系統與決策最優化 學分學程實施辦法

一、為培養本校研究生具有足夠深度與廣度的最優化方法理論基礎。除了可以進行各領域具有深度的研究外，也可以深化陽明交大的研究潛力與素質，為培養下一世代的優質研究人才奠下良好的基礎，特依據「國立交通大學各學院系設置學程實施細則」訂定本學程實施辦法。

二、凡本校學生，均得申請修習本學程，修滿本學程規定之科目及學分者，由本校發給學程修畢證明。本學程分成核心課程與選修課程兩大類。核心課程一共八門課，其中一門為必選課程，學生必須在這八門核心課程中至少修習四門課。選修課程一共十五門，學生必須在這二十三門選修課程中至少修習七門課後授與學程證書。

學分學程課程規劃表

一、學程名稱：系統與決策最優化

二、學程架構及開課系所

分類名稱	課程名稱	開課系所	學分數	開課學期
核心課程	數學分析（必選）*	運管	3	上學期
	線性規劃	應數	3	上學期
	非線性規劃	運管	3	下學期
	整數規劃	運管	3	下學期
	動態規劃	運管	3	上學期
	隨機過程	工工	3	上學期
	組合優選	工工	3	下學期
	模擬學	工工	3	下學期
選修課程	矩陣計算	應數	3	
	數學模式	運管	3	
	網路模式分析	運管	3	
	物流運籌管理	運管	3	
	多目標決策分析	資管/工工	3	
	排程理論與應用	資管/工工	3	
	高等排程理論	工工	3	
	賽局論	工工	3	
	模糊集合及其應用	工工	3	
	類神經網路	電控	3	
	模糊系統	電控	3	
	排隊理論	資工/電信	3	
	演算法/高等演算法	資工/應數/資管	3	
	圖論/圖形理論	應數/資工	3	
	數理統計	統計/財金	3	

***備註：若管理學院各系所未開授「數學分析」研究所課程，得修習本校應用數學系所開授之「實變函數論(一)」課程或其他台聯大系統中各校所開設之對等課程，經本學程召集人認可後予以承認。**

三、召集人姓名：洪暉智教授　單位：管理學院

學程連絡人姓名：劉佳芬　單位：管理學院

Implementation Rules for System and Decision Optimization Certificate Program

1. The purpose is to develop graduate students of the school for them to have theoretical basis for optimization methods in sufficient depth and breadth. Not only deep researches in various fields are available, but also the research potential and quality of NCTU can be deepened. In order to lay good foundation for developing the next generation of super researchers, the implementation rules for the program is specified particularly according to "The Implementation Rules for Establishment of Programs in Colleges and Departments of National Chiao Tung University"
2. All students of the school have to apply for taking the program. The University will issue a program study certificate to students who complete the subjects and credits stipulated by the program. The program is divided into two classes, core courses and selective courses. The core courses include 8 courses, within which one is required course. Students have to take at least 4 courses from the 8 core courses. The selective courses include 15 courses. Students have to take at least 7 courses from the 23 selective courses in order to be awarded with program certificate.

Planning Table for Certificate Program Courses

1. Program Name: System and Decision Optimization

2. Program Structure and Tuition Departments/Institutes

Category Name	Course Name	Tuition Department	Credit	Semester
Core Courses	Mathematical Analysis (Required) *	Transportation & Logistics Management	3	First Semester
	Linear Programming	Applied Mathematics	3	First Semester
	Nonlinear Programming	Transportation & Logistics Management	3	Second Semester
	Integer Programming	Transportation & Logistics Management	3	Second Semester
	Dynamic Programming	Transportation & Logistics Management	3	First Semester
	Stochastic Process	Industrial Engineering	3	First Semester
	Portfolio Optimization	Industrial Engineering	3	Second Semester
	Analogy	Industrial Engineering	3	Second Semester
Selective Courses	Matrix Computation	Applied Mathematics	3	
	Mathematical Model	Transportation & Logistics Management	3	
	Network Model Analysis	Transportation & Logistics Management	3	
	Logistics and Operations Management	Transportation & Logistics Management	3	
	Multiple Objectives Decision-Making	Information Management/Industrial Engineering	3	
	Scheduling Theory and Application	Information Management/Industrial Engineering	3	
	Advanced Scheduling Theory	Industrial Engineering	3	
	Game Theory	Industrial Engineering	3	
	Fuzzy Set and Its Application	Industrial Engineering	3	
	Neural Network	Electrical Control	3	
	Fuzzy System	Electrical Control	3	
	Queuing Theory	Computer Science/Communications	3	
	Algorithm/Advanced Algorithm	Computer Science/Applied Mathematics/Information Management	3	
	Graph Theory	Applied Mathematics/Computer Science	3	
	Mathematical Statistics	Statistics/Finance	3	

*Remark: If no department/institute in College of Management teaches "Mathematical Analysis" institute course, it is allowed to take "Real Function Theory (1)" taught in Department of Applied Mathematics or an equivalent course taught in another school in University System of Taiwan. It is admitted after approval from the convener of the program.

3. Convener Name: Hui-Chih Hung — Unit: College of Management
   Program Contact Name: Chia-Fen Liu — Unit: College of Management