



淡江大學
Tamkang University

課程計畫

Spring 2009 (九十七學年度第二學期)

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Course: Optimal Control

3 credit hours, Optional

Prerequisite: Dynamics, Linear System Theory

Class: Graduated, Aerospace Eng.

Lecture: 01:10 PM- 03:00PM, Mon., 01:10 PM- 02:00PM, Thu.

Room: E238 (Mon), E232 (Thu)

Office hours: Mon, Wed, Thu, and Fri., 11:00 AM ~ 6:00 PM or by appointment

Textbook:

1. Donald E Kirk, *Optimal Control Theory: An Introduction*, Prentice-Hall, 1970. (Dover Publications, imported by 高立圖書)
2. Frank L. Lewis and Vassilis L. Syrmos, *Optimal Control*, 2nd edition, John Wiley & Sons, 1995. (imported by 高立圖書)

References:

Enid R. Pinch, *Optimal Control and the Calculus of Variations*, Oxford University Press, 1993. (imported by 高立圖書)

Course Objectives:

Optimal control theory- which is playing an increasingly important role in the design of modern systems - has as its objective the maximization of the return form, or the minimization of the cost of the operation of physical, social, and economic process. This course will covers the major topics involving measurement, principles of optimality, dynamic programming, variational methods, Kalman filtering, and other solution techniques. The following topics will be taught: Performance Measure for Optimal Control Problem, Calculus of Variations, Static Optimization, Optimal Control of Discrete Time System, Optimal Control of Continuous Time System, The Tracking Problem and Other LQR Extensions, Final-Time-Free and Constrained Input Control, Dynamic Programming, Optimal Control for Polynomial Systems, Output Feedback and Structured Control, Robustness and Multivariable Frequency-Domain Techniques

Grading Policy:

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| 1. Quizzes, Homeworks | 30% |
| 2. Midterm Exam | 30% |
| 3. Final Exam | 40% |