.

\*One can obtain one bonus point by solving at least 80 percent of the exercises i.e. 64 out of total of 80.

\*Each group can hand in one set of solutions but students are strongly recommended to do all the exercises by themselves.

\*There is no more than 10 percent exercises related to the self study parts i.e. 8 out of total of 80.

## Exams

Data: 24.10.2011.

Time: 10:00-13:00.

Place: Exactum, B120.

Notes

\*The exam will contain six questions of which one bonus question is related to the self study parts.

\*Each question is worth a point.

\*You will *not* need a particular table or formula as they will be presented in the question if needed.

\*There would be two separate exams on 17.11.2011 & 6.3.2012. If interested to take any of those, send me an email two weeks to the desirable date and also register for it in the Student Affair Office C329, two weeks prior to the exam.

\*Your previous solutions to the exercises (if you handled in any) will not count toward your final grade if you take separate exam.

## Bibliography

Sheldon Ross, A First Course in Probability, Pearson, 2006.

## Type

NOTE. This course is for international Master's degree program students. The course does not correspond or compensate the compulsory course "Johdatus todennäköisyytlaskentaan" in the degree requirements of mathematics and statistics.

## Registration

Did you forget to register? [What to do.](#)