



## Syllabus 2017 Computer and Mathematical Sciences Applied Data Sciences

Japanese

### Basic information

held this year:	yes
instructor(s)	Smart grid: Fadlullah Zubair, Nei Kato, Mitsuyuki Nakao Applications to economics: Yoshihiro Yajima Applications to biology and ecology: Shusei Sato, Masakado Kawata, Takashi Makino, Jun Hidema
room	Mid Lecture Room
schedule	The first half year (Tuesday) 14:40–16:10
begins on:	04/11

### Objectives and outline

#### Purpose

In addition to numerical analysis and computer science as the academic foundations, practically what kind of problem is solved in what way based on the data science is essential. To acquire such a problem-solving ability is the purpose of this course.

#### Overview

The course includes a smart grid, an introduction to linear regression models with applications to economics, and data science in biology and ecology, each of which is taught by the expert lecturers.

#### Objectives

Students learn about:

1. applied fields of data science
2. ways of application of data science in each field

### Class plan

#### Smart Grid

1. Overview of the electric utility industry and the smart grid evolution
2. Smart grid architecture
3. Smart grid operations
4. Distributed, renewable generation
5. Challenges in smart grid

#### Introduction to linear regression models with applications to economics

6. simple regression
7. multiple regression
8. least squares method
9. t test
10. applications to empirical analysis in economics

#### Biological and ecological applications of data science

11. Advance of the technologies producing biological Big Data
12. Examples application of biological Big Data
13. Comparative genomics
14. Analysis of the data related to evolution of biodiversity and ecology
15. Analysis of the data related to environmental adaptation of plants

### Evaluation

Evaluation is done comprehensively based on short tests and assignments.

### Textbook(s)

Textbook: not used.  
Related literature: If necessary, specified in the lecture.

■ [Web site](#)

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■ [Office hours](#)

Office hour is not scheduled. If a student wants to see a lecturer, make an appointment in advance via e-mail or other means. The contact information will be given in the class.

■ [Other information](#)

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Students are required to review and prepare for each class based on the materials distributed in the class.

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