

Lecture	Date	Topics	Reading	HW Given	HW Topic	HW DUE
Start Of Year	Mon 1/5 14:30	NO CLASS				
1	Wed 1/7 14:30	Intro				
2	Fri 1/9 14:30	Introduction of Names and Concepts; the EOM; Simple Oscillator Example	Simmechanics Documentation (SimMechanics > Getting Started > Modeling, Simulating, and Visualizing Simple Machines)	HW 01	SimMechanics	
3	Mon 1/12 14:30	Complex Simechanics Example; Scalar Values				
4	Wed 1/14 14:30	Physical and Numerical Vectors				
5	Fri 1/16 14:30	Coordinate systems	PfeifferGlocker_Chapt_02 (pages 19- 17)	HW 02	Transformations and Derivatives	HW 01
MLK Day	Mon 1/19 14:30	NO CLASS				
6	Wed 1/21 14:30	Derivative of Vectors				
7	Fri 1/23 14:30	Moving Coordinate Systems; MATLAB Symbolic Math Toolbox				
8	Mon 1/26 14:30	Transformation of Matrices; Object Oriented Prgramming	Weisfeld_Chapter_1 (pages 5-22)			
9	Wed 1/28 14:30	Ridgid Body Kinematics		HW 03	Rigid Body Kinematics	HW 02
10	Fri 1/30 14:30	Integrating Kinematics (Review of HW 02) & Dynamics of Particles				
11	Mon 2/2 14:30	Angular Momentum	Ginsberg_EngineeringDynamics_Chapter_5			
12	Wed 2/4 14:30	The Inertia Matrix				
13	Fri 2/6 14:30	Rigid Body Dynamics		HW 04	Rigid Body Dynamics/ Inertia	HW 03
14	Mon 2/9 14:30	Energy; Inertia Computation; Parallel Axis Theorem, Rigid Body Dynamics in Matrix Form				
15	Wed 2/11 14:30	Explicit and Implicit Constraints	Amirouche_FundamentalsOfMultibody_Chapter_3			
16	Fri 2/13 14:30	Constraint Classification: Implicit-Explicit / Equality- Inequality/ Scleronomic-Rheonomic/ Holonomic-non holonomic				
17	Mon 2/16 14:30	Kinematic Chains and Trees, Linked Lists		HW 05	Constraints/ Pre Test	HW 04
18	Wed 2/18 14:30	Concept of recursion, Outward and Inward Pass Algorithms				
19	Fri 2/20 14:30	Recursive computation of Joint Displacement				
20	Mon 2/23 14:30	Planar Joint Types	Weisfeld_Chapter_1 (pages 22-29)	HW 06	Recursive Algorithms	HW 05
Midterm-Exam	Wed 2/25 14:30	Midterm 8:00-10:00am in DOW-1014				
21	Fri 2/27 14:30	Concept of Inheritance, Implementation of Recursive Kinematics Trees using OO-Programming.	Matlab Documentation (User's Guide -> Object-Oriented Programming -> MATLAB Classes Overview / -> Building on Other Classes)			
Spring Break	Mon 3/2 14:30	NO CLASS				
Spring Break	Wed 3/4 14:30	NO CLASS				
Spring Break	Fri 3/6 14:30	NO CLASS				
22	Mon 3/9 14:30	Polymorphism in Kinematic Trees				
23	Wed 3/11 14:30	Velocities and Accelerations, Computation of the Constraint Jacobian	PfeifferGlocker_Chapt_02 (pages 18 - 20)	HW 07	Recursive Positions, Velocities, and Accelerations	HW 06
24	Fri 3/13 14:30	Duality of Forces and Velocities, Jacobi-Transposed mapping				
25	Mon 3/16 14:30	Virtual Power and the Principle of Jourdain	Shabana_DynamicsMultibody_Chapter_3 (Pages 102-115)			
26	Wed 3/18 14:30	Projected Newton-Euler Equations for systems of particles				
27	Fri 3/20 14:30	Projected Newton-Euler Equations for systems of rigid bodies	PfeifferGlocker_Chapt_03 (pages 21 -25)	HW 08	Multi-Body Dynamics for Particles and Rigid Bodies	HW 07
28	Mon 3/23 14:30	Implicit Constraints, Closing Loops Dynamically				
29	Wed 3/25 14:30	Implicit Constraints, Issues and Implementations				
30	Fri 3/27 14:30	Unilateral Constraints				
31	Mon 3/30 14:30	Collisions		HW 09	Collisions	HW 08
32	Wed 4/1 14:30	Collisions Example I				
33	Fri 4/3 14:30	Collisions Example II; HW08 Revisited				
34	Mon 4/6 14:30	HW08 Revisited				
35	Wed 4/8 14:30	The Canonical Form of the EOMs and its Components Revisited				HW 09
36	Fri 4/10 14:30	Virtual Model Control		Project	Final Project	
37	Mon 4/13 14:30	Algorithmic Implementations: Computational complexity and Inverse Dynamics				
38	Wed 4/15 14:30	Algorithmic Implementations: Inverse Dynamics & Forward Dynamics				
39	Fri 4/17 14:30	Algorithmic Implementations: Order-N Forward Dynamics				
40	Mon 4/20 14:30	Recap				Project
Final Exam	Tue 4/30 10:30	Final 10:30-12:30 in TBD				