

# Walchand College of Engineering, Sangli

(Government Aided Autonomous Institute)

**AY 2023-24**

## Course Information

<b>Programme</b>	M. Tech. (Mechanical Design Engineering)
<b>Class, Semester</b>	First Year M. Tech., Sem II
<b>Course Code</b>	7OE503
<b>Course Name</b>	OE: Industrial Product Design
<b>Desired Requisites:</b>	

Teaching Scheme		Examination Scheme (Marks)			
<b>Lecture</b>	3 Hrs/week	<b>MSE</b>	<b>ISE</b>	<b>ESE</b>	<b>Total</b>
<b>Tutorial</b>	-	30	20	50	100
<b>Credits: 3</b>					

## Course Objectives

<b>1</b>	To prepare the students to succeed as designer in industry /technical profession.
<b>2</b>	To provide students the knowledge of steps involved in design and developments of industrial Product.
<b>3</b>	To train the students to generate the idea for new product development based on the needs of Society.
<b>4</b>	To prepare the students to use knowledge of ergonomics , aesthetics for development of industrial Product.
<b>5</b>	To prepare the students to use knowledge of materials, economics, value analysis, standardization For development of industrial Product.

## Course Outcomes (CO) with Bloom's Taxonomy Level

At the end of the course, students will be able to,

CO	Course Outcome Statement/s	Bloom's Taxonomy Level	Bloom's Taxonomy Description
<b>CO1</b>	Demonstrate an ability to recognize the need of society to design the products as per their requirements.	III	Applying
<b>CO2</b>	Recommend appropriate process to apply aesthetical concepts to product.	V	Evaluating
<b>CO3</b>	Design and develop the products by using standardization.	VI	Creating

Module	Module Contents	Hours
I	Approach to industrial product based on idea generation and innovations to meet the creative process involved in idea marketing, designers, mind-criticism, design process, creation needs of the developing society. Design and development process of industrial products, various steps such as Ergonomics and aesthetic requirements of product design, quality and maintainability consideration in product design, Use of modelling technique, prototype designs, conceptual design.	8
II	General design situations, setting specifications, requirements and ratings, their importance in the design, Study of market requirements and manufacturing aspects of industrial designs. Aspects of ergonomic design of machine tools, testing equipment's, instruments, automobiles, process equipment etc. Convention of style, form and colour of industrial design.	8
III	Design of Consumer Product, Functions and use standard and legal requirements, body dimensions. Ergonomic considerations, interpretation of information, conversions for style, forms, colours.	6
IV	Aesthetic Concepts Concept of unity and order with variety, concept of purpose, style and environment, Aesthetic expressions of symmetry, balance, contrast and continuity, proportion, rhythm, radiation. Form and style of product: visual effect of line and form, mechanics of seeing', psychology of seeing, influence of line and form, Components of style, Basic factors, Effect	7

	of colour on product appearance, colour composition, conversion of colours of engineering products.	
V	Economic Considerations Selection of material, Design for production, use of standardization, value analysis and cost reduction, maintenance aspects in design.	5
VI	Design Organization Structure, Designer position, Drawing office procedure, Standardization, record keeping, legal procedure of Design patents.	5

#### Text Books

1	W. H. Mayall, "Industrial Design for Engineers", Illife, 1967.
2	Hearn Buck. "Problems of Product Design and Development", Pergamon press, Jan 1, 1963.
3	Charles H. Flueriche, "Industrial Designs in Engineering", Design council, 1983.

#### References

1	Ezia Manzim "Material of Invention", Cambridge Mass: MIT press, 1989.
2	Percy H. Hill "The Science of Engineering Design", Holt McDougal, 1970

#### Useful Links

1	<a href="https://www.youtube.com/watch?v=ANBqFUrUfOY">https://www.youtube.com/watch?v=ANBqFUrUfOY</a>
2	<a href="https://www.youtube.com/watch?v=0W_wGuf59UU">https://www.youtube.com/watch?v=0W_wGuf59UU</a>
3	<a href="https://www.youtube.com/watch?v=HN9GtL21rb4&amp;list=PLSGws_74K018yZOnbSaqWJZ837QyBB7vu">https://www.youtube.com/watch?v=HN9GtL21rb4&amp;list=PLSGws_74K018yZOnbSaqWJZ837QyBB7vu</a>
4	<a href="https://youtu.be/oUeK6ZsCo8I">https://youtu.be/oUeK6ZsCo8I</a>

#### CO-PO Mapping

Programme Outcomes (PO)						
	1	2	3	4	5	6
CO1	3					
CO2	3			1		
CO3	3		2		2	

The strength of mapping is to be written as 1,2,3; Where, 1:Low, 2:Medium, 3:High  
Each CO of the course must map to at least one PO.

#### Assessment (for Theory Course)

The assessment is based on MSE, ISE and ESE.

MSE shall be typically on modules 1 to 3.

ISE shall be taken throughout the semester in the form of teacher's assessment. Mode of assessment can be field visit, assignments etc. and is expected to map at least one higher order PO.

ESE shall be on all modules with around 40% weightage on modules 1 to 3 and 60% weightage on modules 4 to 6.

For passing a theory course, Min. 40% marks in (MSE+ISE+ESE) are needed and Min. 40% marks in ESE are needed. (ESE shall be a separate head of passing)