

MATH099
Fourier Analysis & wavelets

Jeremias Rieser

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Abstract

This Course follows Chapter 2 form [\[BK19\]](#).

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Chapter 1

Fourier Transform

1.1 Lecture 1: Fourier Series

Definition 1.1.1 (Fourier Series).

$$f(x) = \sum_{k=1}^{\infty} (A_k \cos(kx) + B_k \sin(kx))$$

where

Definition 1.1.2. $A_k = \frac{1}{\pi} \int_{-\pi}^{\pi} f(x) \cos(kx) dx$

and

Definition 1.1.3. $B_k = \frac{1}{\pi} \int_{-\pi}^{\pi} f(x) \sin(kx) dx$

1.2 Lecture 2: Inner Product

23 Sept. 2022

24 Sept. 2022

Appendix

Wordcucks BTFO once again

Bibliography

- [BK19] Steven L. Brunton and J. Nathan Kutz. *Data-Driven Science and Engineering: Machine Learning, Dynamical Systems, and Control*. Cambridge University Press, 2019. DOI: [10 . 1017 / 9781108380690](https://doi.org/10.1017/9781108380690).