

CENG 382 - Analysis of Dynamic Systems

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Textbook: Invitation to Dynamical Systems, E.R. Scheinerman (see <https://github.com/scheinerman/InvitationToDynamicalSystems>)

Reference books: Introduction to Dynamic Systems: Theory, Models, and Applications , D. Luenberger. , Feedback Systems: An Introduction for Scientists and Engineers, K.J. Astrom and R.M. Murray, Princeton University Press, 2008 (see preprint version http://www.cds.caltech.edu/~murray/amwiki/index.php?title=Version_2.11a)

Evaluation (tentative): midterm exams 20 + 25% (2), 3 take home exams 20%, final 35%.

Timeline (tentative): THE1 14/11, MT1 16/11, THE2 12/12, MT2 14/12. The exams will be during the lecture hours. No late submission is allowed as the solutions will be announced before the exam.

General information:

- The lectures will be in-class.
- Odtuclass will be used for all course related announcements, exams, and material. Follow odtu-class regularly.
- Written take home exams should be prepared using latex.
- Take home exams may require Matlab.

Outline:

1. Basic concepts of systems
2. Discrete and continuous time linear dynamical systems
3. Linear systems in 1D and multiple dimension
4. Equilibrium Points and stability
5. Concepts of control
6. Nonlinear systems, linearization and Lyapunov functions

Policy : In short: no cheating. All assignments should be completed individually, unless stated otherwise. Copying from others, either from other students or off the internet is strictly forbidden. In case of cheating, all other assignments in that category will be graded as 0 and the case will be passed to the Student Discipline Committee.