INDUSTRIAL ENGINEERING DEPARTMENT

IE 681- APPLICATIONS OF OPTIMAL CONTROL THEORY

Fall 2014

3 credits

Class Schedule: 3hrs lecture

Prerequisites: IE 581 or consent of the instructor

Course Description: The course is intended for graduate students in Industrial Engineering, Finance, and Economics who have some background in theoretical knowledge on Calculus of Variations and Optimal Control Theory. A wide range of applications of optimal control theory will be discussed through relevant papers with the purpose of introducing optimal control as a powerful method to model and solve real life problems.

Textbooks & Other Required Material:
No required text book.
The following book is recommended.

Topics Covered:
There will be 9 groups of paper (21 papers) to be discussed:

G1: Various techniques of optimal calculus of variations and optimal control theory-There will be 5 papers in this group. The lecturer will present these papers and discuss these techniques at the beginning of relevant (related to the papers to be presented) week.
G2: Innovation-Technology. There will be 2 papers on this subject.
G3: Marketing/Advertising-There will be three papers on this subject
G4: Capital investment/Growth-There will be one paper on this subject
G5: Managing common resources. There will be two paper on this subject
G6: Exhaustible resources. There will be three paper on this subject
G7: Financial modeling. There will be one paper on this subject
G8: Inventory management-There will be one paper on this subject
G9: Pension funds/Monopoly-There will be two papers on this subject

Grading:

Attendance and class participation: 10%
Paper presentations: 2 x 30%
Quizzes: 2x15%

Prepared by: Dr. Mustafa Akan

Date: September 2014