332: 505 Control Theory II – Fall 2009

Instructors: Professors Z. Gajic (50%) and J. Yi (25%)
Assistant Instructor: Mr. T. Nguyen, advanced doctoral ECE student (25%)
Class Time and Place: MTh2 10:20-11:40am, ECE Conference Room 240.
Office Hours for Z. Gajic MTh 11:40am-12:40pm, Office: EE Building 222, tel:5-3415, email: gajic@ece.rutgers.edu
Office Hours for J. Yi to be determined, Office: Engineering Building D-157, tel: 5-3282, email: jgyi@jove.rutgers.edu
Office Hours for T. Nguyen to be determined, Office: EE Building 202, tel: 5-5015, email: thnguyen@eden.rutgers.edu

Textbook: A. Sinha, *Linear Systems: Optimal and Robust Control*, CRC Press (Taylor & Francis) 2007. Chapters 2-4 (Gajic), Chapter 5 (Yi), Chapter 6 (Nguyen)

Topics:

Review of the state space technique (Sections 2.1-2.4) Controllability and observability concepts (Sections 2.5-2.10) Stability analysis and the Lyapunov equation (Section 2.15) State Feedback (Sections 3.1-3.3) Optimal control of linear deterministic systems (Sections 3.4, 3.5, 3.7, 3.9) Observers (Sections 4.1-4.4) Kalman filter (Sections 4.5-4.6) Optimal control of linear stochastic systems (Sections 4.7-4.8) PROJECT ASSIGNED (20% of the course grade) EXAM I (Chapters 2-4, 40% of the course grade)

Chapter 5 on Robust Control (J. Yi) Chapter 6 on Sliding Mode Control (T. Nguyen) EXAM II (FINAL EXAM, Chapters 5 and 6, 40% of the course grade)

Homework will be assigned weekly with the solutions distributed a week after. **Exams** will be based on problems similar to homework problems and theoretical questions covered in class.

Professor Gajic will be in charge of homework, projects, exams, and grading.

Grading: Exam I = 40% Project based on MATLAB = 20% Exam II (Final Exam) = 40%