HCMC University of Technology

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Probability and Statistics

Introduction

Outline I

1. Course information
2. Contents
3. Assessments
4. Learning Resources
5. Learning Methods

Course information

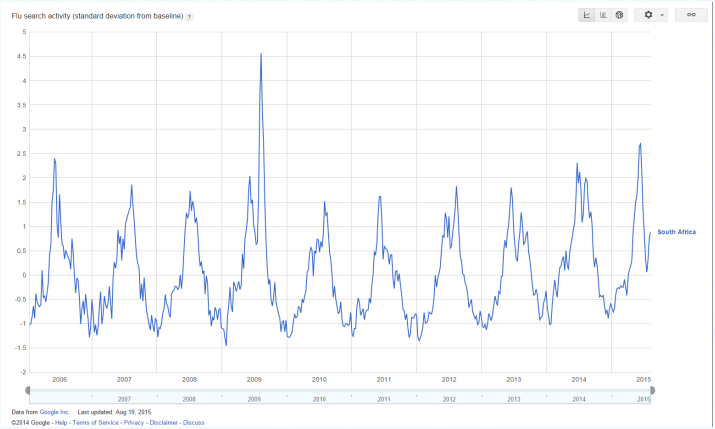
- Course: Probability and Statistics.
- Code: MT2013

Motivations of statistical data analysis I

How could we compare the effectiveness of a new treatment with that of an existing one?

Motivations of statistical data analysis II

How can search terms be used to decide that an infectious disease is starting to spread?

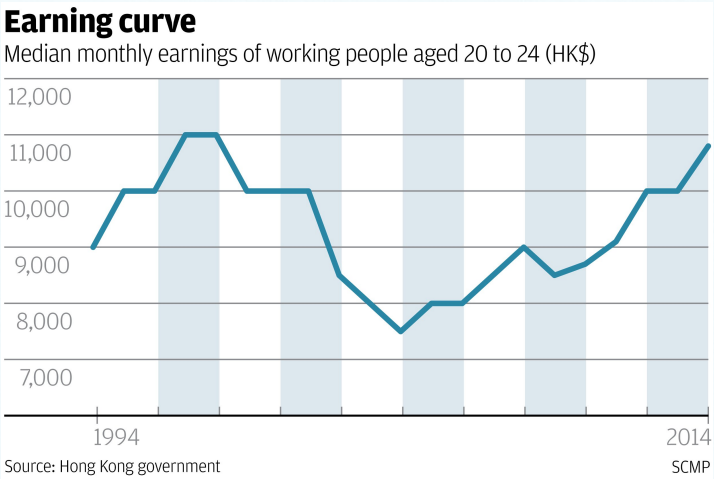


Motivations of statistical data analysis III

How confident could engineers be with their measurements?

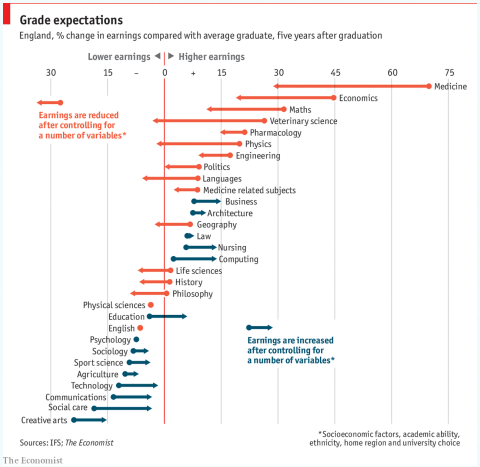
Motivations of statistical data analysis IV

How could you predict your average monthly income over the next several years?



Motivations of statistical data analysis V

How do we know the percentage change in earnings compared with average graduate?



"It is easy to lie with statistics.
It is hard to tell the truth without it."

– Andrejs Dunkels.

Statistics to tell the truth,
the whole truth,
and nothing but the truth.

Contents

Probability

1. Probability
2. Random variables
3. Joint discrete distributions
4. Some special distributions

Statistics

1. Descriptive statistics
2. Confidence interval
3. One-sample hypothesis testing
4. Two-sample hypothesis testing
5. ANOVA
6. Linear regression models

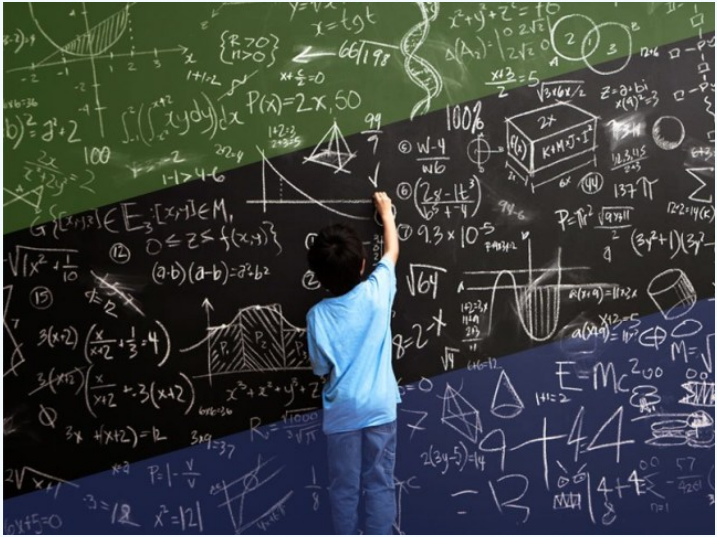
Assessments

Assessment components include:

- Quizzes + Project 1 (15%): Team work (Software: R-console and R-Studio).
- Project 2 (25%): Team work (Software: R-console and R-Studio).
- Midterm Exam (20%): Open-book
- Final Exam (40%): Open-book

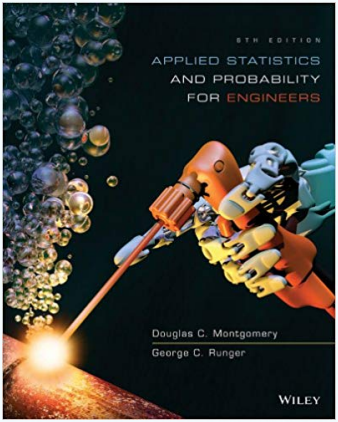
Second chance?

Bonus scores for solving challenging problems in class.



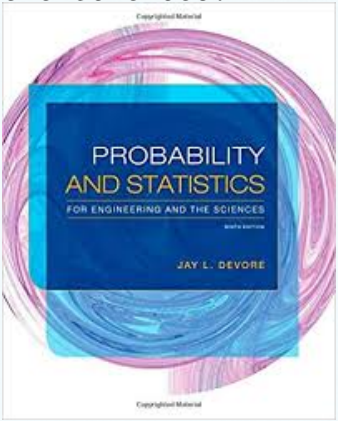
Reference Books I

1. Douglas C. Montgomery, *Applied Statistics and Probability for Engineers*.



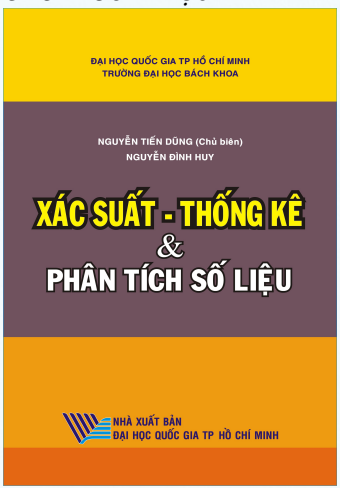
Reference Books II

2. Jay L. Devore, *Probability and Statistics for Engineering and the Sciences*.



Reference Books III

3. Nguyễn Tiến Dũng, Nguyễn Đình Huy, *Xác suất thống kê và phân tích số liệu*



Other Learning Resources

- BK E-learning (lecture notes, videos, other supplements)
- Library (books, papers, ...)
- Internet

Inside the classroom I

Never miss quizzes, midterm exam, and final exam.

Inside the classroom II

Work on examples

Inside the classroom III

Be involved in class discussions

Inside the classroom IV

Ask your lecturer

At home I

Watch video lectures and read all learning materials

At home II

At home III

Think about some possible applications of what you've learned.

At home IV

At home V

At home VI