INC 693, 481 Dynamics System and Modelling

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Outline

- Basic course information
- Relationship wiht other courses
- Topics
- Refrences
- Lecture notes

Basic course information

Course: INC 693, 481 Dynamics System and Modelling

Instructor: Assistant Professor Dr.-Ing. Sudchai Boonto
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Web-page: `http://staff.kmutt.ac.th/~sudchai.boo/Teaching/inc693/inc693.html`

Grading: Assignment 30%, Homework 20%, Midterm 25%, Final 25%
weekly home works

Basic course information

- System modelling from physical laws, whereby direct analysis used to develop mathematical models from natural laws and basic engineering principles.
- prerequisites: Calculus, Basic Circuit Analysis, Physics

Basic course information

- A unified System Representation
- Kinematics
- Lagrange's Equation of Motion
- Constrained Systems
- Numerical Solution of ODEs and DAEs
- Dynamic System Analysis and Simulation

Assignment

- Each group of two students has to build a mechanical system. Construct its mathematic model by using any methods from the course. Provide a simple controller to stabilize the system.
- Each group will get 500 baht from the department for this assignment.

Reference

Complete notes will be handed out, so there is no required textbook. However, the notes use some materials from the following books:

1. Wellstead, P. E. *Introduction to Physical System Modelling*, Electronically published by: `www.control-systems-principles.co.uk`, 2000
2. Banerjee, S., *Dynamics for Engineers*, John Wiley & Sons, Ltd., 2005
3. Brian Fabien, *Analytical System Dynamics: Modeling and Simulation*, Springer, 2009
4. Sangveraphunsiri, V., *Dynamics System and Modeling*, Chula Press, 2556 (in thai)
5. Ljung, L. and Glad, T., *Modeling of Dynamic Systems*, Prentice-Hal, Inc. , 1994