Syllabus

VE 460: Control Systems Analysis and Design
VM 461: Automatic Control

Fall 2014

1 Basic Information

Instructor: Dr. Jun Zhang, Room 222 JI Bldg, zhangjun12@sjtu.edu.cn
Office hours: Tu 2-3 pm
TAs & Office Hours:

- Yadong Wu, Thursday 7 - 9 pm, wuyadong301@sjtu.edu.cn

- LiShan Zeng, Friday 7 - 9 pm, lishan_zeng@sjtu.edu.cn

Classroom: Dong Xia Yuan 200

2 Course material

Textbook: *Automatic Control Systems*, 8th Edition, 2003, ISBN: 978-0-471-13476-3, by B. C. Kuo and F. Golnaraghi.
Additional reading materials will be posted on the course web site.

3 Catalog Description

Introduction to theory and practice of automatic control for continuous-time systems; Representations of the system: transfer function, block diagram, signal flow graph, differential state equation and output equation; Analysis of control system components. Transient and steady-state performance; System analysis: Routh-Hurwitz, root-locus, Nyquist, Bode plots; System design: PID controller, and lead-lag compensators, pole placement via state feedback, observer, stability margins in Nyquist and Bode plots; Emphasis on design principles and their implementation; Design exercises with a MATLAB package for specific engineering problems.

4 Course Content

This course will include the following topics:

- Introduction

- Mathematical foundation

- Block diagrams and signal flow graphs

- Modeling of systems

- Stability

- Time-domain response

- Root locus

- Frequency-domain analysis

- Design techniques

- State variable analysis

5   Grading Policy

Your work in this course includes: a ttending lecture, reading assigned material, completing homework assignments, and successfully completing the midterm and final exams. Final grades will be based on:

Homework:	30 % (including course participation)
Midterm:	30 %
Final:	35 %
Attendance:	5 %

Students who miss 1/3 lectures will be failed automatically by SJTU policy.

6   Homework

Homework is to be done on an individual basis. Homework due dates will be announced in lecture or on Sakai. Late homework will not be accepted except in extraordinary circumstances.