The Final Exam is Tuesday, December 10, 2:30–4:20 pm, in CHL 015

The final exam is cumulative. Expect there to be 2 problems on material from the first midterm, 2 problems on material from the second midterm, and 3 problems (which may be multi-part) from the topics below.

Section 6.1, 6.2: Laplace transform and inverse Laplace transform using the tables. You will be given a table of Laplace transforms; you do not need to know how to set up or calculate transforms using integrals. Know how to apply partial fractions to write $F(s)$ as a sum of the simpler terms that appear on the table.

Section 6.3: Solving second-order initial value problems using the Laplace transform. Rule 18 says: if $\mathcal{L}[y(t)] = Y(s)$, then

$$\mathcal{L}[y''(t)] = s^2 Y(s) - sy(0) - y'(0), \qquad \mathcal{L}[y'(t)] = sY(s) - y(0)$$

Use this, partial fractions, and Laplace table to find $y(t)$.

Section 6.4: Step functions and time delay. Know how to represent piece-wise defined functions (such as step functions) as a sum of terms of the form $u_c(t)f(t-c)$. Know how to use Rule 13 to calculate the Laplace transform of step functions, and also to find the inverse Laplace transform of $e^{-cs}F(s)$.

Section 6.5: Impulse functions: here, you just need to know what $\delta_c(t) = \delta(t-c)$ refers to, and how to use Rule 17 to find its Laplace transform.

There will not be any problems on convolution or transfer functions on the final exam.