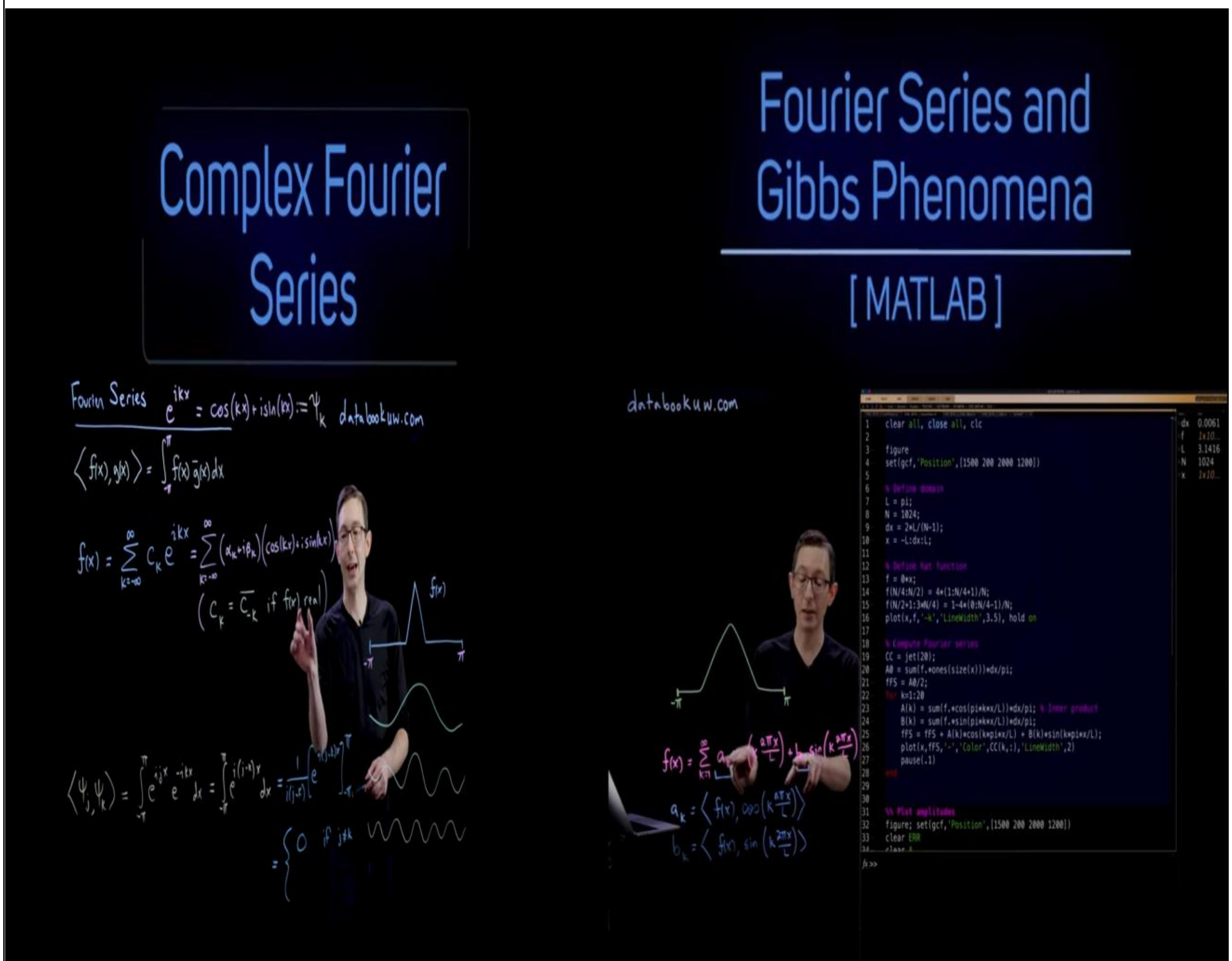
DAILY ASSESSMENT FORMAT

Date:	**25-05-2020**	**Name:**	**Sahana S R**
Course:	**Digital signal processing**	**USN:**	**4al17ec083**
Topic:	**Fourier series**	**Semester & Section:**	**6th sem B sec**
Github Repository:	**sahanasr-course**		

FORENOON SESSION DETAILS
Image of session



Report – Report can be typed or hand written for up to two pages.

1. **Introduction.**
2. **Fourier Series part-1,2.**
3. **Inner product in Hilbert Transform.**
4. **Complex Fourier Series.**
5. **Fourier Series using Mat Lab.**
6. **Fourier Series using Python.**
7. **Fourier Series and Gibbs phenomena.**

Introduction:

1. Fourier Series and Wavelets.
2. Coordinate Transform-used for Image Compression.
3. Hilbert Transform.
4. Fast Fourier Transform(FFT).

Discrete Fourier Transform:

- It converts a finite sequence of equally spaced samples of a function into a same length sequence of equally -spaced samples of DTFT.

Analyzing the Functions.

Fourier Series:

- A Fourier series is a way of representing a periodic function as a (possibly infinite) sum of sine and cosine functions. It is analogous to a Taylor series, which represents functions as possibly infinite sums of monomial terms. A sawtooth wave represented by a successively larger sum of trigonometric terms.

$$
\begin{aligned}
a_n &= \frac{1}{\pi}\int_{-\pi}^{\pi} s(x)\cos(nx)\,dx = 0, \quad n \geq 0. \\
b_n &= \frac{1}{\pi}\int_{-\pi}^{\pi} s(x)\sin(nx)\,dx \\
&= -\frac{2}{\pi n}\cos(n\pi) + \frac{2}{\pi^2 n^2}\sin(n\pi) \\
&= \frac{2\,(-1)^{n+1}}{\pi n}, \quad n \geq 1.
\end{aligned}
$$

Inner Product in Hilbert Space:

- A Hilbert space H is a real or complex inner product space that is also a complete metric space with respect to the distance function induced by the inner product. A real inner product space is defined in the same way, except that H is a real vector space and the inner product takes real values.

Sampling.

Complex Fourier Series:

- The complex Fourier series is presented first with period 2π, then with general period.
- Using Mat Lab.