ECSE-6480 – ADAPTIVE SYSTEMS
Fall 2007

Instructor: Dr. Murat Arcak

E-mail Address: arcakm@rpi.edu

Class Hours: Tuesday, Friday - 12:30 - 1:50 PM

Room: JEC 4304

Instructor's Office & Phone: JEC 6028, x6535

Office Hours: Monday and Thursday (5-6 pm) or by appointment.

Textbook: Ioannou and Fidan, Adaptive Control Tutorial, SIAM, 2006.

Additional class notes will be provided as necessary. Below is a list of reference books on reserve in the library:

1. Astrom and Wittenmark: Adaptive Control, 2nd ed., Addison-Wesley, 1995
2. Ioannou and Sun: Robust Adaptive Control, Prentice Hall, 1996
3. Khalil: Nonlinear Systems, 3rd ed., Prentice Hall, 2002
4. Krstic et al.: Nonlinear and Adaptive Control Design, Wiley, 1995
5. Sastry and Bodson: Adaptive Control: Stability, Convergence and Robustness, Prentice Hall, 1989.

Grading:

Homework:	25%
Midterm:	25%
Final:	35%
Project:	15%

Homework: About 10 homework sets will be assigned. 20% penalty for each session late. Submission will **NOT** be accepted if more than two sessions late. Solutions will be posted on the Web.

Project: Detailed instructions will be provided later during the semester. Presentations will be given during the last week of classes.

Prerequisities: ECSE-6400 System Analysis Techniques, or equivalent.

Note the following dates:

October 9, Tuesday:	No class. (Follows Monday schedule.)
October 12, Friday:	**Midterm (in class).**
November 21-23:	Thanksgiving break.
December 7:	Last class.
December 10-11:	Reading days (no class).
December 13-19:	Final exam period (exact time and place will be announced).

Tentative Course Outline:

- Introduction to Adaptive Control, and a review of Lyapunov theory and other preliminaries (3 wks.)
- Discrete-Time Parameter Estimation, and feedback design via Adaptive Pole Placement (2 wks.)
- Continuous-Time Parameter Estimation and Adaptive Pole Placement (2 wks.)
- Model Reference Adaptive Control and robustness properties (3 wks.)
- Other topics, including an introduction to Nonlinear Adaptive Control, and Extremum-Seeking (3wks.)