

# COURSE DETAIL

## INTRODUCTION TO MATHEMATICS FOR DEEP LEARNING

**Country**

Korea, South

**Host Institution**

Yonsei University

**Program(s)**

Yonsei University

**UCEAP Course Level**

Lower Division

**UCEAP Subject Area(s)**

Computer Science

**UCEAP Course Number**

85

**UCEAP Course Suffix****UCEAP Official Title**

INTRODUCTION TO MATHEMATICS FOR DEEP LEARNING

**UCEAP Transcript Title**

DEEP LEARNING MATH

**UCEAP Quarter Units**

4.50

**UCEAP Semester Units**

3.00

## Course Description

This course surveys basic mathematical tools for deep learning research. The course includes 1) advanced probability theory, 2) information theory, and 3) optimization theory. Topics include introductions to learning theory, review on probability theory, multidimensional Gaussian variables, Gaussian processes, optimal linear estimation, parameter estimation, bias and variance of an estimator, introduction to information theory, entropy, mutual information, KL Divergence, applications of information theory, introduction to optimization, stochastic gradient descent and its convergence, and other optimization techniques and its convergence.

### Language(s) of Instruction

English

### Host Institution Course Number

AAI2230

### Host Institution Course Title

INTRODUCTION TO MATHEMATICS FOR DEEP LEARNING

### Host Institution Campus

### Host Institution Faculty

### Host Institution Degree

### Host Institution Department

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