

Hibbeler 14th Edition Correspondence		Week	Title	Description	Video Links	Lecture Number
Chapter	Section					
12		1	1 Some Fundamental Definitions Units Particles Rigid Bodies, Vector	Define what we mean by Particles and Rigid Bodies, Vector fundamentals, Dimensions (English Engineering, British Gravitational and SI) and Dimensional Consistency	https://bit.ly/MIE100Definitions	1
12		2	1 Particle Position Velocity and Acceleration	Before we can talk about ways of describing the fundamental quantities of position, velocity and acceleration - we need to define them.	https://bit.ly/MIE100IntroLecture	2
		4	General Curvilinear Motion	What happens when a particle travels in a 2D path (welcome to the world of the Simpsons).	https://bit.ly/MIE100PartKineticsGenCurMot	3
12		5	1 Curvilinear Motion Rectangular Coordinates	Start looking at how to describe curvilinear motion in 2D using rectangular coordinates	https://bit.ly/MIE100RectangularCoordPartKinetics	4
12		6	1 Projectile Motion (Mini Lecture)	How do you describe motion of a projectile undergoing constant acceleration	https://bit.ly/MIE100ProjMotionPartKin	5
12		6	2 Projectile Motion	Look at projectile motion analysis	https://bit.ly/MIE100ProjMotion	6
12		7	2 nt coordinate (Mini Lecture)	Another coordinate system important to this course - normal-tangential coordinates.	https://bit.ly/MIE100ntPartKinetics	7
12		8	2 Curvilinear Motion - Cylindrical Coordinates (Mini Lecture)	What happens when you have motion along a curved path?	https://bit.ly/MIE100CurvilinearMotionPartKin	8
		8	2 r-theta example	Another coordinate system important to this course - r-theta coordinates.		9
12		9	2 Absolute Dependent Motion (Mini Lecture)	An interesting problem in particle kinematics - what happens when motion of one particle is dependent on another.	https://bit.ly/MIE100AbsDepMotionPart	10
		9	3 Absolute dependent motion	Looking at absolute dependent motion	https://bit.ly/MIE100KinematicsAbsDepMot	11
12		10	3 Relative Velocity of Particles (Mini Lecture)	Introduction to relative position, velocity and acceleration of particles.	https://bit.ly/PartKineticsRelativeMotion	12
		10	3 Relative Motion	Challenging concept in the course – Relative motion – focused on a plane/skydiver. Used in second half of course	https://bit.ly/MIE100RelMotion	13
12		3	Chapter 12 summary	Important concepts from Chapter 12 (Particle Kinematics) covered	bit.ly/MIE100Ch12	14
13		1	3 Gravity Units Mass Weight	Just defining all of the terms we use in the rest of the course	https://bit.ly/MIE100DefineTerms	15
12		3	Quiz 1 2020	Discussion on the first quiz from 2020	https://bit.ly/MIE100Quiz2020	16
13 Sections 1-6		3	Particle Kinetics Introduction	Important concepts from Chapter 13 (Particle Kinetics) covered	bit.ly/MIE100Ch13	17
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13		2	4 Second Law and Units	Define base SI and US customary units, Second Law for the three coordinates and direction of forces for curved path	https://bit.ly/MIE100SecondLawParticles	19
		3	4 Friction Friction	Kinetics and friction – nice example from the Physics Teacher Journal	https://bit.ly/MIE100FrictionKinetics	20
13		4	4 Curvilinear Kinetics	Examples in curvilinear kinetics	https://bit.ly/MIE100CurvilinearKinetics	21
13		5	4 n-t coordinate examples	Examples in normal-tangential coordinates	https://bit.ly/MIE100KineticsNT	22
13		4	4 Absolute Dependent Motion	Examples looking at absolute dependent motion	https://bit.ly/MIE100KineticsAbsDepMot	23
13		7	4 Central Force Motion	Not covered in live lecture -Define Central Force Motion	https://bit.ly/MIE100CentralForceMotionKinetics	24
14 Sections 1-6		5	5 Overview of Particle Work-Energy	Important concepts from Chapter 14 (Particle Work-Energy) covered	bit.ly/MIE100Ch14	25
14		2	5 Spring Gravity Work Energy problems	Example of Work Energy of Particles (Spring/Gravity)	https://bit.ly/MIE100WorkEnergySpring	26
14		2	5 Ski Jumper Problem	Good illustration of gravity and work-energy (standard course example)	https://bit.ly/MIE100SkiJumpWork	27
Section 2-6			5 Spring Gravity Work Energy Problems (2)	More examples – these tend to be useful as challenging spring/gravity	https://bit.ly/MIE100WorkEnergySpring2	28
14 Section 2-6		5	5 Work-Energy Examples	More examples – but with absolute dependent motion	https://bit.ly/MIE100WorkEnergy3	29
15 Sections 1-7		6	6 Overview of Particle Momentum	Important concepts from Chapter 15 (Particle Momentum) covered	bit.ly/MIE100Ch15	30
15 Sections 1-7		6	6 Particle Angular Momentum	Look at particle angular momentum	https://bit.ly/MIE100ParticleAngMom	31
15 Sections 1-7		6	6 Particle Linear Momentum	Look at linear momentum and simple impact	https://bit.ly/MIE100PartLinMom	32
15 Sections 1-7		6	6 Central Force Motion - Momentum	Not covered in live lecture -Using central force motion and momentum	https://bit.ly/MIE100CentralForceMom	33
16 Sections 1-7		7	7 Kinematics of Rigid Bodies	Important concepts from Chapter 16 (Kinematics) covered	bit.ly/MIE100Ch16	34
16		6	7 Instantaneous Centre of Zero Velocity	Discuss the instantaneous centre of zero velocity	https://bit.ly/MIE100ICZV	35
Chapters 12-16		7	MIE100 Midterm 2020	Discuss the contents of Midterm (Particle Kinematics and Kinetics, Rigid Body Kinematics (not acceleration)	https://bit.ly/MIE100Midterm2020	36
16 Section 6-7		7	7 Velocity and Acceleration - Rigid Bodies	Velocity and Acceleration analysis of Rigid Bodies	https://bit.ly/MIE100KinematicsAcc	37
16		6	8 Graphical (scalar) and Vector velocity analysis of rigid bodies	Looking at graphical and vector approaches for rigid bodies	https://bit.ly/MIE100Kinematics	38
17		1	8 Moment of Inertia	Discussion of mass moment of inertia	https://bit.ly/MIE100MomInertia	39
17 Sections 2-5		8	8 Overview of Rigid Body Kinetics	Important concepts from Chapter 17 (Kinetics) covered	https://bit.ly/MIE100Chap17	40
17		5	8 Rolling with and without slip	Look at rolling with and without slip – useful and often challenging concept	https://bit.ly/MIE100RollingSlip	41

	17 Sections 3-5	8 Rigid Body Kinematics and Kinetics	More examples focused on rolling	https://bit.ly/MIE100KineticRolling	42
	17 Sections 3-5	9 Kinetics - Rigid Bodies	Some more standard examples looking at rigid body kinetics	https://bit.ly/MIE100KineticExample	43
	18 Sections 1-5	9 Overview of Rigid Body Work-Energy	Important concepts from Chapter 18 (Work-Energy) covered	bit.ly/MIE100Ch18	44
	18 Sections 1-5	Rigid Bodies Work Energy Examples 2	Set of examples looking at Rigid Body Work-Energy	https://bit.ly/MIE100WorkEnergy2	45
	18 Sections 1-5	9 Rigid Bodies - Work Energy	A second set of examples looking at Rigid Body Work-Energy	https://bit.ly/MIE100WorkEnergy1	46
	18 Sections 1-5	10 Rigid body kinetics - Work and Energy	Look at work-energy with an Instantaneous centre of zero velocity	https://bit.ly/MIE100WorkEnerICZY	47
	19 Sections 1-3	10 Overview of Rigid Body Momentum Chapter	Important Concepts from Chapter 19 (Angular and Linear Momentum) covered here	bit.ly/MIE100Ch19	48
	19 Sections 1-3	10 Rigid Body Momentum More Examples	Rolling motion examples	https://bit.ly/MIE100MomRolling	49
	19 Sections 1-3	10 Rigid Body Momentum Angular/Linear	General Rigid Body Angular and Linear Momentum Problems	https://bit.ly/MIE100RBMom	50
	19 Sections 1-3	11 Rolling cylinder on ramp friction direction and calculation	A couple of momentum problems with rolling	https://bit.ly/MIE100RollingRBMomentum	51
	22 Sections 1, 3-6	11 Overview of Vibrations Chapter	Important concepts covered in Vibrations Chapter are derived here	bit.ly/MIE100Ch22	52
	22 Sections 1, 3-6	11 Touched by an Angle	Rigid Body Free Vibration	https://bit.ly/MIE100FreeVibRB	53
	22 Sections 1, 3-6	11 Vibrations Introductory Problems	Particle Free and Damped Vibration Example, Introduction of Free Vibration for Rigid Bodies	https://bit.ly/MIE100VibrationIntro	54
Entire Course	22 Sections 1, 3-6	12 Final Exam 2020	Discussion on MIE100 Final Exam 2020	https://bit.ly/MIE100Final2020	55
	22 Sections 1, 3-6	Absolute Dependent Motion	Example looking at complex absolute motion. The goal here is to explain the components of the standard equation we have discussed in class.	https://bit.ly/MIE100AbsDependent	57
	22	3 12 Forced Vibration Problem (plus a damping problem)	Look at how to solve forced vibrations – and a damped vibration problem thrown in as a bonus	https://bit.ly/MIE100ForcedVibration	58
	22	5 13 Forced damped vibrations	Not covered in live lecture - but useful to look at as the equations of motion are described in more detail	https://bit.ly/MIE100ForceVibrationDamp	59