Course Description Form

1. Course Name:	
Engineering Analysis	
2. Course Code:	
WBM-31-01	
3. Semester / Year:	
Semester1/2024-2025	
4. Description Preparation Date:	
2024-9-19	
5. Available Attendance Forms:	
presence in the classroom	
6. Number of Credit Hours (Total) / Number of Units (Total)	
60 Hours / 3 Units	

7. Course administrator's name (mention all, if more than one name)

8. Course Objectives

Course Objectives	The topic of engineering analysis of frequency functions mathematically aims to clarify the practical and philosophical challenges of current engineering analyzes that have stimulated this continuous development, as well as to present the basic concepts of functions and their useful fields for further study of engineering sciences and applied analytical mathematics in the scientific and practical field. This is done starting from reviewing the basic principles, studying the meaning of the function and how to draw it for the attempter, analyzing the integral with respect to time and frequency and finding its purpose, vectors and finally polar coordinates... in addition to introducing the principles of integration and differentiation and their applications and some functions in particular, in addition to increasing the opportunity for students to practice ways of thinking. Proper thinking, such as reflective, deductive, and inductive thinking and increasing their skills in using problem-solving methods to understand what they are studying and to discover new relationships.

9. Teaching and Learning Strategies

Strategy	1- Enabling students to write assignments on topics related to mathematics.

2- Enabling students to solve algebraic equations in a way that can match the practical reality of communications systems.
3- Easing students from taking professional tests organized by local or international bodies.
4- Enabling students for continuous self-development after graduation

10. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1+2	3	Introduction to wave analytics, Fourier series representation of periodic signals, trigonometric Fourier series orthogonality conditions for sine and coding function	Introduction	Lectures presented in P format	Daily exams + homework assignments + monthly exams
3	3	Fourier series expansion , even and odd function , half range expansion ,complex exponetion fourier	Fourier series expansion	Lectures presented in PDF format	Daily exams homework assignments monthly exam
4+5	3	complex exponetion fourier Parssival's theorem for periodic function power, trigonometric series approximation	complex exponetion fourier	Lectures presented in PDF format	Daily exams homework assignments monthly exam
6	3	Fourier integral, Fourier transform, definition and properties	Fourier integral, Fourier transform	Lectures presented in PDF format	Daily exams homework assignments monthly exam

7	3	multiplication and convolution, duality, inverse Fourier transform, unit impulse function	multiplication and convolution	Lectures presented in PDF format	Daily exams homework assignments monthly
8+9	3	unit step function, rectangular function, Sinc function, Parssival's theorem for aperiodic function energy	unit step function	Lectures presented in PDF format	Daily exams homework assignments monthly
10	3	Laplace transform, definition and properties asymptotes and dominant terms, Examples	Laplace transform	Lectures presented in PDF format	Daily exams homework assignments monthly
11	3	Laplace transform of special functions	Laplace transform	Lectures presented in PDF format	Daily exams homework assignments monthly
12	3	initial value and final value theorems	initial value	Lectures presented in PDF format	Daily exams homework assignments monthly

11. Course Evaluation

☐ Daily exams with practical and scientific questions.
☐ Participation scores for difficult competition questions among students
☐ Establishing grades for environmental duties and the reports assigned to them
☐ Semester exams for the curriculum, in addition to the mid-year exam and final exam

12. Learning and Teaching Resources

Required textbooks (curricular books, if any)	Signals and systems, Sanjay sharma. 2011
Main references (sources)	• College library to obtain additional sourc for the curriculum. • Check scientific websites to see rece developments in the subject.

Recommended books and references (scientific journals, reports…)	All solid scientific journals that are related the broad concept of mathematical theor and their results.