淡江大学 Tamkang University

Syllabus

Fall, 2005

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Course: Advanced Dynamics 3 credits
Prerequisite: Dynamics
Lecture (roundtable)*: Mon. 3:10 - 6:00PM, E812
Office hours: Mon, Tue, Thr, Fri: 11:00AM ~ 6:00PM or by appointment
Textbook:

Haim Baruth, *Analytical Dynamics*, McGraw-Hill, 1999. (Imported by 滄海書局)

References:

1. Donald T. Greenwood, *Advanced Dynamics*, Cambridge University Press, 2003.
2. Donald T. Greenwood, *Principles of Dynamics*, 2nd Ed., Prentice Hall, 1988.

Course Objective:

Kinematics of motion, particle dynamics, Lagranges equations. Rigid body dynamics including Eulers equations, the Poinsot construction, spin stabilization, the rotation matrix. Vibrations of coupled systems, orthogonality relationships, generalized coordinates and generalized system parameters.

Hamiltons equations, canonical transformations, and Hamilton-Jacobi theory. Applications to orbital problems. General perturbation theory. Introduction to special relativity.

Grading Police:

1. Homeworks, Participation 50%
2. Midterm Exam: 20%
3. Final Exam: 30%

* 1. Sample presentation slides (prepared by the former students) can be downloaded from the course website. You are welcome to modify the presentation material.
2. It is required to have you to share the ideas with others.
3. You are welcome to bring coffee, tea and snacks to roundtable.