

lec1

EECE233 Signals and Systems

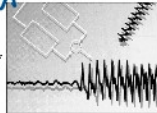
Lecture Note #1
Prof. Joon Ho Cho

(Slides thanks to Qing Hu*, D. Boning, D. Freeman, T. Weiss, J. White, and A. Willsky)

1) Administrative details

2) Signals

* These lecture notes are based on the lecture notes used in 6.003 taught by Prof. Qing Hu at MIT. These notes are adopted for EECE233 under the permission of Prof. Qing Hu.



Electrical Signal: $\frac{V}{m}$ $\frac{V}{m}$

Signals and Systems

EECE233 is about using mathematical techniques to help analyze and synthesize systems which process signals.

- Signals are variables that carry information.
- Systems process input signals to produce output signals.

Today: Signals, next lecture: Systems.

input signal x → system y → output signal
real scalar → real scalar

$$\underline{x} \in \mathbb{R}^n \rightarrow \underline{y} \in \mathbb{R}^m \quad \underline{y} = A \underline{x}$$

2

$$\begin{bmatrix} x(t) \\ y(t) \\ z(t) \end{bmatrix}$$

$\underline{E}, \underline{B}$

modeling

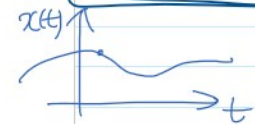
OCW



PCB

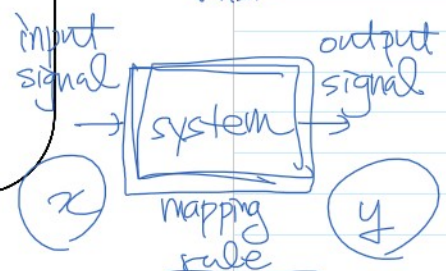
OP amp.

1200 bps
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1x/ scalar, matrix
vector, sequence of scalars
waveform (vectors, matrices, scalar-valued, vector-valued)
polynomial

scalar field
vector
tensor



$$y = x^2$$

$$\underline{x} \rightarrow \underline{y} \quad \underline{y} = A \underline{x}$$