

MECHANICS OF THE HUMAN LOCOMOTOR SYSTEM
EML 5595 - FALL 2005

SEGMENT	MONTH	DAY	TOPIC	JOURNAL ARTICLES	PRESENTER		
Systems-level Modeling	August	24	Introduction & Course Overview		Fregly		
		26	SIMM Overview	Delp & Loan (2000)	Fregly		
		29	Systems-level Modeling Overview	Zajac (1993)	Fregly		
Multijoint Dynamics		31	Kinematic Modeling	Kinematics handout, Lu and O'Connor (1999)	Fregly		
	September	2	Dynamic Modeling with SD/Fast	Momentum, Inertia, and Dynamics Handouts	Fregly		
		5	Holiday				
		7	Introduction to Simulation Lab 1		Fregly		
		9	Inverse Dynamics Analyses	Kuo (1998), Cahouet et al (2002)	Lightcap		
		12	Forward Dynamics Analyses	Gilchrist and Winter (1997), Panne and Lamouret (1995)	Subramanian		
		14	Advanced Dynamics Analyses	Fregly and Zajac (1996), Raasch et al. (1997)	Fregly		
		16	Introduction to Course Project		Fregly		
		19	Forward Dynamic Optimization	Kautz and Hull (1995)	Machado		
		21	Inverse Dynamic Optimization	Yen and Nagurka (1990), Mazzo & Cappozzo (2004)	Marquez		
		23	Fast Gradient Calculation Methods	Durrbaum et al. (2002), Lo et al. (2002), Anderson & Hsu (2002)	Reinbolt		
		26	Subject-Specific Cost Functions	Liu et al. (2005), Bottasso et al. (2005)	DiGiovanna		
		28	Introduction to Simulation Lab 2		Fregly		
		30	Ground Contact Modeling	Neptune et al. (2000), Rooney et al. (2005)	Subramanian		
		Musculoskeletal Geometry	October	3	Patient-Specific Modeling	Reinbolt et al. (2005a), Reinbolt et al. (2005b)	Jackson
5	Multijoint Dynamics Wrap-Up				Fregly		
7	Holiday						
10	Muscle Wrapping			Carlton and Johnson (2001), Garner and Pandy (2000)	Marquez		
12	Muscle Moment Arm Estimation			Arnold et al. (2000a), Murray et al. (2002)	Peterson		
14	Applications of Geometric Musculoskeletal Models			Arnold et al. (2000b), Arnold and Delp (2001)	Machado		
17	Introduction to Simulation Lab 3				Fregly		
19	Musculoskeletal Geometry Wrap-Up				Fregly		
Musculo-tendon Dynamics				21	Dimensionless Muscle Model	Pandy et al. (1990), Buchanan et al. (2004)	Lightcap
				24	Muscle Model Evaluation	Bogert et al. (1998), Anderson and Pandy (2001a)	DiGiovanna
		26	Muscle Model Parameter Estimation	Garner and Pandy (2003), Lloyd & Besier (2003)	Gao		
		28	Introduction to Simulation Lab 4		Fregly		
		31	Musculo-tendon Dynamics Wrap-Up		Fregly		
Systems-level Modeling	November	2	Muscle Control Principles	Munih and Kralj (1997), Glitsch and Baumann (1997)	Lee		
		4	Muscle Feedback Control	Kooij et al. (1999), Gerritsen et al. (1998)	Gao		
		7	Biological Control Models	Suzuki et al. (1996), Wada et al. (2001)	Jackson		
		9	Factor Analyses	Dafertshofer et al. (2004), Ting & Macpherson (2005), Stone (2002)	Reinbolt		
		11	Holiday				
		14	Summary of Muscle Control Principles		Fregly		
		16	Static Optimization	Yamaguchi et al. (1995), Li et al. (1999)	Peterson		
		18	Dynamic Optimization	Anderson & Pandy (1999), Anderson & Pandy (2001b)	Fregly		
		21	Introduction to Simulation Lab 5		Fregly		
		23	Deterministic vs. Stochastic Modeling	Valero-Cuevas et al. (2003), McLean et al. (2003)	Fregly		
		25	Holiday				
		28	Joint Contact Modeling	Fregly et al. (2003), Lin et al. (2005)	Lee		
		30	Systems-level Modeling Wrap-Up		Fregly		
	December	2	Course Project Presentations				
		5	Course Project Presentations				
		7	Course Project Presentations				