

Analytical Mechanics Syllabus*

Meeting	Topic	Reading	Notes
1 (Wed: 11/30)	Math Methods Vectors and coordinate systems	1 (Secs. 1-5, 8-16)	
2 (Thurs: 12/01)	Newtonian Mechanics I Equations of motion from the 2 nd law	2 (Secs. 1-4)	
3 (Fri: 12/02)	Newtonian Mechanics II Retarding forces, conservation laws, rockets	2 (Secs. 4-7)	P.S. #1 due: <u>5 pm Sun. 12/04</u>
4 (Mon: 12/05)	Linear Oscillations I Simple harmonic motion and phase diagrams	3 (Secs. 1-2, 4-5)	
5 (Tues: 12/06)	Linear Oscillations II Damped and driven oscillators	3 (Secs. 5-8)	P.S. #2 due: <u>5 pm Wed. 12/07</u>
6 (Thurs: 12/08)	Calculus of Variations Euler's equations and extremum solutions	6 (Secs. 1-7)	
7 (Fri: 12/09)	Lagrangian Dynamics I Lagrange's equation and generalized coordinates	7 (Secs. 1-4)	P.S. #3 due: <u>5 pm Fri. 12/09</u>
Take-Home Mid-Term Exam: Due 5 pm, Sunday 12/11 (covers Chapters 2, 3, 6)			
8 (Mon: 12/12)	Lagrangian Dynamics II Lagrange multipliers and constraint forces	7 (Secs. 5-9)	
9 (Tues: 12/13)	Hamiltonian Dynamics Generalized momenta and Hamilton's equations	7 (Secs. 10-11)	P.S. #4 due: <u>5 pm Wed. 12/14</u>
10 (Thurs: 12/15)	Central Force Motion I Equations of motion for the two-body problem	8 (Secs. 1-5)	
11 (Fri: 12/16)	Central Force Motion II Planetary motion and orbital dynamics	8 (Secs. 5-8)	P.S. #5 due: <u>5 pm Sun. 12/18</u>
12 (Mon: 12/19)	Rigid Body Dynamics I Inertia tensor, principle axes, and angular momentum	11 (Secs. 1-6)	
13 (Tues: 12/20)	Rigid Body Dynamics II Euler's equations and the symmetric top	11 (Secs. 7-10)	P.S. #6 due: <u>10am Wed. 12/21</u>
Take-Home Final Exam: Due 5 pm, Wednesday 12/21 (covers Chapters 7, 8, 11)			

*Note: This schedule is subject to change through the term, although the exam dates are firm.