

**GUJARAT TECHNOLOGICAL UNIVERSITY****Syllabus for Bachelor of Vocation (B.Voc), 5th Semester****Branch: Automobile Servicing****Subject Name: Automotive System Design****Subject Code: 1150101****With effective
from academic
year 2018-19**

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	-	0	3	50	-	-	-	50

Course Content:

Unit No.	Content	Hrs
1	Design of Clutches & Gearbox: Design requirements of friction clutches, selection criterion, torque transmission capacity, lining materials, Design of single plate clutch, multiplate clutch and centrifugal clutch. Selection of gear ratios and final drive ratio, numerical on 3- speed and 4- speed gearbox.	08
2	Design of Propeller Shafts and Axles: Design of propeller shafts for bending, torsion and rigidity, Design of universal joints and slip joints, final drive, Design of live and dead axles	08
3	Brake Systems: Design of hydraulic braking system, internal expanding shoe brake and disc brake, design of master and wheel cylinder and piping design.	08
4	Design of Suspension and Steering System: General design considerations of suspension system, design of helical and leaf springs for automobile suspension system, design considerations of belleville springs, elastomeric springs, design considerations of steering system and vehicle frame design.	10
5	Statistical Consideration in Design and Optimization: Ergonomics and aesthetic design, statistics in design, design for natural tolerances, statistical analysis, and mechanical reliability, introduction to design optimization of mechanical elements, adequate and optimum design, methods of optimization, johnson's method of optimum design-simple problems in optimum design like axially loaded members.	08
Total Hours:		42

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks				
R Level	U Level	A Level	N Level	E Level
5	15	15	10	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate and above Levels (Bloom's Taxonomy)