

MECHTRON 3TA4 Summary

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Math objects made using [MathType](#); graphs made using [Winplot](#).

Please join GitHub and contribute to this document. There is a guide on how to do this on my GitHub.

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Chapter 1

Market Window (W): the amount of time, in months, between the on-time entry of the company and peak revenue. It is also the amount of time from peak revenue to when revenue gets to 0. In other words, the entire lifecycle of a product is $2 \times W$

Delay (D): the entry point of a company given a delay

$$\text{Revenue loss depending on entry} = \frac{\text{On-time} - \text{Delayed}}{\text{On-time}} \times 100\%$$

$$\text{Percentage revenue loss} = \frac{D(3W - D)}{2W^2} \times 100\%$$

Design Metrics

Non-Recurring Engineering (NRE) cost: one-time cost to design a system. No more design costs are needed

Unit cost: cost of manufacturing one instance of design


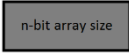
Chapter 2

Datapath

1. Identifying variables

2. Identifying operations

State machine data-path symbols:

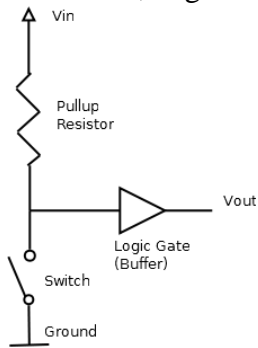
- Register: 
- Multiplexor: 
- Operations: regular white rectangles

Op-Amps

Slew rate: maximum rate of change of voltage / s

Gain: $\frac{V_{out}}{V_{in}} = 20\text{dB} \cdot \log\left(\frac{V_{out}}{V_{in}}\right)$

Pull up resistor: When the switch is open, the pull-up resistor brings the voltage up, while when it's closed, V goes to ground



Pull down resistor:

