Class	Major Topics	Textbook Reference
1 Mon. Sept. 12	• Introduction to PHY138: the structure of the course • Studying Physics • Doing well at University	None
2 Wed. Sept. 14	• Motion Diagrams • Example: projectile motion • Position, velocity, acceleration • Vectors • Problem solving • Units • Significant figures	Chapter 1 - **Concepts of Motion**
3 Mon. Sept. 19	• More about displacement, velocity, speed and acceleration • Using derivatives • Introducing the integral sign • Free fall • Motion on an inclined plane	Chapter 2 - **Kinematics: The Mathematics of Motion** Omit subsection of §2.4: *A Little More Calculus: Integrals*
4 Wed. Sept. 20	• Vectors and scalars • Coordinate systems • Newton's 1st and 2nd Laws • Inertial reference frames • Free body diagrams	Chapter 3 - **Vectors and Coordinate Systems** Chapter 4 - **Force and Motion**
5 Mon. Sept. 26	• Equilibrium • Using Newton's 2nd Law • Mass and weight	Chapter 5 - **Dynamics I: Motion Along a Line** Omit §5.4 - Friction Omit §5.5 - Drag

6 Wed. Sept. 28	• Kinematics in Two Dimensions • Dynamics in Two Dimensions • Projectile motion • 📕 ***Data and analysis of jumping frogs***.	Chapter 6 - **Dynamics II: Motion in a Plane** Omit §6.4 - Relative motion
7 Mon. Oct. 3	• Uniform circular motion • Circular orbits	Chapter 7 - **Dynamics III: Motion in a Circle** §7.1 - §7.4
8 Wed. Oct. 5	• Fictitious forces • Nonuniform circular motion • Action/reaction pairs • Ropes and pulleys • 📕 ***Ballistocardiogram***	§7.5 - §7.6 Chapter 8 - **Newton's Third Law**
9 Wed. Oct, 12	• Impulse • 📕 ***Damage caused to people in collisions*** • 📕 ***Physics of a tennis serve*** • Conservation of momentum • Inelastic collisions • Angular momentum	Chapter 9 - **Impulse and Momentum**
10 Mon. Oct. 17	• Kinetic energy • Gravitational potential energy • 📕 The gravitational field 🌀 • Hooke's Law for springs • Elastic collisions • Energy diagrams	Chapter 10 - **Energy** §10.1 - §10.7 🆕 Omit subsection of §10.6: *Using Reference Frames*

11 Wed. Oct. 19	- Work and kinetic energy ***More about jumping frogs*** - Conservative and non-conservative forces - Thermal energy - Conservation of energy - Power ***Basal metabolic rate***	Chapter 11 - **Work** §11.1 - §11.9
12 Mon. Oct. 24	- Rotation about the center of mass - Torque ***Forces on the hip and femur***	Chapter 13 - **Rotation of a Rigid Body** §13.1 - §13.3
13 Wed. Oct. 26	- Moment of inertia - Conservation of angular momentum - Rotational energy - Angular momentum of a rigid body	§13.4 - §13.7, §13,10 NEW Omit §13.8 - *Rolling Motion* NEW Include the *Angular Velocity Vector* subsection of §13.9; omit the rest of this section
14 Mon. Oct. 31	Review for the test	All of the above.
15 Wed. Nov. 2	Error analysis: a laboratory topic	Nothing from the textbook, but we will discuss *Significant Figures* from Class 2 in a different way.

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