

## CHAPTER OVERVIEW

### 3.8: Fourier Series

In the previous chapter we hinted that timbre is determined by the waveform or shape of the wave. So far we have only looked at waves that can be described by the mathematical functions of sine and cosine. How are differently shaped waves related to simple sine or cosine waves? What gives different waveforms different shapes?

#### Key Terms:

Fourier's theorem, Fourier analysis, Fourier synthesis, synthesizer, Fourier series, Fourier spectrum, fundamental frequency, uncertainty principle, harmonic, overtone.

#### [3.8.1: Sound Texture](#)

##### [3.8.1.1: Wave Shape](#)

##### [3.8.1.2: Sound Waveforms Simulation](#)

#### [3.8.2: Fourier Series](#)

##### [3.8.2.1: Fourier Series](#)

##### [3.8.2.2: Fourier Analysis](#)

##### [3.8.2.3: Fourier Series Simulation](#)

##### [3.8.2.4: Timbre \(again!\)](#)

#### [3.8.3: Microphone Sound Analyzer](#)

##### [3.8.3.1: Fourier Analysis of Microphone Data](#)

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