**Instructor:**Jong-Tae Lim (jtlim@ee.kaist.ac.kr)   
  
**Text:** 'Nonlinear Systems' by H.K. Khalil, 3rd Edition, Prentice-Hall   
  
**Reference:**  
  (1) Nonlinear System Analysis, M. Vidyasagar, Prentice-Hall   
  (2) Applied Nonlinear Control, J.E. Slotine and W. Li, Prentice-Hall   
  (3) Nonlinear Control Systems, H.J. Marquez, John Wiley & Sons   
  (4) Nonlinear Systems I,II (analysis and applications), R.R.Mohler, Prentice-Hall   
  (5) Nonlinear Control, H. K. Khalil, Pearson   
  
**Course Description**  
  This course is intended for graduate students in engineering to present   
  the fundamental results of the analysis and design of nonlinear control   
  systems. Especially, this course is concerned with the analysis tools for   
  nonlinear dynamical systems and the design techniques for nonlinear   
  control systems. Emphasis is placed upon application of the theory to   
  systems of interest to the students. Included is an outline of topics to   
  be covered in the course.

* Nonlinear phenomena
* Phase plane analysis
* Mathematical foundation
* Lyapunov stability theorem
* Variable gradient method
* Advanced stability theorem
* Input-output stability
* Asymptotic techniques
* Circle & Popov criteria
* Describing function method
* Feedback linearization
* Lyapunov redesign
* Back stepping
* Sliding mode control
* High gain observers

  The relative importance of homeworks and tests on determining   
  the final grade will be as follows:

|  |  |  |
| --- | --- | --- |
|  | Homework & Quizes | 20% |
|  | Midterm exam | 40% |
|  | Term paper & presentation | 40% |

**Homepage:**   
  http://stcon.kaist.ac.kr/lecture/ee681\_2018   
**TA:**

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