



# GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Diploma in Vocation (D.Voc), 5<sup>th</sup> Semester

Branch: Automobile Servicing

Subject Name: Metrology & Measuring Instruments- Lab.

Subject Code: 1250105

With effective  
from academic  
year 2018-19

## Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	P	OJT		Theory		Tutorial/ Practical		
			University exams (ESE)	Progressive Assessment (PA)	External Practical /viva Exam (ESE)	Internal evaluation Practical /viva Exam (PA)		
-	2	-	1.5	-	-	30	20	50

L- Lectures; P- Practical; OJT- On Job Training; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

## Content:

Sr. No.	Content	Hrs
1	Measurement of angle with the help of sine bar/ Vernier Bevel protractor.	2
2	Study and sketch of various types of optical projectors.	4
3	Study and sketch of various types of comparators and use them for comparing length of given piece.	2
4	To measure the diameter of a hole with the help of precision balls.	2
5	To measure external and internal taper with the help of taper gauges, precision rollers.	4
6	To test the squareness of a component with auto-collimeter.	2
7	To measure the pitch, angle and form of thread of a screw.	2
8	To measure the geometry of a gear having involute profile.	2
9	To measure the straightness of the edge of a component with the help of autocollimeter.	2
10	To measure the length, breadth, thickness, depth, height with micrometer.	2
11	To measure the length, breadth, thickness, depth, height, with height gauge and Vernier	2
12	Calibration of Vernier calipers/micrometers.	2
13	Calibration of height gauge/depth gauge.	2
14	Study of a tool maker's microscope.	2
15	Checking of accuracy of snap gauge with slop gauge.	2
16	Checking of accuracy of a plug gauge with micrometer.	2
17	Measurement of areas by polar planimeter.	2
18	Use of feeler, wire, radius and fillet gauges measurement of standard parameters.	4
	<b>Total</b>	<b>42</b>

## Course outcomes:

After learning the practical the students should be able to:

1. Use linear, angular and taper measurement devices for measurement of various automobile components.
2. Discriminate between various screws, gears and automobile components by measuring their dimensions using miscellaneous methods.



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3. Describe basic concepts of mechanical measurement and errors in measurements and learn to calibrate various instruments.

**Reference Books**

1. Mechanical Measurement and Metrology by R K Jain, Khanna Publisher.
2. Mechanical Measurements and Instrumentations by Er. R K Rajput, Kataria Publication.
3. Mechanical Measurements by Beckwith & Buck, Narosa publishing House.