

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 Course Details

Host Institution Campus

Host Institution Faculty

Host Institution Degree

Host Institution Department

Course Last Reviewed

2024-2025

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