Community College of Skill Development

Lesson Plan: Metrology

Program: B. Voc. **Semester: III** **Course Code: BSC-203** **Credits: 3**

Course Objectives:

The aim of studying this course for student is to know the basic concepts in various methods of engineering measurement and application, and to understand the importance of measurement and inspection in manufacturing industries. Expose the student to various modern meteorological instruments and the procedure used to operate these measurement.

Course Outcomes:

At the end of the course, the student shall be able to:

CO1: Apply principles of measurement End metrology to select appropriate Instruments, Analyze Measurement errors, and ensure Accuracy in Industrial Processes.

CO2: Demonstrate proficiency in linear and angular measurement Using Play season Instrument and comparators, Insuring Compliance With engineering standards.

CO3: Perform measurements of physical properties Such as Temperature, force, pressure And surface finish, employing appropriate Instruments And techniques.

CO4: Apply geometric dimensioning Add a tolerance (GD&T) Principles To interpret Engineering drawings and major components Geometric features accurately.

Equipment required in Classroom/ Laboratory/ Workshop

i. LCD/Projector
ii. Whiteboard/ Black Marker

Assessment Scheme

Sl. No.	Criteria	Marks
1	End Term Examination	75
2	Internal Evaluation Scheme	25
2a	Class Tests	15
2a (i)	Class Test-I	7.5
2a (ii)	Class Test-II	7.5

2(b)	Teacher Assessment (Continuous Evaluation)	10
2b (i)	Attendance	5
2b (ii)	Assignment / Presentation	5

Lecture No.	Topic Covered	Pedagogy	Date of Implementation	Course Outcomes Covered	Faculty Sign
1.	**Inspection & its need, Units of measurement**	**Formative assessment and student centered**	**4/9/2025**	**CO1**	**sanjeev**
2.	**Selection of instrument, Methods of measurement**	**Formative assessment and student centered**	**4/9/2025**	**CO1**	**sanjeev**
3.	**Concept of errors, Sources of error**	**Formative assessment and student centered**	**5/9/2025**	**CO1**	**sanjeev**
4.	**Measurement standards, Calibration**	**Formative assessment and student centered**	**11/9/2025**	**CO1**	**sanjeev**
5.	**Linear measurement, surface plates, Slip gauges**	**Formative assessment and student centered**	**11/9/2025**	**CO2**	**sanjeev**
6.	**Dial indicator, micrometer, Bevel protector**	**Formative assessment and student centered**	**12/9/2025**	**CO2**	**sanjeev**
7.	**Sprit level, sine bar, Comparators, types & advantages and**	**Formative assessment and**	**18/9/2025**	**CO2**	**sanjeev**

	disadvantages	**student centered**			
8.	**Miscellaneous measurement, taper and radial measurements**	**Formative assessment and student centered**	**18/9/2025**	**CO2**	**sanjeev**
9.	**Revision**	**----------**	**19/9/2025**	**CO2**	**sanjeev**
10.	**Sessional**	**----------**	**25/9/2025**	**----**	**sanjeev**
11.	**Sessional**	**----------**	**25/9/2025**	**----**	**sanjeev**
12.	**Sessional**	**----------**	**26/9/2025**	**----**	**sanjeev**
13.	**Sessional Q paper solution**	**Formative assessment and student centered**	**3/10/2025**	**----**	**sanjeev**
14.	**Interchangeability**	**Formative assessment and student centered**	**9/10/2025**	**CO3**	**sanjeev**
15.	**Limit, fits & its types**	**Formative assessment and student centered**	**9/10/2025**	**CO3**	**sanjeev**
16.	**Design of limit gauge**	**Formative assessment and student centered**	**16/10/2025**	**CO3**	**sanjeev**
17.	**Tolerance**	**Formative assessment and student centered**	**16/10/2025**	**CO3**	**sanjeev**
18.	**Computer added tolerancing**	**Formative assessment and student**	**17/10/2025**	**CO3**	**sanjeev**

		centered			
19.	**Measurement of G and D Parameters**	**Formative assessment and student centered**	**24/10/2025**	**CO4**	**sanjeev**
20.	**Measuring of straightness, Flatness,**	**Formative assessment and student centered**	**30/10/2025**	**CO4**	**sanjeev**
21.	**Squareness Round, parallelism, cylinder city Non-contact Profiling system**	**Formative assessment and student centered**	**30/10/2025**	**CO4**	**sanjeev**
22.	**Measurement of surface finish, Introduction Terminology, Specifying roughness on drawings**	**Formative assessment and student centered**	**31/10/2025**	**CO4**	**sanjeev**
23.	**Surface roughness parameter, Factor affecting surface roughness**	**Formative assessment and student centered**	**6/11/2025**	**CO4**	**sanjeev**
24.	**ideal surface roughness, Methods, Precautions,**	**Formative assessment and student centered**	**6/11/2025**	**CO4**	**sanjeev**
25.	**Surface microscopy, Surface finish software**	**Formative assessment and student centered**	**7/11/2025**	**CO4**	**sanjeev**
26.	**Revision**	**Formative assessment and student centered**	**13/11/2025**	**CO1,2,3,4**	**sanjeev**
27.	**Revision**	**Formative**	**13/11/2025**	**CO1,2,3,4**	**sanjeev**

		assessment and student centered			

Text Books:

1. **Engineering metrology and measurements Bye N.V. Raghavendra**

Reference Books:

2. **Engineering metrology by R.K. Jain**
3. **Mechanical measurements and instrumentation By R.K. Rajput**