

DESIGNS AND ANALYSIS OF AUTOMOBILE CHASSIS

A project report submitted In the partial fulfillment of the requirements for award of degree of

**BACHELOR OF TECHNOLOGY
IN
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Submitted by

S.ANU VAMSI

18815A0360

K.SRIKANTH

18815A0326

K.MUKESH

18815A0324

G.BHASKAR RAO

18815A0314

Under the guidance of

Mrs V.SUMA PRIYA M.Tech

Assistant professor

DEPARTMENT OF MECHANICAL ENGINEERING



AVANTHI INSTITUTION OF ENGINEERING AND TECHNOLOGY
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(Affiliated to Jawaharlal Nehru technological university Kakinada, A.P)
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DEPARTMENT OF MECHANICAL ENGINEERING

AVANTHI INSTITUTION OF ENGINEERING AND TECHNOLOGY



CERTIFICATE

This is to certify that the project entitled “**DESIGN AND ANALYSIS OF AUTOMOBILE CHASSIS** ” is this record of the work carried out by **S.ANUVAMSI (18815A0360), G.BHASKAR RAO (18815A0314), K.MUKESH (18815A0324), K.SRIKANTH (18815A0326)** students of final year B. Tech in the department of Mechanical engineering.

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V. Suma Priya

Project Guide

V.SUMA PRIYA M.Tech

Head of the Department

V.HARI KIRAN M.Tech(Ph.D)

External Examiner

ABSTRACT

Chassis serves as the skeletal base frame structure of an automobile which has to carry all the supporting loads. Chassis should be rigid enough to absorb the shock, twist, vibration and other stresses. Along with strength, an important consideration in chassis design is to have adequate bending stiffness for better handling characteristics. A ladder frame chassis is assembled with axles and suspension system which form a combined unit absorbing the induced stresses. A structural and random vibration analyses are carried out using a simulation tool ANSYS by varying the materials for the theoretically calculated loading conditions. A simulation is done for the considered chassis design of C cross section subjected to loading. The analyses investigate the structural stability of the body when different materials i.e., A710 Steel, A4130 Steel, ST-52 Steel, Structural Steel, Mild Steel and Wrought Iron are considered. These materials are chosen after a careful analysis of previously performed works. Studies conducted so far show that the structural analysis is carried out for various single frame chassis neglecting the stability and damping characteristics offered by cross members and leaf springs. This work is focused on determining structural stability and probability of failure when the structure is subjected to pre-defined loads and randomly varying vibrations. To achieve this, an optimized ladder frame chassis design has to be considered where the axles and suspension system form an integral part of the skeletal design