



[Course](#) > [Unit 1: Fourier Series](#) > [2. Properties of Fourier Series \(of Period  \$2L\$ \)](#)

1. Fourier series of arbitrary period,  
> Fourier transform

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## 1. Fourier series of arbitrary period, Fourier transform

### Objectives:

After this section and some practice, you should be able to:

- Understand **Gibbs' phenomenon** and how Fourier series can act strangely at points of discontinuity.
- Compute the Fourier series coefficients for the **Triangle Wave** of period 2.
- Find the Fourier series for any even or odd periodic function with **period  $2L$** .
- Determine the properties of the **convergence** of a Fourier Series near points of **jump discontinuity**.
- Apply **scaling** and **shifting** to find formulas for more general periodic functions that are not even or odd.
- Use the **Fourier transform** to find the frequencies of any (possibly nonperiodic) signal made up of a superposition of periodic signals.



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