

GUJARAT TECHNOLOGICAL UNIVERSITY

MECHANICAL (I.C. ENGINE & AUTOMOBILE ENGINEERING) (11)

AUTOMOTIVE CHASSIS & BODY ENGINEERING

SUBJECT CODE: 2721104

SEMESTER: II

Type of course: Advanced/ Application

Prerequisite: -.Nil

Rationale: The knowledge and skills of vehicle body technology is required to manage vehicle body fabrication and repair. Chassis and body forms the core of automobile engineering. The subject aims at imparting knowledge and skills regarding chassis and body structure, viz, improving the driver visibility, safety aspect in design. This course is designed to provide students the required level of knowledge and skills of automotive chassis and body engineering.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks		
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	Unit-I Vehicle Aerodynamics; Objects- vehicle drag and types; various types of forces and moments; effects of forces and moments; various body optimization techniques for minimum drag; principle of wind tunnel technology; flow visualization techniques; tests with scale models.	12	29
2	Unit-II Car Body Details; Types of car bodies; visibility; regulation,; driver's visibility; methods of improving visibility; safety design; constructional details of roof; under floor; bonnet; boot; wings etc; Classification of coach work.	14	33
3	Unit-III Design of Vehicle Bodies; Vehicle body materials; Layout of the design; preliminary design; safety; Idealized structure; structural surface; shear panel method; symmetric and asymmetrical vertical loads in car; longitudinal loads; different loading situations; load distribution on vehicle structure; Calculation of loading cases; stress analysis of bus body structure under bending and torsion; stress analysis in integral bus body; Design of chassis frame; Rules and regulations for body; Recent safety measures; Testing of body.	16	38

Reference Books:

Reference Books:

1. Vehicle Body Engineering – Pawloski J., Business Books Ltd.
2. The Automotive Chassis: Engineering Principles – Reimpell J.
3. Vehicle Body Layout and Analysis – John Fenton, Mechanical Engg. Publications

Ltd. London

4. Body Construction and Design – Giles J. G., Illife Books, Butterworth and Co

Course Learning Outcome:

After successful completion of the course, student will be able to:

- Understand the basic concept of vehicle aerodynamics
- Understand the car body details
- Understand design of vehicle bodies

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.