

# EE2031

# Circuits and System Design Lab

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# Lecture Outline

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- **Overview of Mini-Project**
- **Design Flow**

# Overview

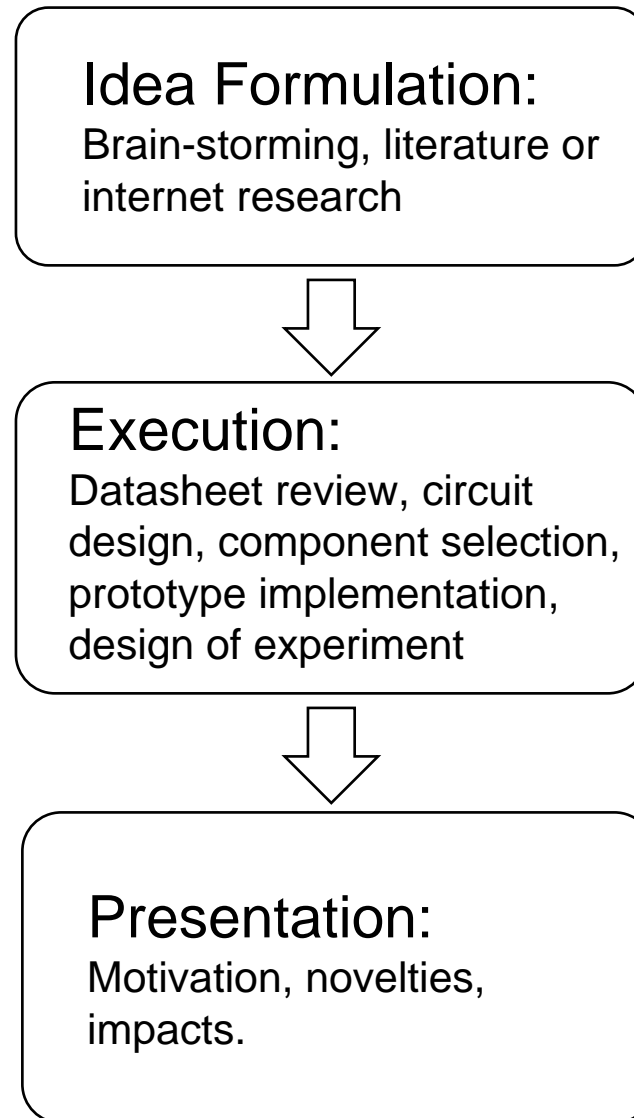
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▪ <b>Idea</b>	<b>30%</b>
Creativity, interesting, difficulty	
▪ <b>Execution</b>	<b>40%</b>
Design, implementation, prototype demo	
▪ <b>Mini-project Report &amp; Presentation</b>	<b>30%</b>
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<b>Total</b>	<b>100%</b>

**This occupies 30% of the module total**

# Design Flow

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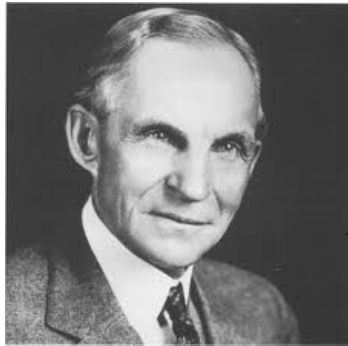


# Idea Formulation

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- **Two school of thoughts:**
  - **Market or customer survey**
  - **Dictate what customer want**

# Idea – 2<sup>nd</sup> Approach



Henry Ford

What do you want?

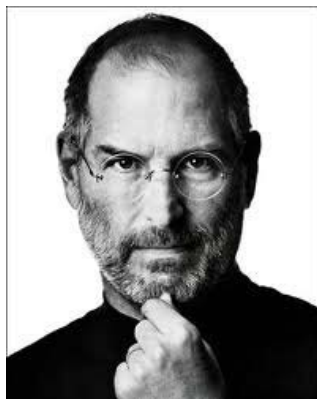
Faster horse?

What's that? We love it!

How about model T?



Customers



Steve Jobs

Customers don't know what they want until they see it.

Markets that don't exist can't be analyzed.  
– The Innovator's Dilemma



Prof. Clayton M. Christensen

# Execution - Constraints

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- **Constraints force you to be creative**
- **All engineers work within constraints**
- **Manpower constraint**
  - Limited manpower, 2 in this project
- **Component constraint**
  - Design with what you have, not what you don't
- **Time constraint**
  - You have deadline to meet, 4 weeks

# Design of Experiment

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- **Component characterization**

- You need to understand the component before you can use it
- How to design an experiment to characterize it

- **Functionality verification**

- e.g., does your amplifier meet the gain specification?  
Does the power consumption within your estimation?  
Does the comparator switch at right threshold?



# Presentation

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- **People do judge a book by its cover**

“We may have the best product, the highest quality, the most useful software etc.; if we present them in a slipshod manner, they will be perceived as slipshod; if we present them in a creative, professional manner, we will impute the desired qualities.” –

Apple Marketing Philosophy

- **A good presentation is as important as the prototype itself**
- **Be clear about the motivation, novelties, impacts**
- **Keep your audience mesmerized**

# Design

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