

**INEL 4102 ELECTRICAL SYSTEM ANALYSIS II**  
Spring Semester 2019

Professor: Shawn Hunt

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Text: Electric Circuits, 9th Edition, Nilsson and Riedel

**Exams:**

There will be 3 partial exams and 1 final exam.

Exam dates: feb 15, apr 1, and apr 29.

**MAKE UP EXAMS WILL BE GIVEN ONLY FOR MEDICAL EXCUSES.**

If there is a medical reason for missing an exam, you must certify this in order to request a make up. The document from the physician must be submitted the first day the student is able to return to study.

**Homework:**

Computer work: There will be computer work to be done in matlab. Instructions on how to do the matlab homework are on the web page. This work is to be done in groups of two students. Select the students for your group and inform me in writing before the end of the third week of class.

Choose your partner carefully, there will be no changing of group members without first consulting with me. Due dates will be given with the homework. Late homework will not be accepted. Do not copy the homework. Homework from two or more groups that are the same will mean a negative grade.

Homework problems: Homework problems will be given in class. They are not to be handed in, but for you to practice.

**Grading:**

Your Final Grade will be computed as a percentage of 520 total points: 300 points for the partial exams (100 pts for each partial exam), 20 points for computer problems, and 200 points for the final.

A - 90-100

B - 80-89

C - 70-79

D - 60-69

F - below 60

Your grade may improve due to attendance and class participation. I will not lower your grade if you do not participate in class, but will consider attendance and participation if you only need a few points to reach the next letter grade.

Topics to Cover:

1. Transient analysis of RL, RC and RLC circuits.
  - a. Natural response of RL, RC and RLC circuits.
  - b. Step response of RL, RC and RLC circuits.
  - c. General solution of the transient response.
2. The Laplace Transform
  - a. Introduction to the Laplace Transform
  - b. Transform Properties
  - c. Inverse Transform
  - d. Convolution
3. Circuit Analysis using the Laplace Transform
  - a. Models and Analysis
  - b. Transfer Function
  - c. Pole-Zero
  - d. Steady State Response
4. Frequency Response
  - a. Relation to TF and Sinusoidal steady state response
  - b. Bode plots
5. Filters
  - a. Frequency selective circuits.
  - b. Resonant circuits
6. Fourier Series
  - a. Trigonometric Fourier Series
  - b. Exponential Fourier Series
  - c. Frequency Spectrum
  - d. Steady-State Response and Average Power
7. Circuit Analysis using the Fourier Series
  - a. Steady-State Response and Average Power