ELEG 305 SIGNALS AND SYSTEMS
SPRING 2019

- **All Homeworks and Homework Quizzes are worth 25 points.**
- **Homeworks and Solutions from Spring 2018 have been posted on Canvas.**

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HOMEWORK #5

- *Do not hand in*
- *There will be a Quiz, in Lecture, on one of the following problems on Thursday March 28. Solutions will be posted to all of these problems before the Quiz.*
- *Conceptual and Math Review Problems are extra credit here (10 total points) and will not be asked on the Quiz. Please hand them in on Thursday March 28 in Lecture.*

Read Chapter 4 in Oppenheim, Willsky, and Nawab (**O&W**)

O&W: #3.34 (a,b), #3.37 (a), #4.1, #4.2, #4.6, #4.21 (a,b,f,h), #4.25 (a,b,c,e)

Conceptual #1: Please provide a couple of examples where you think the application of the Fourier transform can be useful, e.g., the identification of valuable musical instruments or the analysis of an electrocardiogram to detect a heart defect. When you give your example, please explain *why* it is useful.

Conceptual #2: Determine if the following statement is true or false: "Differentiation of a signal accentuates high frequencies." Do not use formulas to explain your answer; rather, use your understanding of what this system is doing and what information the Fourier transform provides about a signal.

Math Review: Evaluate the following integrals using partial fraction expansion:

$$\int \frac{1}{(x^2-1)(x+2)}\,dx$$

$$\int \frac{x+2}{(x+1)(x+3)}\,dx$$

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EXAM # 2 Tuesday April 16

- Closed everything: no calculators, cellphones, laptops, …
- Chapters 3 and 4
- A formula sheet will be provided with trigonometric identities, and the defining equations and properties for Fourier Series/Transforms.
- Review on Monday April 15