CS:18CS401 22-23 LessonPlan 1

Department	Computer Science and Engineering
Degree & Semester:	B.E & CSE
Course code & Title:	18CS401 & Engineering Mathematics IV
Unit Title:	Fourier Analysis
CO / Lesson No (GO):	1/1

- **Prerequisite(s):**Basic differential and integral calculus.
- **Topic :** Fourier series for periodic functions in (0,2l)
- **General Objective (GO):**Understand the concept of periodic functions and apply it to solve Engineering problems.
- **Specific Objectives (SO):** (Addresses the detail specification of contents to be taught for the session; Minimum three SOs to be given; CD/KD mapping should be specified in parentheses at the end of each SO)
  - SO1 Illustrate the periodic functions with examples. [U/C]
  - SO2 Compute the Euler coefficients for the given function. [A/P]
  - SO3 Construct the Fourier series in (0,2l) using Euler coefficients for the given function.[A/P]
- **Mapping Table**

  (Each SO should be mapped to the specific PO competency and indicators with relevance to the mapping done for the respective course outcome as shown in the table below)

SO	PO	PO/PSO Competency	PO/PSO Indicator
SO1	1,2	1.3, 2.1, 2.4	1.3.1, 2.1.3, 2.4.1
SO2	1,2	1.3, 2.1, 2.4	1.3.1, 2.1.3, 2.4.1
SO3	1,2	1.3, 2.1, 2.4	1.3.1, 2.1.3, 2.4.1

- **Mind map and Summary**

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- Fourier series is an expansion of a periodic signal in terms of the summing of an infinite number of sinusoids or complex exponentials, as any periodic signal of practical nature can be approximated by adding up sinusoids with the properly chosen frequencies, amplitudes, and initial phases
- **References (Books/Videos/Journals/Web references)**

  - Kreyszig Erwin, Advanced Engineering Mathematics, 7th Edition, John Wiley, 1993.
  - Johnson Richard A. and Bhaltacharyya Gouri K., Statistics, Principles and Methods, 3rd Edition, John Wiley, 1996.
  - O Neil Peter V., Advanced Engineering Mathematics, 4th Edition, PWS-Kent, 1995.
  - James Glyn, Advanced Modern Engineering Mathematics, Addison-Wesley, 1993.
  - Milton J. S. and Arnold Jesse C., Introduction to Probability and Statistics: Principles and Applications for Engineering and The Computing Sciences, McGraw Hill Inc, 3rd Edition, 1995.

- Khan academy series : Fourier series

Link: https://www.khanacademy.org/science/electrical-engineering/ee-signals/ee-fourier-series/v/ee-fourier-series-intro

Paul's Online notes:Link: https://tutorial.math.lamar.edu/classes/de/fourierseries.aspx

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