Escuela Superior Politécnica del Litoral

Course Syllabus

ELECTRICAL NETWORKS ANALYSIS II

Printed by: jfmoncay

Program: Telecommunications Engineering

1. Course number and name

ELEG1001 - ELECTRICAL NETWORKS ANALYSIS II

2. Credits and contact hours

3 credits and 4 contact hours

3. Instructor's course or coordinator's name

DENNYS DICK CORTEZ ALVAREZ

4. Text book, tittle, author, and year

• Susan Riedel James W. Nilsson. Electric Circuits (10th Edition)

a.Other supplemental materials

• Alexander, Charles & Sadiku, Matthew N. O.. Fundamentals of Electric Circuits (Hardcover; 2012-01-13)

• Hayt, William Hart & Kemmerly, Jack E. & Steven M. Durbin. Engineering Circuit Analysis (Hardcover; 2011-09-02)

5. Specific course information

a. Brief description of the content of the course (catalog description)

The course is at an intermediate level in the study curriculum being an introductory course to the topic of the analysis of electrical circuits. Initially, methods employed in the analysis of electrical systems are addressed both in the steady state for three-phase circuits and in this transient for circuits formed with passive elements. Subsequently, techniques such as the Laplace transform, the frequency response of electrical circuits are addressed. The final part of the course analyzes equivalent circuits using two-port network parameters.

b. Prerequisites

DIFFERENTIAL EQUATIONS - MATG1004

ELECTRICAL NETWORKS ANALYSIS I - ELEG1003

c. This course is: Required

6. Specific goals for the course

a. Specific outcomes of instruction

1.- Analyze three-phase circuits subjected to sinusoidal excitation using phasor methods.

2.- Analyze linear electric circuits of first and second order by using techniques in the time domain, for the determination of transient responses and steady state.

3.- Analyze first and second order linear electric circuits by using techniques in the frequency domain, to determine the bandwidth and characteristics of the circuits.

4.- Determine the different types of parameters used in one / two port electrical networks to obtain predictions of the behavior of the variables.

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   b.   Explicity indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course

   • An ability to apply knowledge of mathematics, science and engineering

   • An ability to communicate effectively in Spanish

7. Brief list of topics to be covered

   1.- Three-phase circuits

   2.- Dynamic inductor and capacitor characteristics

   3.- First-order electrical circuits

   4.- Second order electrical circuits

   5.- Analysis of electrical circuits with the Laplace transform

   6.- Frequency response in electrical circuits

   7.- Parameters of two-port networks