

# COURSE DETAIL

## INTRODUCTION TO OPTIMIZATION FOR DATA SCIENCE

**Country**

Korea, South

**Host Institution**

Yonsei University

**Program(s)**

Yonsei University

**UCEAP Course Level**

Upper Division

**UCEAP Subject Area(s)**

Statistics

**UCEAP Course Number**

107

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

INTRODUCTION TO OPTIMIZATION FOR DATA SCIENCE

**UCEAP Transcript Title**

DATA SCIENCE

**UCEAP Quarter Units**

4.50

**UCEAP Semester Units**

3.00

## Course Description

This course covers the basic concepts and applications of linear optimization, convex optimization, and non-linear & combinatorial optimization. Topics include introduction to optimization, intro to convex optimization, linear programming (LP), least squares (LS), quadratic programming (QP), second-order cone programming (SOCP), semi-definite programming (SDP), duality: connecting convex optimization with non-convex optimization, strong/weak duality, gradient descent ascent (GDA), interior point method (IPM), Lagrange relaxation, applications: unsupervised learning (GAN, Wasserstein GAN), and applications: sparse/low-rank recovery (compressed sensing, matrix completion).

Prerequisites: Calculus, Linear Algebra

### Language(s) of Instruction

English

### Host Institution Course Number

STA4123

### Host Institution Course Title

INTRODUCTION TO OPTIMIZATION FOR DATA SCIENCE

### Host Institution Campus

### Host Institution Faculty

### Host Institution Degree

### Host Institution Department

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