

## ELG4152: Modern Control Systems (Winter 2007)

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**Textbook:** R.C. Dorf and R.H. Bishop, Modern Control Systems, 10<sup>th</sup> Edition, Prentice all.

### Course Content:

- Review of state space modeling concepts
- Controllability and observability
- Poles and zeros
- Minimal realizations
- State and output feedback
- Spectral assignability
- Pole placement techniques
- Full and reduced order observers
- Compensator design using observers
- Introduction to optimal control
- Robust control systems
- Linear quadratic problem
- Algebraic Riccati equations
- Kalman filtering
- Introduction to nonlinear control
- Lagrange equations and their control engineering applications
- Digital control systems
- Projects

### Prerequisite: ELG4151

#### Assessment:

Each assessment part contributes to the total mark as described below:

**Quizzes and MATLAB Assignments: 10%**

**Project: 30%**

**Mid-term Test (20%):** 90-minute duration.

**Final Exam (40%):** Three-hour exam.