

# Problem Based Learning(PBL)

**Course Name and Code** : Machine Design(ME3023)

**Class and Div.** : T. Y. B.Tech Div. B

**Department** : Mechanical Engineering

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## Purpose and Motivation

- New Topic added in the syllabus: Transmission Systems in Hybrid Electric Vehicle.
- Students are not much conversant with Hybrid Electrical Vehicles.
- Very much curious to know about advances in the transmission systems in hybrid electrical vehicles- Driving potential for PBL activity.
- Address and achieve the CO-5 : Elaborate various modes of operation, degree of hybridization and allied terms associated with hybrid electric vehicles.

## Suitability of Technique to course

- The syllabus content especially unit no. 6 of the course Machine Design is some what open ended.
- There is substantial technological development in the HEV, students should know the basics of general configuration of HEV as well as recent technological development.
- Sufficient information on recent development is available in the literature, videos and on the web sites of HEV manufacturing company.

## Procedure of Technique

- A group of 4-5 students is formed.
- Students are asked to search information on recent development in HEV.
- 6-8 weeks are given for information collection.
- Students are asked to prepare presentation on information collected and present in front of whole class.
- Students from class are encouraged to ask questions on presentation.
- Evaluation is carried out through Q-A and discussion.

## Outcomes of Technique

- Students active involvement has increased.
- Enough scope was given to each student to participate actively.
- Difficult syllabus content could be covered effectively through PBL with proper planning.
- Slow learners can participate actively while working in small groups.

# Photographs and Student Response

**1** Rajarambapu Institute of Technology,  
Rajaramnagar  
Maitra Daru  
ISE 1  
3rd Level, Vidya, Near Mahapekar

**2** Hybrid Electric Vehicles

**3** What is a Hybrid Electric Vehicle?

**4** Types of Hybrid Electric Vehicles

**5** Series, Parallel, Series-Parallel

**6** Advantages of Hybrid Electric Vehicles

**▶** Rajarambapu Institute of Technology,  
Rajaramnagar

**Machine Design**  
**ISE 1**  
**Hybrid Electric Vehicles, Power Management**

**Shreya Thorat (2006037)**  
**Richal Pawar (2002056)**  
**Pranav Tate (2006068)**  
**Pooja Ijare (2006058)**  
**Omkar Ainapure (2006049)**

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## Photographs and Student Response

**Machine Design**

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### ISE II Presentations

Visible groups: All participants

#### Grading summary

Hidden from students	No
Participants	49
Submitted	45
Needs grading	45
Due date	Wednesday, 12 July 2023, 10:00 AM
Time remaining	Assignment is due

**Machine Design**

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- Soft Copy of Machine Design by V. B. Bhandari book
- Assignment 2 Design of Worm Gears
- ME3023 Machine Design Theory Course Plan
- Machine Design Syllabus
- ISE II Presentations
- ISE I

Design of Gears-I

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