

# 統計学Ⅲ (Statistical AnalysisⅢ)

科目ナンバリング ECS-203

選択 2単位

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## 1. 授業の概要(ねらい)

This course will offer the opportunity to study the statistics from the basics to intermediate. It consists of two parts and each part is taught by one of following two professors; Taku SUZUKI and Shiho YUKAWA.

Statistics is used in various fields, it is important to understand the basic statistics.

In the lectures, we will study the fundamental statistics, data visualization, and inferential statistics.

## 2. 授業の到達目標

Understand

- the fundamental statistics and its application for basic data analysis,
- the method of the visualization of data,
- the fundamental probability theory and estimation of the parameters.

## 3. 成績評価の方法および基準

The following percentage breakdown will constitute your final grade.

Participation (45%): Each participation is counted as 3% of your whole performance.

Exercises (55%): Exercises as Term Exam are to be held at the end of each part. 20% and 35% is assigned to part I (Yukawa) and part II (Suzuki), respectively.

## 4. 教科書・参考文献

教科書

Each professor distributes course materials.

## 5. 準備学修の内容

Review of each lecture is very important.

Homework will be assigned several times. You must do the homework by next lecture.

## 6. その他履修上の注意事項

It is desirable to check the course materials beforehand if you think your preparation is not enough.

Basically, MS Excel is often used as a tool for calculation, and sometimes R is used in Part 1.

## 7. 授業内容

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| 【第1回】  | Introduction  |
| 【第2回】  | Visualization of data(1) How to use excel                                 |
| 【第3回】  | Visualization of data(2) Data management                                  |
| 【第4回】  | Visualization of data(3) Graphics   |
| 【第5回】  | Visualization of data(4) Graphics   |
| 【第6回】  | Review and Exercise(1)  |
| 【第7回】  | Random Variables (1) Combination , Probability and Independent trial      |
| 【第8回】  | Random Variables (2) Integral and Probability distribution                |
| 【第9回】  | Random Variables (3) Expectation and Variance (Online)                    |
| 【第10回】 | Review and Exercise(2)  |
| 【第11回】 | Probability distribution(1) Binomial distribution and Normal distribution |
| 【第12回】 | Probability distribution(2) Chi-square distribution and t distribution    |
| 【第13回】 | Estimation(1) Point and interval estimation of population mean            |
| 【第14回】 | Estimation(2) Point estimation of Variance and Covariance                 |
| 【第15回】 | Review and Exercise(3)  |