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Advanced Process Control

CBEg 6142

School of Chemical and Bio-Engineering

Addis Ababa Institute of Technology

Addis Ababa University



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Dr Lemma Dendena Tufa

Associate Professor

School of Chemical and Bio-Engineering

Addis Ababa Institute of Technology

Addis Ababa University

Office: Building D - No. 34

H/P: +251913852022

Email: lemma.dendena@aau.edu.et; lemmatufa@gmail.com

P.O.Box 150366, Addis Ababa, Ethiopia

Synopsis

The course starts with introduction of the strengths and weaknesses of the classical feedback control system, gradually setting up the scenario for the need of advanced control systems, like cascade control, feedforward control, multi-loop control systems etc. The course covers design and analysis of advanced control systems. The performance of specific design of control systems will be assessed using simulation software, like Matlab and/or Hysis.

At the end of this course, students should be able to:

1. Design and Analyze feedback control systems
2. Design and analyze advanced control systems
3. Analyze open-loop and closed-loop characteristics of multivariable systems
4. Design multi-loop controllers with decouplers for multivariable systems

Credit value : 3

Assessment:

Assignments : 10%

Project : 20%

Test :20

Final Examination : 50%

1. Automated Continuous Process Control¹, Carlos A. Smith, 2002, John Wiley & Sons, Inc., New York
2. Cecil L. Smith, ADVANCED PROCESS CONTROL, Beyond Single-Loop Control

3. B. Roffel . B. H.Betlem, Advanced Practical Process Control, 2004, Springer-Veriag
4. Seborg D.E., Edgar T. F. and Mellichamp D. A., Process Dynamics and Control, 2nd Ed., John Wiley, 2004.
5. Harold L. Wade, Basic and Advanced Regulatory Control: System Design and Application, 2nd edition, 2004, ISA.