Schedule: Lectures, homeworks, labs, exams, MIPSI

Week	1^{st} meeting of week (1.5 hours)	2^{nd} meeting of week (1.5 hours)
09/26	Babyboot MIPSI. Classification of ODEs. Math review: Complex plane, logs, trig.	Math review: Trigonometry, amplitude-phase formula, `atan2`. Solve $x^2 = \cos(x)$. Solve $\frac{dy}{dt} = \sin(t * y)$.
Lab	**Motor spin down & 1^{st}-order ODEs. System ID for dry/viscous friction constants.**	
10/03	**Hw 1**. Geometry and calculus. **(due)**	**Hw 2**. Amplitude-phase. ODEs & system identification with separation of variables. **(due)**
Lab	**Slinky experiments & 2^{nd}-order ODEs. System ID for spring & damping constants.**	
10/10	**Hw 3**. Vibrations and 2^{nd}-order ODEs. **(due)**	**Hw 4**. Time-specs for ODEs and control. **(due)**
Lab	**Bifilar pendulum & 2^{nd}-order ODEs. System ID for moment of inertia.**	
10/17	**Hw 6** (skip Hw 6.11, 12). Inhomogeneous ODEs, harmonic forcing, resonance. **(due)**	**Lab: Harmonic forcing & resonance. System ID natural frequency (in-class).**
10/24	Hw 6.11, 12 & **Hw 7**. Root locus **(due)** Power/energy & resonance. Theory/demos for **optional Hw 5**.	**Midterm** Room TBD.
10/31	**Optional Hw 5**. $\vec{\mathbf{F}} = m\vec{\mathbf{a}}$ translate/rotate. **(due)** **Bonus for optional Hw 5: 15 points.**	
Lab	**Design of RC, LC, and other high-pass and low-pass circuits for music.**	
11/07	**Hw 8**. Circuits, filters, sensors. Laplace transforms. Bode plots. **(due)**	
Lab	**Motor constants.**	
11/14	**Hw 10**. Motors and PID control. **(due)**	
11/21	**Thanksgiving Week** (Complete homework & MIPSI)	
Lab	**PID control of motor.**	
11/28	**Hw 11**. Linearization & stability. **(due)** **Hw 12**. Matrix algebra. Fourier series. **(due)**	**Lab: Determination of drag model for coffee-filter. (Fit under/over-determinate data).**
Lab	**MIPSI: Power-point slide with question, picture of system, team photo, answer to question.**	
12/05	**Hw 13**. Coupled ODEs, eigen-analysis **(done)**	**Hw 13, 14**. State-space & control **(due)**
Final exam Thursday December 15, 12:15 - 3:15. Room TBD.		
Sat. Dec. 17: Winter break. Grades in Axess.