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| Class meetings | Topics | Due dates  **In-class assignments:**  **T due Th,   F due T** |
| Day 1  F Jan 19 | Intro.  Review 1st order systems in time domain. Analytical and numerical solns. for free, forced-step, and forced-harmonic. |  |
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| Day 2  T Jan 23 | Review free response of 2nd order systems in the time domain.  Analytical and numerical solutions.  Parameter identification. |  |
| Day 3  F Jan 26 | Review forced response of 2nd order systems in time domain to step and harmonic excitation. Analytical and numerical solutions. |  |
|  |  | HW 1. Due **F** 1/26 |
| Day 4  T Jan 30 | Intro to the s-plane and the Laplace transform (LT). |  |
| Day 5  F Feb 2 | Applying the LT to solve ODEs, e.g.,2nd order ODE. Partial fraction expansions and the table lookup method. |  |
|  |  | HW 2. Due **F** 2/2 |
| Day 6  T Feb 6 | Transfer functions. Symbolic MATLAB tools.  Poles, zeros, |  |
| Day 7  F Feb 9 | Poles of second order systems and their relationship to stability and response. |  |
|  |  | HW 3. Due **F** 2/9 |
| Day 8  T Feb 13 | Intro to feedback control. Black’s formula, Final value theorem.  Proportional and PI feedback.  Steady-state error. |  |
| F Feb 16 | NO CLASSES due to Candidates Weekend 1 ! |  |
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| Day 9  T Feb 20 | Analyzing feedback systems with MATLAB symbolic tools.  PI control of a first order system. |  |
|  |  | HW 4. Due **W** 2/21 |
| Day 10  F Feb 23 | Inverted pendulum (Rocky) eqns of motion. Formulating a feedback system for Rocky. Regulator problem |  |
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| Day 11  T Feb 27 | Inverted pendulum (Rocky) project | HW 5. Due **W** 2/28 |
| Day 12  F Mar 1 | Inverted pendulum (Rocky) project |  |
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| Day 13  T Mar 5 | Inverted pendulum (Rocky) project | Quiz. Due **F** 3/8 |
| Day 14  F Mar 8 | Inverted pendulum (Rocky) project |  |
|  |  | Final Project Deliverables  Due **F** 3/15 |