

GOVERNMENT OF GUJARAT
LUKHDHIRJI ENGINEERING COLLEGE, MORBI
 Mechanical Engineering Department

Course Teaching-Learning-Evaluation Strategy

Subject: Design Engineering-IB(3140005) Academic Year:2021-22(EVEN) Class: 4thSemester

Type of course: Project Work

Faculties: JMPujara

Prerequisite: Design Engineering – 1A

Course Outcomes (Cos)

| CO Nos. | CO statement | Weightage (Marks %) |
|---------|--|---------------------|
| 1. | Understand Reverse Engineering aspect and modify/redesign it as per the User's needs using Design Thinking. | 25 |
| 2. | To select branch specific design projects and relate all stages/phases of it with their regular core subjects with design engineering. | 25 |
| 3. | Design Thinking process will be used, but more emphasis on Ideation and initial Product Development phase. | 25 |
| 4. | Preparation of product development and its rough prototype as step towards actual product. | 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. | Phase 1:Reverse Engineering(RE) ✓SelectionofBranchspecific component/product/artefact/program ✓Disassembly/Analysisof thecomponent/product/artefact/program andlearningaboutthetopic | 15 |
| 2. | UserFeedback based refinementandredesignof the REtopic based on3rdsemesterlearning ✓UnderstandingofUser’sneed for ReverseEngineeringtopicand preparationofcanvases/frameworkforhistopic(AEIOU, Mind Mapping,Empathy mapping,ideation,product development) ✓Priorartsearch(TwoPapers studyandsummaryreports) ✓Summary of thelearningfromReverseEngineeringactivity | 15 |
| 3. | Phase 2:Pre-Design ✓LearningNeed Matrix (LNM)andtheskillsetlearntinthissemester so far ✓Basic Pre-designcalculationwhichroughlydecide size/shape/materialrequirement/manufacturingprocess/design specifications/applicablestandards | 15 |
| 4. | Phase 3:Proof ofConcept ✓DirtyMock-ups/Fast-prototype/ Schematic plan | 15 |
| 5. | Log book (Individual completedlogbook,duly signed by guideregularly) Continuous AssessmentCard for Internal Evaluation (Complete and duly signed by guideregularly) | 10 |
| 6. | Report: Compilation of work report(processreport),OnlineCertificate generatedthroughDE Portal,Futureactionplan, QuestionandAnswer, Communication Skill,Attitude | 10 |
| | | 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) |
|---|---|
| 3140005-1 WITH PO1, PO2, PO4, PO6, PO10, PO11, PO12, PSO1, PSO2, | 3140005-1 mapped because through 3140005-1 students shows ability to apply basic reverse engineering knowledge to selected problem |
| 3140005-2 WITH PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO10, PO11, PO12, PSO1, PSO2, | 3140005-2 mapped because 3140005-2 students will able to select branch specific design projects and relate all stages/phases of it with their regular core subjects with design engg. |
| 3140005-3 WITH PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO9, PO11, PO12, PSO1, PSO2, | 3150005-3 mapped because students will understand design Thinking process and its use, and more emphasis of Ideation and initial Product Development phase will explore |
| 3140005-4 WITH PO1, PO2, PO4, PO5, PO6, PO7, PO8, PO10, PO11, PO12, PSO1, PSO2, | 3140005-4 mapped because will develop ability of students to prepare rough prototype as step towards actual product. |

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 | Understand Reverse Engineering aspect and modify/redesign it as per the User's needs using Design Thinking. | PO1 PO2 PO4 PO6 PO10 PO11 PO12 | PSO1 PSO2 | U | C |
| CO2 | To select branch specific design projects and relate all stages/phases of it with their regular core subjects with design engineering. | PO1 PO2 PO3 PO5 PO6 PO7 PO8 PO10 PO11 PO12 | PSO1 PSO2 | Ap | C, P |
| CO3 | Design Thinking process will be used, but more emphasis on Ideation and initial Product Development phase. | PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO9 PO11 PO12 | PSO1 PSO2 | Ap, An | C, P |
| CO4 | Preparation of product development and its rough prototype as step towards actual product. | PO1 PO2 PO4 PO5 PO6 PO7 PO8 PO10 PO11 PO12 | PSO1 PSO2 | Ap, An | C, P |

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>