

# **Selected Topics in Control (II)**

**Spring 2019**

Total Credits: 3

## **Course Description:**

The objective of this course is to introduce some advanced control engineering concepts. More specifically Linear System with non-linear feedback, Model Predictive Control (MPC), Sliding Mode Control (SMC) and robust control techniques will be discussed.

## **Course Contents**

1. Model Predictive Control
2. Variable Structure Control (VSS)
3. Sliding Mode Control
4. Lyapunov Stability Analysis. Direct and Indirect Method.
5. Linear System with non-linear feedback
6. Robust Control

## **Pre-requisites**

1. Control system engineering.

## **Text Books**

1. Modern Control Engineering by P.N. Paraskevopoulos, CRC Press , 2002
2. Model Predictive Control System Design and Implementation using Matlab, Springer 2009.
3. Sliding Mode Control and Observation by Yuri Shtessel et.al, Publisher: Birkhauser, 2010
4. J.-J. Slotine and W. Li, *Applied Nonlinear Control*, Prentice-Hall 1991.
5. Multivariable Feedback Control: Analysis and Design by Sigurd Skogestad and Ian Postlethwaite

## **Reference Books**

1. "Automatic Control System", by Benjamin C Kou, 9<sup>th</sup> Edition.
2. "Modern Control System", by Richard C Dorf 12<sup>th</sup> Edition.