Online Delivery Plan

Assessment

1. **Homeworks** – will proceed as normal
2. **Quizzes** – Assigned with homework, but grade contributes to Quiz category.
3. **Exams** – one-week, “take-home”
   - No online resources other than course website and textbook
   - MATLAB/LTSpice ok to use, but no credit unless otherwise stated
4. **Experiments** – Completed individually using MATLAB/LTSpice. No prelab. Reduced to two labs (total)

Online Delivery Plan (2)

Content Delivery

1. **Lectures** – Zoom livestream and recording
2. **Lecture Q&A** – Slido during livestream
3. **Office Hours** – Zoom, Slack, Canvas, e-mail
   - Additional meetings by appointment
4. **Collaboration** – Slack, Canvas

Additional Resources

**Supplemental Materials**

- Online Course Delivery
- Additional References
- Simulation/Analysis Software
- Course Materials
Communication

• Contacting me
  - Anytime, through e-mail, Slack, Zoom (OH/Lectures), Slido (Lectures), Canvas, Phone (schedule)
  - Contact me if you need help with course material, need help adjusting to working from home, are stressed, need to talk, or anything else.

• Contacting peers
  - Please register and use the Slack channel
  - Centralized communication that every student can see
  - No possibility of negative impact to your grade for anything posted on Slack

Resources

• University and College Update Sites
  - [https://www.utk.edu/coronavirus/students/](https://www.utk.edu/coronavirus/students/)
  - [https://tickle.utk.edu/coronavirus/](https://tickle.utk.edu/coronavirus/)
    ▪ Links to companies offering 2 months of free internet / removed data caps

• University Technology Request Form
  - [https://forms.utk.edu/tech-request/](https://forms.utk.edu/tech-request/)
    ▪ Request a laptop and/or hotspot through OIT

• CDC guidance on Covid-19

• Tips for Emotional Wellness
Upcoming

• (Tentative) modifications to drop deadline and ability to change enrollment to S/NC

Course Content

• Magnetically Coupled Circuits (Ch 13)
• Sinusoidal Steady-State Analysis (Ch 10)
• AC Circuit Power Analysis (Ch 11)
• Circuit Analysis in the s-Domain (Ch 14)

• Frequency Response (Ch 15)
• Fourier Circuit Analysis (Ch 17)
• Two-Port Networks (Ch 16)
• Polyphase Circuits (Ch 12)
Quiz #2 – Common Mistake

- Average: 79, Max: 100, Median: 85
- Mistakes: Algebra

\[
s^2 + a_1 s + a_0 = (s - p_1)(s - p_2), \quad p_{1,2} = \frac{-a_1 \pm \sqrt{a_1^2 - 4a_0}}{2}
\]

\[
a_2 s^2 + a_1 s + a_0 \neq (s - p'_1)(s - p'_2), \quad p'_{1,2} = \frac{-a_1 \pm \sqrt{a_1^2 - 4a_2a_0}}{2a_2}
\]

\[
a_2 \left( s^2 + \frac{a_1}{a_2} s + \frac{a_0}{a_2} \right) = a_2 \left( s - p'_1 \right) \left( s - p'_2 \right),
\]

\[
p'_{1,2} = \frac{-a_1}{a_2} \pm \frac{\sqrt{a_1^2 - 4a_0}}{2a_2} = \frac{-a_1 \pm \sqrt{a_1^2 - 4a_2a_0}}{2a_2}
\]

Convolution

Let \( T \to 0 \)

\[
v_i(t) = \int_0^T s(t-2) \psi_i(t) dt
\]

\[
v_o(t) = \int_0^T s(t-2) \psi_i(t) dt
\]

Formally, convolution goes \( \int_{-\infty}^{\infty} \) but for Laplace

\( \psi_i(t) = 0 \) for \( t < 0 \)

\( h(t) \) must be \( = 0 \) for \( t < 0 \) if the system is causal

\[
v_o(t) = \sum_{k=0}^{\infty} H(t-kt) \psi_i(kt)
\]
Block Diagrams

\[ v_i \rightarrow H(s) \rightarrow v_o(t) \]

\[ v_o(t) = \int_0^t h(t-\tau)v_i(\tau)d\tau \]

Solved so that remaining circuit doesn't load \( H \)

\[ H(s) = \frac{R_2}{R_1+R_2} \]

\[ \frac{R_4}{R_3+R_4} \]

\[ V_o = H_2(V_1, V_i(s)) \]