

GOVERNMENT OF GUJARAT
LUKHDHIRJI ENGINEERING COLLEGE, MORBI
 Mechanical Engineering Department

Course Teaching-Learning-Evaluation Strategy

Subject: Design Engineering-IIB(3160001) Academic Year:2021-22(EVEN) Class: 6thSemester

Type of course: Project Work

Faculties: JMPujara

Prerequisite: Design Engineering – 1A, Design Engineering – 1B & Design Engineering – 2A

Course Outcomes (Cos)

CO Nos.	CO statement	Weightage (Marks %)
1.	To understand system level design and undergo any modification needed to improve in it.	25
2.	Detailing on design of product considering its all aspects and prototyping techniques used to iterate it.	25
3.	Uses of other technical tools to iterate prototyping all stages and last stage of building solutions of the product.	25
4.	Preparation of final working model and its reflection towards actual product design.	25

Teaching and Examination Scheme:

Teaching Scheme			credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE(E)	PA(M)	ESE(V)	PA(I)	
0	0	2	1	0	0	80	20	100

Course Evaluation Plan

	Direct Assessment				
	Internal Evaluation			External(Uni.) Evaluation	
	Mid Sem Exam (continue evaluation) (Theory)	Assignment/ Quiz	Lab. Work	Practical/ Viva (IF)	Uni. Exam (Theory)
Max. Marks			20	80	
Weightage	30%			70%	
CO1			05	20	
CO2			05	20	
CO3			05	20	
CO4			05	20	

Course Content

Sr. No.	Particular	Sub-Head Weightage
1.	<ul style="list-style-type: none"> ✓ Design calculation (it may include size & shape specifications, tolerances, material requirement, standards/safety rules/govt. policies, sketches, detail & assembly drawings, list of components with specifications etc.) These all aspects are cases sensitive so one can add/remove some aspects from the list. ✓ For CE, IT, other process related branches, one may also use Flow chart/Block Diagrams/Algorithms/Programming etc. ✓ Measuring Instruments/techniques-knowledge and use ✓ Comparison of existing materials, methods, tools and equipment for your project <p>Detail Design: Considerations for-</p> <p>Design for Performance, Safety and Reliability</p> <ul style="list-style-type: none"> ✓ Different aspects of design for performance, safety and reliability introduced/considered for defined problem <p>Design for Ergonomics and Aesthetics</p> <ul style="list-style-type: none"> ✓ Consideration of Ergonomics and Aesthetics aspects to raise the value of products <p>Design for Manufacturability & Assembly (DFMA)</p> <ul style="list-style-type: none"> ✓ Reference, different considerations and guidelines followed for DFMA during the work <p>Design for Cost, Environment</p> <ul style="list-style-type: none"> ✓ Cost and Environment consideration as they play major role in Product design <p>Design for Use, Reuse and Sustainability</p>	25
2.	Simulation & Analysis (CAD/Software modelling), Mathematical model	15
3.	<p>Prototyping & Testing:</p> <ul style="list-style-type: none"> ✓ Versions of Prototypes with all possible modification and iterations to further refine the solutions ✓ Testing/user feedback results ✓ Video of Prototypes (Youtube link) 	25
4.	Report, Logbook, Continuous Assessment Card: Compilation of work report (process report), duly signed Logbook and Continuous Assessment Card, Online Certificate generated through DE Portal, Future action plan, Question and Answer, Communication Skill, Attitude	15
		80

Course articulation matrix correlation

CO No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2		1		2				2	2	2	3	2
CO2	1	3	2		2	2	2	2		3	1	1	2	3
CO3	2	2	1	2	2	3	2		2		1	1	2	2
CO4	3	2		2	3	1	1	3		2	2	2	2	1

Justification(s) of correlation between Co and Pos/PSOs

Mapping	Justification(s)
3160001-1 WITH PO1, PO2, PO4, PO6, PO10, PO11, PO12, PSO1, PSO2,	3160001-1 mapped because through 3160001-1 students discuss reverse engineering knowledge orientation towards their problem
3160001-2 WITH PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO10, PO11, PO12, PSO1, PSO2,	3160001-2 mapped because 3160001-2 students will Work on their Ideation canvas, Summary of AEIOU activity/inputs, Preparation of Mind Map, Empathy Map.
3160001-3 WITH PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO11, PO12, PSO1, PSO2,	3160001-3 mapped because students will Prepare a Product Development Canvas (PDC), Product Experience, Product Functions, Product Features, Components
3160001-4 WITH PO1, PO2, PO4, PO5, PO6, PO7, PO8, PO10, PO11, PO12, PSO1, PSO2,	3160001-4 mapped because will develop Pre-Design, Iteration & Modification based on feedbacks, Rough Prototype

Tagging of Cos with POs, PSOs, Cognitive Level (R-Remember, U-Understand, Ap- Apply, AnAnalyse, E-Evaluate and C-Create), Knowledge Categories (F—Factual, C—Conceptual, P—Procedural and M—Metacognitive).

CO No.	Statement	POs	PSOs	Cognitive Level	Knowledge Categories
CO1	To understand system level design and undergo any modification needed to improve in it.	PO1 PO2 PO4 PO6 PO10 PO11 PO12	PSO1 PSO2	U	C
CO2	Detailing on design of product considering its all aspects and prototyping techniques used to iterate it.	PO1 PO2 PO3 PO5 PO6 PO7 PO8 PO10 PO11 PO12	PSO1 PSO2	Ap	C, P
CO3	Uses of other technical tools to iterate prototyping all stages and last stage of building solutions of the product.	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO9 PO11 PO12	PSO1 PSO2	Ap, An	C, P
CO4	Preparation of final working model and its reflection towards actual product design.	PO1 PO2 PO4 PO5 PO6 PO7 PO8 PO10 PO11 PO12	PSO1 PSO2	Ap, An	C, P, M

Online Links:

1. <https://www.youtube.com/watch?v=cYGbaqF89Qk>
2. <https://www.youtube.com/watch?v=brpBM9xV7n8>
3. <https://www.youtube.com/watch?v=QZzXUUnGkng>
4. <https://www.youtube.com/watch?v=EHnLvkdG06M>
5. <https://designengineeringsheetmaker.in/>
6. <https://www.youtube.com/watch?v=Q7IVU6Q9H8A&t=54s>
7. <https://www.youtube.com/watch?v=PbzNMMZe4KU>