330: 510 — Synthesis of Optimal Control Systems

Instructor: Zoran Gajic, ELE 222, 932-3415
Office: M, Th 7:30–8:30 pm

Text Book: *Optimal Control Theory*, D. Kirk, Prentice Hall, 1970.
Recommended Reading: *Optimum Systems Control*, A. Sage and C. White, Prentice Hall, 1977.

Course Outlines:

meeting   *topics*

  1 — Formulation of Optimal Control Problem (Chapters 1–2)

  2–3 — Dynamic Programming (Chapter 3)

  4–6 — Calculus of Variations (Chapter 4)

  7 — Necessary Conditions for Optimal Control (Section 5.1)

  8 — Linear Optimal Regulator (Section 5.2)

  9 — Pontryagyn's Minimum Principle (Section 5.3)

  10 — Minimum-Time and Minimum Effort Problems (Sections 5.4–5.5)

  11 — Singular Optimal Control (Section 5.6)

  12 — Exam I (based on problem solving — Chapters 3–5)

  13–14—Numerical Techniques for Finding Optimal Control (Chapter 6)

Grading:

Homeworks 30%
Exam I   35%
Final   35% (theoretical questions only)

Time and Place: F 6:10–9:00PM, SEC 202 or ELE 240