



**GOVERNMENT OF TAMIL NADU**

**HIGHER SECONDARY SECOND YEAR**

**VOCATIONAL EDUCATION**

# **Basic Automobile Engineering**

**THEORY & PRACTICAL**

A publication under Free Textbook Programme of Government of Tamil Nadu

**Department of School Education**

**Untouchability is Inhuman and a Crime**

## Government of Tamil Nadu

First Edition - 2019

Revised Edition - 2020,2022

(Published under New Syllabus)

NOT FOR SALE

## Content Creation



State Council of Educational Research  
and Training

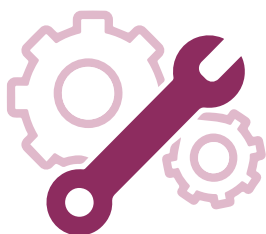
© SCERT 2019

## Printing & Publishing



Tamil NaduTextbook and Educational  
Services Corporation

[www.textbooksonline.tn.nic.in](http://www.textbooksonline.tn.nic.in)



## Preface

We take immense pleasure in presenting the text book on “Basic Automobile Engineering” theory for the second year students of Higher Secondary course. The authors express their deepest gratitude to the teachers and the SCERT for their support and help to write, compose and publish this book in time.

This book is divided into ten chapters, each covers the major sub-system of Automotive System. A range of examples for components and lay out for assembled systems are given and discussed for easy understanding by the students. Most of the drawings of the components are simplified and presented for easy explanation and the pictorial photographs are also added for better understanding.

“Do you know” box items are included to highlight the facts and figures of the recent developments. The practical part includes dismantling, inspection and assembly in each chapter to enable the student to appreciate the construction and working principles. We are sure that this book would help the students acquire theoretical knowledge, analytical ability and practical skill.

To facilitate further learning and higher order thinking reference books, videos, websites have been incorporated for each chapter. Suggestions, innovative ideas and constructive criticisms are welcome for due consideration and inclusion in the future edition.





## How to use the book?

	Higher Studies	List of professions related to the subject.
	Learning Objectives	Learning objectives are brief statements that describe what students will be expected to learn by the end of school year, course, unit, lesson or class period.
	Do You Know?	Amazing facts, Rhetorical questions to lead students to Automobile inquiry
	QR Code	To download QR code scanner from the google play store To open the QR code The camera will open after scanner button is pressed. To focus the camera to scan the QR code The URL link will be displayed on the screen after QR code is read by the camera. Get the information related to the lesson through the website
	Student Activity	Directions are provided to students to conduct activities in order to explore, enrich the concept.
	Evaluation	Assess students to pause, think and check their understanding
	Practical	The details of practicals related to the lessons are given in detail
	Case Study	To encourage you, the role model students who studied in this group and achieved in various fields such as employment, self-employment and higher studies are mentioned in this case study.
	Web Reference	To motivate the students to further explore the content digitally and take them in to virtual world
	Book References	List of related books for further details of the topic





## Career Guidance

### Vertical Mobility

#### Engineering

1. Directly to Join 2nd year Diploma Engineering in Government Aided and private polytechnics and select any other major Engineering course.
2. 10% of the Seats are allotted to Government and Government Aided and Private Engineering colleges to Join Ist year graduate engineering.
3. Distance Education Directly under go the course AMIE which is equal to Government Engineering Courses. Maximum Duration Six years.

#### Arts

1. +2 Vocational Groups Student are eligible to Join Ist year Diploma Teacher Training Course.
2. Directly Join B.A. Arts Group Except – Physic Chemistry, Biology major all other science group.
3. Directly Join B.Sc Math's group.

### Horizontal Mobility

#### Employments

1. Directly Join to Reputed Industries as Apprentice Training/Factory Training like
  - a) Ashok Leyland. (Chennai and Hosur)
  - b) TVS Groups. (Chennai, Hosur, Madurai, etc.)
  - c) ABT Maruti. (Chennai, Coimbatore, Pollachi, etc.)
  - d) Hyundai Car Company. (Sriperumbudar, Irrangatukdtai, Chennai)
  - e) Ford India Ltd. (Maraimalai Nagar)
  - f) All Reputed Service centers like TVS, VST and Hyundai, Ford etc.
  - g) All Automobile leading manufacturing, repairing and servicing centers.

#### Self-Employment

1. Vocational Students after getting Apprentice Training Industry Training are eligible to get small scale Industry Loan from Hudco, TIDCO, SIDCO etc.
2. After Adequate required experience in the field getting they are eligible to minimum loans under the scheme of
  - a) NRY (Nehru Rozhar Yogana)
  - b) PMRY (Prime Minister Rozhar Yogana)
  - c) TRYSEM (Training for Rural Youth and Self Employment)
  - d) PMKVY (Pradhan Mantri Kaushal Vikas Yojana)



## Contents

### Basic Automobile Engineering

Unit No.	Chapter Title	Page No.	Month
1.	Transmission System	1-14	June
2.	Clutch Unit	15-29	June
3.	Gear Box	30-54	July
4.	Propeller Shaft and Rear Axle	55-73	August
5.	Wheels and Tyres	74-90	September
6.	Braking System	91-122	October
7.	Suspension System	123-144	October
8.	Steering System	145-166	November
9.	Chassis and Body	167-183	November
10.	Electrical System	184-219	Nov-Dec
	Model Question Paper	220-222	
	Basic Automobile Engineering Practical	223-261	
	Case Studies	262-268	
	References	269-270	
	Common Glossary	271-273	



E-book



Assessment