淡江大学
Tamkang University

課程計畫

Spring 2008 (九十六學年度第二學期)

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Course: Optimum Atmospheric Flight Trajectories   3 credit hours, Optional
Prerequisite: Dynamics, Linear System Theory
Class: Graduated, Aerospace Eng.
Lecture: 01:10 PM- 04:00PM, Mon.
Room: E238
Office hours: Mon, Tue, Thur, and Fri., 11:00 AM ~ 6:00 PM or by appointment
Textbook:
   Course Notes

References:

   1. Donald E Kirk, *Optimal Control Theory An Introduction*, Prentice-Hall, 1970.
   2. Nguyen. X. Vinh, *Optimal Trajectories in Atmospheric Flight*, Elsevier Scientific Publishing, 1981.
   3. Frank L. Lewis and Vassilis L. Syrmos, *Optimal Control*, 2nd edition, John Wiely & Sons, 1995. (imported by 高立 圖書)

Course Objectives:

   Many problems in science and technology require choosing the best, or the optimal, solution among all the possible solutions. One of the most challenging and fascinating optimization problems is the analysis of optimal space trajectories. It consists of finding the best trajectory, in some sense, for the motion of a vehicle in a three-dimensional space. For flight in a vacuum, in which the vehicle is subject only to gravitational forces, either from one or from many sources, and its self-generated propulsive force, the theory is very complete. A natural extension would be the analysis of the optimal trajectories in atmospheric flight.

   This course is designed to motivate graduate students in pursuing research in the general area of *Optimal Trajectories*. The following topics will be covered: Optimization Theory, Atmospheric Flight Mechanics, General Properties of Optimal Trajectories, Flight in a Horizontal Plane, and Optimal Coasting Flight.

Grading Policy:

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