Applied Physics 183 THV

Second Semester AY 2018-19
WFR 8:30-10 NIP R109
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Consultation: TTH 1-6PM R203

Course Description : Linear and nonlinear systems; analog systems; time-domain modeling; frequency-domain modeling; state equations; transient response, stability analysis, steady-state error; control system design

Course Outline:
1. Linear vs. Nonlinear Systems Modeling
2. Modeling in the Time Domain; State Space
3. Transient and Steady State Response, Stability
4. Modeling in the Frequency Domain; Laplace Space
5. Feedback and Error
6. PID Controller

References:

- J. Bechhoefer, Feedback for physicists: A tutorial essay on control, Rev. Mod. Phys. 77, 783-836 (2005)
- Nise, N., Control Systems and Engineering 2nd Ed. (Addison-Wesley 1995)
- Ogata, K., Modern Control Engineering, 4th Ed. (Prentice-Hall 2002)
- Philips, C., Habor, R., Feedback Control Systems, 2nd Ed. (Prentice-Hall- 1991)
- Shinners, S., Modern Control Systems Theory and Design (John Wiley & Sons, 1992)

In addition, you will need:
- Cattleya notebook
- scientific calculator, ruler, graphing paper
- laptop or computer access, VisSim, Scilab, or Matlab Simulink software

Course Requirements:
- 3 Long Exams (every 5 weeks- Feb 15, March 27, May 10) 20% each 60%
- Finals 20%
- Drills, Quizzes, Problem Sets (daily) 20%

Guidelines:
1. Seatworks are collaborative but must be individually submitted. Please remember if you attend all lectures, do the almost-daily seatwork, submit all problem sets and take all quizzes you can get the equivalent of a perfect score in one long exam.
2. Ringing Tone Quiz : If I hear a cellphone ring during class there will be a quiz the following meeting.
3. Those who fail to take the Ringing Tone Quiz will have a score equal to the NEGATIVE of the perfect score.

Grading System
100-90 : 1.0
89-85 : 1.25
84-80 : 1.5
79-75 : 1.75
74-70 : 2.0
69-65 : 2.25
64-60 : 2.5
59-55 : 2.75
54-50 : 3.0
49-40 : 4.0
39-0 : 5.0