

Program : Diploma in Automobile Engineering	
Course Code : 3055	Course Title: Automobile Engineering Drawing
Semester : 3	Credits: 1.5
Course Category: Program Core	
Periods per week: 3 (L:0, T:0, P:3)	Periods per semester: 45

Course Objectives:

- To provide knowledge about the importance of different fastening devices, joints, couplings and automobile components.
- To understand the basics of assembly drawing preparation of automobile components.

Course Prerequisites:

Topic	Course code	Course Title	Semester
Knowledge of basic Engineering Drawings		Engineering Graphics	1
Basic knowledge of Engine components		Basic Automobile Engineering	2

Course Outcomes:

On completion of the course, the student will be able to:

CO _n	Description	Duration (Hours)	Cognitive Level
CO1	Outline the basics of fastening devices.	10	Understanding
CO2	Construct assembly and detailed drawing of different joints and couplings.	10	Applying
CO3	Model engine components and automobile workshop layout.	10	Applying
CO4	Make use of Assembly drawing principles on engine components.	12	Applying
	Lab Exam	3	

CO - PO Mapping:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7
CO1	2						
CO2	2						
CO3	3		2				2
CO4	3		2				2

3-Strongly mapped, 2-Moderately mapped, 1-Weakly mapped

Course Outline:

Module Outcomes	Description	Duration (Hours)	Cognitive Level
CO1	Outline the basics of fastening devices.		
M1.01	Compare the temporary and permanent fastening devices and their areas of application.	1	Understanding
M1.02	Show how to draw different types of nuts and bolts.	3	Understanding
M1.03	Show different types of locking arrangements of nuts.	3	Understanding
M1.04	Outline different types of rivet heads and preparation of drawings for riveted joints	3	Understanding
Contents:			
Basic Fastening Devices. Temporary and permanent fasteners - areas of applications - Nuts and Bolts - Bolts with special forms of heads - Stud bolts - Screws - different types of locking arrangements of nuts.			
Riveted joints. Different types of rivet heads for general purposes - proportions of riveted joints - Different types of riveted joints - single riveted and double riveted lap joint (Chain and zigzag), single riveted single strap butt joint and single riveted double strap butt joint.			
CO2	Construct assembly and detailed drawing of different joints and couplings.		
M2.01	Explain the need of assembly and detailed drawing.	1	Understanding
M2.02	Interpret different steps in assembly drawing	3	Understanding
M2.03	Develop assembly drawings of different types of cotter joints	3	Applying
M2.04	Develop assembly drawings of couplings	3	Applying
	Series Test- I	1.5	

Contents:

Need and functions of assembly and detailed drawings - selection of sheet sizes - preparation of title block - bill of materials and parts list -

Steps in preparing Assembly and Detailed drawings. Exercises in Assembly and Detailed drawings of 1) Sleeve and Cotter Joint, Socket and Spigot Joint, Gib and Cotter joints 2)

Coupling such as Flanged coupling - (unprotected type and bush type) (7 sheets)

CO3	Model engine components and automobile workshop layout.		
M3.01	Model automobile engine piston drawings	1	Applying
M3.02	Model 4-cylinder engine cam shaft drawing	3	Applying
M3.03	Develop 4-cylinder engine crank shaft drawing	3	Applying
M3.04	Build fuel filling cum service station, modern garage, paint booth and road ways workshop.	3	Applying

Contents:

Show the dimensioned drawings of the following automobile engine components

1. 4 stroke petrol engine pistons
2. 4 stroke diesel engine pistons
3. 4 cylinder engine crank shaft
4. 4 cylinder engine cam shaft

Layout of modern fuel filling cum service station

Layout of fully equipped modern garage

Layout of modern paint booth

CO4	Make use of Assembly drawing principles on engine components		
M4.01	Model assembly drawing of connecting rod	3	Applying
M4.02	Develop assembly drawing of valve mechanism (OHC overhead valve, side cam shaft overhead valve)	3	Applying
M4.03	Construct sectioned view of spark plug	3	Applying
M4.04	Develop sectioned view of injector	3	Applying
	Open Ended Projects		Applying
	Series Test -II	1.5	

Contents:

Utilize Assembly drawing principles on the following engine components

1. Connecting rod
2. Overhead & side valve mechanism with all parts (OHC overhead valve, side cam shaft overhead valve)
3. Spark plug & fuel injector

****Suggested Open Ended Projects**

(Not for End Semester Examination but compulsory to be included in Continuous Internal Evaluation. Students can - do open - ended experiments as a group of 2-3. There is no duplication in experiments between groups.

1. Develop proportionate drawing comprising exploded view of Two- wheeler gear box.
2. Construct proportionate drawing comprising exploded view of Multi plate wet clutch.
3. Model a complete wiring diagram of any 100 CC bike.

Text /Reference:

T/R	BookTitle/Author
T1	P.S.Gill - Machine Drawing - Katson Publishing,
T2	P.I.Varghese - Machine Drawing - VIP Publishers
R2	V. Lakshmi Narayan - A text book of Machine Drawing
R3	M.B Shah & B.C Rana- Engineering Drawing - Pearson Education India
R4	N.D.Bhatt - Machine Drawing - Charotar publishing house pvt. ltd
R5	N.D.Bhatt - Machine Drawing - Charotar publishing house pvt. ltd
R6	R.B.Gupta - Automobile Engineering Drawing - Satyaprakasan pub

Online Resources:

Sl.No	Website Link
1	http://ecoursesonline.iasri.res.in/mod/page/view.php?id=2477
2	https://www.uotechnology.edu.iq/dep-production/branch1_files/Mechanical%20Drawing.pdf
3	https://www.youtube.com/watch?v=mlgmVleA-Zw
4	https://www.youtube.com/watch?v=ZoCn4Pb6rLU
5	https://www.youtube.com/watch?v=H_nOMxAoI84