

J. S. Vipperman
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Contact Information:

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Office Hours: Th: 11-1, by appointment

Text: *Analytical Dynamics*, Haim Baruh, 2000, McGraw-Hill Higher Education; ISBN: 0073659770

Objectives:

To become proficient at analyzing and mathematically modeling the effects of forces and inertia in mechanical systems using various methods, including Newton's Laws, Work/Energy, Impulse/Momentum, and Lagrange's Equations.

Course Webpage: <http://www.pitt.edu/~jsv/courses/me2027/>

Grading:

Midterm	35%
Final Exam	35%
Homework	30%

Tentative Syllabus:

Class:	Date:	Topic:	Reading:
1	1/8/04	Overview/Review	ch. 1
2	1/15/04	Kinematics: Relative Motion	ch. 2
3	1/22/04	Kinematics, Cont.	ch. 2
4	1/29/04	Kinetics: Systems of Particles	ch. 3
5	2/5/04	Analytical Mechanics	ch. 4
6	2/12/04	Analytical Mechanics, Cont.	ch. 4
7	2/19/04	Analytical Mechanics	ch. 1-4
8	2/26/04	Test Review	ch. 5
9	3/4/04	Midterm Exam (ch 1-4)	-
10	3/11/04	Spring Break	-
11	3/18/04	Analytical Mechanics, Cont.	ch. 5
12	3/25/04	Inertial Properties of Rigid Bodies	ch. 6
13	4/1/04	Rigid Body Dynamics	ch. 7
14	4/8/04	Rigid Body Dynamics, Cont.	ch. 7
15	4/15/04	Review, Applications, etc.	ch. 8
16	4/22/04	Final Exam (comprehensive)	Notes, book

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Course Policies:

- A free body diagram **is required** for all problems involving particles or bodies and using vector methods (Newton's second law or impulse-momentum). This includes both homework and test problems. At least 10% of your grade will be a FBD.
- Homework will be collected the following week after it is assigned.
- I reserve the right not to grade all homework problems!
- If I haven't given you a break during class by 5:30, stop me!

Additional References:**Advanced Dynamics:**

- ◆ *Advanced Engineering Dynamics*, 2/e, J.H. Ginsberg, Cambridge University Press, 1998.
- ◆ *Principles of Dynamics*, 2/e, Donald T. Greenwood, Prentice Hall, 1988.
- ◆ *Analytical Mechanics, (With an Introduction to Dynamical Systems)*, J. S. Torok, Wiley Interscience, 2000.
- ◆ *Methods of Analytical Dynamics*, L. Meirovitch, McGraw-Hill, 1986.

Introductory Dynamics:

- ◆ *Engineering Mechanics: Dynamics*. 8/e, Hibbeler, Russell C., 1997, ISBN: 0135782619, Prentice Hall
- ◆ *Engineering Mechanics: Dynamics*. Meriam, J. L.; Kraige, L. Glenn, 1997, ISBN: 0471597678, John Wiley & Sons, Incorporated

Math

- ◆ *Schaum's Mathematical Handbook of Formulas & Tables*. Spiegel, Murray R., 1998, ISBN: 0070382034, The McGraw-Hill Companies
- ◆ *Advanced Engineering Mathematics*. O'Neil, Peter V., 1997, ISBN: 0534943209, P W S Publishers,