

# LEARNING SYNTHS PLAYGROUND

Navega a [LearningSynths.Ableton.com/en/Playground](https://learningsynths.ableton.com/en/playground), un sencillo sintetizador digital creado por **Ableton**. Cada uno de estos controles, que representan módulos físicos, se basa en una ecuación matemática. (Esas ecuaciones se muestran debajo.)

Ajusta los diferentes deslizadores y observa cómo cambia el sonido. ¿Algunos módulos funcionan mejor juntos que otros? Si es así, ¿por qué crees que ocurre eso?

The screenshot shows the Learning Synths Playground interface with several modules and their associated mathematical equations:

- Square Oscillator:**  $x(t) = \text{sgn}(\sin(2\pi f \cdot t))$
- Saw Oscillator:**  $y(t) = 2 \left( \frac{t}{p} - \left\lfloor \frac{1}{2} + \frac{t}{p} \right\rfloor \right)$
- Amplitude Envelope:**  $e(t) = \sqrt{x(t)^2 + \hat{x}(t)^2}$
- Low-Pass Filter:**  $y(n) = x(n) + x(n-1)$
- LFO:**  $R = n \left( \frac{T}{240} \right)$
- Noise:**  $G(\omega) = 2 \left| \cos\left(\frac{\omega T}{2}\right) \right|$

The interface includes a Perform section with a MIDI piano roll, Record and Export buttons, a Sequence section, Presets, and a Keyboard section. The modules shown are Square Oscillator, Saw Oscillator, Amplitude Envelope, Low-Pass Filter, LFO, and Noise. Each module has various sliders and knobs for adjustment.

Learning synths. Learning Synths. (s.f.). <https://learningsynths.ableton.com/en/playground>