

Tentative Schedule and Suggested Reading

I Newtonian Dynamics		
A One-dimensional motion	• K&K Ch:2.1-2.5, 2.7-2.9	<i>Sep 6, 8</i>
B Three-dimensional motion 1. Vectors, inner products, $\vec{F} = m\vec{a}$ 2. Coordinates and examples 3. Circular motion 4. Changing basis vectors 5. Moving coordinate systems 6. Universal gravitation	• K&K Ch:1.1-1.4 • K&K Ch:1.5-1.11, 3.1-3.2 • K&K Ch:1.12-1.19, 2.10 • K&K Ch:3.4 • K&K Ch:2.6 • K&K Ch:3.3-3.6	<i>Sep 8</i> <i>Sep 13, 15</i> <i>Sep 15</i> <i>Sep 15, 20</i> <i>Sep 20</i> <i>Sep 20</i>
C Momentum 1. Definition, examples 2. Center of mass, impulse	• K&K Ch:4	<i>Sep 20</i> <i>Sep 22</i>
D Energy 1. 1-dim., kinetic, potential, work 2. 3-dim., line integral, gradient 3. Gravitational potential 3. Stokes' theorem, 2-dim. 4. Stokes' theorem, 3-dim. cross product, curl 5. Collisions	• K&K Ch:5.1-5.2 • K&K Ch:5.3-5.8, Note 5.2 • K&K Ch:6.5	<i>Sep 22</i> <i>Sep 22</i> <i>Sep 27</i> <i>Sep 27</i> <i>Sep 27, 29</i> <i>Oct 4, 6, 11</i>
Midterm		Oct 13
E Simple harmonic motion 1. Introduction 2. Complex numbers 3. Damped SHM 4. Forced SHM	• K&K Ch:3.7, 6.2, 6.3, 11.1, 11.2 • K&K Note 11.1 • K&K Ch:11.3 • K&K Ch:11.4-11.6	<i>Oct 11</i> <i>Oct 11</i> <i>Oct 18</i> <i>Oct 20, 25</i>
Below is from Fall 2021:		
II Special Relativity		
A Introduction	• K&K Ch:12.1-12.3	<i>Oct 28</i>
B Lorentz transformations 1. Derivation 2. Four-vectors 3. Doppler effect 4. Invariant length and causality 5. Dynamics	• K&K Ch:12.4-12.9 • K&K Ch:14.1-14.4 • K&K Ch:13, 14.5, 14.6	<i>Oct 28, Nov 4</i> <i>Nov 4</i> <i>Nov 9</i> <i>Nov 9</i> <i>Nov 11, 16</i>
III Rigid body motion		
A Fixed axis rotation	• K&K Ch:7.1-7.4	<i>Nov 16</i>

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B Angular momentum	• K&K Ch:7.5-7.10	<i>Nov 16, 18</i>
C Motion in 3 dimensions	• K&K Ch:8	<i>Nov 23</i>
IV Electrostatics		
A Coulomb's law	• Purcell Ch:1.1-1.8	<i>Nov 24, Dec 1</i>
B Gauss' law	• Purcell Ch:1.9-1.15	<i>Dec 3</i>
C Gauss' theorem	• Purcell Ch:2	<i>Dec 3, 8</i>
D Scalar potential	• Purcell Ch:2	<i>Dec 8</i>
E Conductors	• Purcell Ch:3.1-3.4	<i>Dec 10</i>
Final		Dec 17
F Capacitance	• Purcell Ch:3.5-3.8	
G Ohm's law and circuit theory	• Purcell Ch:4	
V Electrodynamics		