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# Engineering Internship - Roller Coaster

Internship Date  
01-12-2021 to 30-12-2021

Competition on January 2022

[www.saeiss.org](http://www.saeiss.org)



## About the program

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Manufacturing companies are at cross roads. They need engineers who can solve the problems and come with innovative solutions to the challenges faced by them. Student Engineers, who will graduate in future are expected to have competencies in the areas of Systems Thinking, Problem Solving, Codes & Standards, and Project Management.

Engineering Internship- Roller Coaster will focus on building as well as applying these skills in real life in two-fold.

- **Engineering Design (ED) Internship**  
(Learn)
- **Engineering Design (ED) Challenge**  
(Apply)

This road-map of work was designed as an answer for the questioning that is faced by the students to meet with the requirements of the industry.

Through this Engineering Internship the students will gain practical experience and create portfolio to demonstrate their skills and competencies

# Engineering Design Internship

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- Students will design, build and test their own small-scale model roller coasters using Roller Coaster kit provided. They will explore the basic principles of roller coasters which are essential to the design. During the design of model roller coasters, students understand the issues which are encountered in the real-world. In order to build working roller coasters, Engineering Intern must recognize the constraints placed on their designs based on the fundamental laws of physics.
- Engineering Intern will develop paper prototype with kit and generate data by Design of Experiments to gain insights to build the prototype. Intern will create Digital prototype using the Matlab Simulink models.



# Program Objectives

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After this activity, students will be able to:

- Solve engineering problems having multiple possible solutions.
- Identify the issues and learn from the failure.
- Provide suitable counter measures for the issues.
- Use creativity and spatial thinking to solve problems.
- Apply engineering design process to real life problem.

## **Deliverables:**

### **A. Set Goals**

1. Project Brief

### **B. Build Knowledge**

2. Paper Roller Coaster

### **C. Design-Roller Coaster**

3. Requirement List
4. Function Structure
5. Sub Function vs Science Effects
6. Concept Variants
7. Concept Testing
8. Concept Selection
9. Design Calculation
10. Selection Calculation
11. Principle Layout

12.Design FMEA

13.Tolerance Stack up Calculations

14.3D CAD Models

15.2D CAD Drawings

#### **D. Build - Roller Coaster**

16.MATLAB Simulink Models (Digital Prototyping)

#### **E. Test- Roller Coaster**

17.Digital Prototyping Testing

#### **F. Design Documentation -Roller Coaster**

18.Maintenance Manuals

## **Pre-requisite knowledge**

Basic knowledge of Physics and Mathematics

## **Program Delivery**

Online instruction– 1 hour per day

Practice by students– 7 hours per day



*The above kit will be provided to each student*

## Program Fee

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Rs.4500 per student for Internship

Rs.1500 per student for the Challenge

Total- Rs.6000 per student + 18 % GST

Payment to be made through online bank transfer to:

Account Name: SAEINDIA SOUTHERN SECTION

Account Number : 38517580801

Bank Name & Branch : State Bank of India, Guindy

MICR Number : 60000207

IFSC Code : SBIN0000956

## Contact Details

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Program Executive

SAEINDIA Southern Section

Block-1, Modules: 29 & 30,  
SIDCO Electronic Complex, Thiru-Vi-Ka  
Industrial Estate, Guindy, Chennai - 600032

Phone: 044-42188651-52

Email: [asop@saeiss.org](mailto:asop@saeiss.org)