

## BME322 System dynamics and control

2.2.2019

Instructor : Prof. Dr. Gülay Özkan

Lectures : Pazartesi 13:30- 16:15

Reference Books:

1. W.L. McCabe, J.C. Smith, P. Harriott., Unit Operations of Chemical Engineering, McGraw Hill, N.Y., 1.Coughanowr D., LeBlanc S., 2009, Process Systems Analysis and Control, McGraw-Hill ISBN: 978-007 339 7894
2. Bequette B.W., 2008, Process Control Modelling; Design and Simulation, Prentice-Hall, ISBN: 013-353640-8
3. Seborg D.E., Mellichamp D. A., Edgar T.F, Doyle F.J., 2011, Process Dynamics and Control , John Wiley and Sons ISBN: 978-0-470-64610-6
4. Seborg D.E., Mellichamp D. A., Edgar T.F, Doyle F.J., ÇEVİRENLER: Tapan N.A., Erdoğan S. 3. baskıdan çeviriden 1.basım, 2012, Proses Dinamiği ve Kontrolü, Nobel Akademik Yayıncılık ISBN: 978-605-133-298-7
5. Alpbaz M.,Hapoğlu H.,Akay B., 2012, Proses Kontrol, Gazi Kitabevi Tic. Ltd. Şti. Ankara, ISBN:978-605-5543-64-8

Course Content

- 1 Introduction and general concepts
- 2 Mathematical modelling
- 3 The representation in terms of deviation variables
- 4 Transfer function
- 5 Linear and nonlinear process dynamics
- 6 The effect of damping ratio on process response
- 7 The feedback control systems
- 8 Controller design and evaluation of their effectiveness
- 9 The frequency response
- 10 Nyquist and Bode diagrams
- 12 Stability analysis
- 12 Arasınava
- 13 PID controller parameters calculation
- 14 State space model

Grading: ; Midterm (20%) ; Quiz (10%); Final examination (80%)