

ENG201 Linear Systems Analysis and Design

Level: 2

Credit Units: 5 Credit Units

Language: ENGLISH

Presentation Pattern: EVERY SEMESTER

Synopsis:

This level 2 course is fundamental to the study of many fields that constitute the ever-expanding disciplines of electrical and electronic engineering. This course also serves as the prerequisite for other coursework in the study of filter theory and design, communications, signal processing, and control engineering. On theoretical basis, this course addresses many essential issues in electrical and electronic engineering, including analogue and discrete representation of signals and systems, analysis and design of signals and systems in the time and frequency domains. Frequently used system operations on signals, such as convolution and transformation are also studied.

This course is to provide with fundamental knowledge of Linear Systems Analysis and Design required for solving complex engineering problems

Topics:

- Introduction to Signals and systems
- Basics of Signals; Basics of Systems
- Introduction of LTI system
- Convolution; System modeling (differential/difference equations,etc)
- Fourier Analysis of Periodic Signals
- Fourier Analysis of Aperiodic Signals
- System Analysis using Laplace Transform
- Application of z-Transform

Textbooks:

Haykin, S. S.Van Veen,B.: Signals and Systems (eTextbook) 2nd edition John-Wiley and Sons (2004)
ISBN-13: 9781119496212

Learning Outcome:

- Sketch the signal waveforms and system responses.
- Describe the signals and systems using appropriate mathematical expressions.
- Calculate the Fourier series, Fourier transform, inverse Fourier transform, Laplace transform and inverse Laplace transform.
- Discuss the characteristics and properties of signals and systems.
- Solve differential equations for modeling and analyzing systems.
- Determine the system responses and characteristics.
- Analyze the basic properties of signals and LTI systems.
- Design LTI systems and signals using the basic signal functions and properties.

Assessment Strategies (Evening Class):

Components	Description	Weightage Allocation (%)
Overall Continuous Assessment	PRE-CLASS QUIZ 1	2
	PRE-CLASS QUIZ 2	2
	PRE-CLASS QUIZ 3	2
	CLASS TEST 1	8
	CLASS TEST 2	8
	LAB TEST 1	8
Overall Examinable Components	Written Exam	70
Total		100