AE 6511 OPTIMAL GUIDANCE AND CONTROL

Catalog Data: AE 6511. Optimal Guidance and Control 3-0-3. Prerequisite: AE 3501 or equivalent. Euler-Lagrange formulation; Hamilton-Jacobi approach; Pontryagin's minimum principle;Systems with quadratic performance index; Second variation and neighboring extremals; Singular solutions; Numerical solution techniques.

Coordinator: J.V.R. Prasad, Associate Professor

Textbook:
Bryson, Arthur E., Jr., and Ho, Yu-Chi: Applied Optimal Control, John Wiley & Sons, New York, 1975.

Educational Objectives: This course offers students a basic knowledge in optimal control theory and its applications in the area of optimal guidance and control of aerospace systems.

Topics		**Hours**
1.	Introduction	1
2.	Parameter Optimization Problems	2
3.	Optimization problems for dynamic systems	4
4.	Optimization problems for dynamic systems with path constraints	5
5.	Dynamic programming	4
6.	Linear systems with quadratic criteria	4
7.	Time, fuel and energy optimal systems	5
8.	Second variation and neighboring extremals	5
9.	Singular solutions	3
10.	Standard computational methods	7
	Quizzes and Instructor's option	5
	Total	45

Computer Usage:

Individual student projects involve computer program development for numerical solution to optimal control problems.

Laboratory Projects:

None