

Course Content

Course Title (English)	Convex Optimization
Course Title (Chinese)	凸函數最佳化
Credit	3
Instructor	Prof. Borching Su 蘇柏青 教授
Outline	<p>本課程探討現代數學最佳化(Mathematical Optimization)問題之演算法及理論基礎。數學最佳化可以應用到極多工程、科學等相關領域。其中，凸最佳化(Convex Optimization，或譯"凸優化")這一類型的問題為本課程探討的重點，其具有局部最佳解即為全域最佳解的特點。本課程將介紹凸集合(Convex Sets)、凸函數(Convex functions)、凸最佳化問題(Convex optimization)之定義及各種性質，再透過二元性(duality)、KKT conditions 的理論觀點了解最佳解的條件。最後介紹內點法的原理以及如何以多項式時間來求解凸最佳化的問題。</p> <p>In this course, we study mathematical optimization problems along with their algorithms and background theory, with stress on convex optimization problems.</p> <p>The outline of the course is as follows.</p> <ul style="list-style-type: none">• Convex Sets• Convex Functions• Convex Optimization Problems• Duality & KKT conditions• Interior Point Methods for Convex Problems
Goal	<ol style="list-style-type: none">1. 學習判斷凸集合、凸函數、凸最佳化問題。2. 學習判斷最佳解之理論基礎。3. 學習應用凸最佳化之原理及工具至自己研究領域的問題。

	<ol style="list-style-type: none">1. Learn to determine the convexity of a set, a function, and a problem.2. Learn to find conditions on determining an optimal solution for a given problem.3. Learn to apply the theory and algorithm to a research problem.
English Teaching	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Teaching Material	<input checked="" type="checkbox"/> English <input type="checkbox"/> Chinese