Lesson Plan

Name of the Faculty : Sh. Deepak Malhotra (T), Sh. Subhash Chander (P)

Discipline : Mechanical Engineering

Semester : 6th (Section A & B)

Subject : **INSPECTION AND QUALITY CONTROL**

Lesson Plan duration : 15 weeks (from 22nd March, 2021 to 2nd July, 2021)

Work load per week : Lecture – 03, Practical – 02

Week	Theory		Practical	
	Lecture Day	Topic (Including assessment/test)	Practical Day	Topic
1st	1st	**1. Inspection:** Introduction, units of measurement, Standards for measurement,	1st	Introduction about the lab and brief discussion over the practical work to be conducted.
	2nd	Interchangeability. International, national and company standard, line and wavelength standards.		
	3rd	Planning of inspection: what to inspect? When to inspect? Who should inspect? Where to inspect?		
2nd	4th	Types of inspections: Remedial, preventive and operative inspection, incoming, in-process and final inspection. factors influencing the quality of manufacture.	2nd	Use of dial indicator for measuring taper.
	5th	**2. Measurement and Gauging:** Basic principles used in measurement and gauging- Mechanical, optical,		
	6th	Basic principles used in measurement and gauging- electrical, electronic		
3rd	7th	Study of various measuring instruments like: calipers, micrometers,	3rd	Use of combination set, Use of bevel protector,
	8th	dial indicators , surface plate, straight edge,		
	9th	try square, protectors, sine bar, clinometer,		

4th	10th	Comparators – mechanical, electrical and pneumatic	4th	Use of sine bar for measuring taper.
	11th	slip gauges, tool room microscope, profile projector.		
	12th	Limit gauges: plug, ring, snap, taper and their applications for linear, angular, surface, thread Gear measurements, gauge tolerances,		
5th	13th	thread, height, depth, form, feeler, wire and their applications for linear, angular, surface, thread Gear measurements, gauge tolerances	5th	Measurement of thread characteristic using vernier and gauges.
	14th	Measurement of geometrical parameter such as straightness, flatness and parallelism.		
	15th	Study of procedure for alignment tests on lathes, drilling machines		
6th	16th	Geometrical parameters and errors: Errors & their effect on quality, Concept of errors,	6th	Checking of Practical file
	17th	**1st sessional test (Tentative)**		
	18th	**Assessment**		
7th	19th	Study of procedure for alignment tests on milling machines. Testing and maintenance of measuring instruments.	7th	Measurement of thread characteristic using vernier and gauges.
	20th	**3. Statistical Quality Control:** Basic statistical concepts, empirical distribution and histograms,		
	21st	Frequency, mean, mode, - Simple examples		
8th	22nd	standard deviation, - Simple examples	8th	Use of slip gauge in measurement of center distance between two pins.
	23rd	normal distribution, binomial and poisson distribution, Simple examples.		
	24th	Introduction to control charts,		
9th	25th	X and R, x and σ,P, ηp,C charts	9th	Use of tool maker's microscope and comparator.
	26th	P and C charts and their Applications.		
	27th	Sampling plans, selection of sample size, method of taking samples,		

		frequency of samples.		
10th	28th	Inspection plan format and test reports	10th	Checking of Practical file
	29th	**2nd sessional test (Tentative)**		
	30th	**Assessment**		
11th	31st	**4. Modern Quality Concepts:** Concept of total quality management (TQM).	11th	Plot frequency distribution for 50 turned components.
	32nd	National and International Codes.		
	33rd	ISO-9000, concept and its evolution.		
12th	34th	ISO-9000, concept and its evolution.	12th	With the help of given data, plot X, R charts,
	35th	QC tools. Introduction to Kaizen, 5S		
	36th	**5. Instrumentation:** Measurement of mechanical quantities such as displacement		
13th	37th	Measurement of mechanical quantities such as vibration	13th	With the help of given data, plot P and C charts.
	38th	Measurement of mechanical quantities such as frequency		
	39th	Measurement of mechanical quantities such as pressure by electro mechanical transducers.		
14th	40th	Measurement of mechanical quantities such as temperature by electro mechanical transducers of resistance, capacitance & inductance type.	14th	Checking of Practical file
	41st	**3rd sessional test (Tentative)**		
	42nd	**Assessment**		
15th	43rd	Revision	15th	Checking of Practical file & Evaluation
	44th	Revision		
	45th	Revision		