**LESSON PLAN**

Name of the Faculty : Pardeep

Discipline : Mechanical Engg. Semester : 6th

Subject :IQC

Lesson plan duration :16 weeks (from 15 Feb,2024 to 14 June, 2024*)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WEEK | THEORY | | PRACTICAL | |
| Lecture  Day | Topic (including assignments /tests) | Practical  Day | Topic |
| WEEK 1 | 1st | **UNIT-1 Introduction,** units of  measurement, standards for measurement and interchangeability | 1st | Use of dial indicator for measuring taper. |
| 2nd | International, national and company standard, line and wavelength standards.  Planning of inspection: what  to inspect?When to inspect? |
| 3rd | Types of inspection:remedial, preventive and operative inspection, incoming,in-process  and final inspection. |
| WEEK 2 | 1st | Factors influencing the quality of manufacture. | 1st | Use of dial indicator for measuring taper. |
| 2nd | **UNIT-2 Measurement and Gauging**  Basic principles used in measurement and gauging, mechanical, optical, electrical and electronic |
| 3rd | Study of various measuring instruments like: calipers, micrometers, dial indicators, surface  plate, |
| WEEK 3 | 1st | straight edge, try square, protectors, sine bar, clinometer, comparators – mechanical,  electrical and pneumatic. | 1st | Use of combination set, bevel protector and sine bar for measuring taper. |
| 2nd | Slip gauges, |
| 3rd | tool room microscope, profile projector |
| WEEK 4 | 1st | Limit gauges: plug, ring, | 1st | Measurement of thread characteristic  using vernier and gauges |
| 2nd | snap, taper, thread, height, depth, form |
| 3rd | feeler, wire limiting gauge |
| WEEK 5 | 1st | their applications for linear, angular, | 1st | Use of slip gauge in measurement of center distance between two pins. |
| 2nd | their applications for surface, thread and gear measurements, |
| 3rd | gauge tolerances |
| WEEK 6 | 1st | Geometrical parameters and errors:  Errors & their effect on quality, | 1st | Use of tool maker’s |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 2nd | concept of errors, measurement of geometrical | 1st | microscope and  comparator. |
| 3rd | parameter such as straightness, |
| WEEK 7 | 1st | flatness and parallelism | 1st | Plot frequency distribution for 50 turned components. |
| 2nd | Study of procedure for alignment tests on lathes, |
| 3rd | Study of procedure for alignment tests drilling and milling machines. |
| WEEK 8 | 1st | Testing and maintenance of measuring instruments. | 1st | With the help of given data, plot X and R, P and C charts |
| 2nd | **Unit-3 Statistical Quality Control** Basic statistical concepts, empirical distribution  and histograms |
| 3rd | frequency, mean, mode, |
| WEEK 9 | 1st | standard deviation, normal distribution, | 1st | Use of combination set, bevel protector and sine bar for  measuring taper. |
| 2nd | binomial and Poisson, Simple- examples. |
| 3rd | Introduction to control charts |
| WEEK 10 | 1st | X and R, X and σ, P, ηp, C charts | 1st | Measurement of thread characteristic using vernier and  gauges |
| 2nd | Applications of charts. |
| 3rd | Sampling plans, |
| WEEK 11 | 1st | selection of sample size | 1st | Plot frequency distribution for 50  turned components. |
| 2nd | method of taking samples |
| 3rd | frequencyof samples. |
| WEEK 12 | 1st | Inspection plan format | 1st | Use of tool maker’s microscope and comparator. |
| 2nd | test reports |
| 3rd | **UNIT-4 Modern Quality Concepts**  Concept of total quality management (TQM) |
| WEEK 13 | 1st | National and International Codes. | 1st | With the help of given data, plot X and R, P and C charts |
| 2nd | ISO-9000, concept and its evolution |
| 3rd | QC tools |
| WEEK 14 | 1st | Introduction to Kaizen | 1st | Use of combination set, bevel protector and sine bar for measuring taper. |
| 2nd | Introduction to 5S |
| 3rd | **UNIT-5 Instrumentation** Measurement of mechanical quantities such as displacement by electro mechanical transducers ofresistance, capacitance & inductance type. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  |  |  |
| WEEK 15 | 1st | Measurement of mechanical quantities such as vibration, by electro mechanical transducers ofresistance, capacitance &  inductance type | 1st | Plot frequency distribution for 50 turned components |
| 2nd | Measurement of mechanical quantities such as frequency, pressure temperature by electro mechanical transducers ofresistance,  capacitance & inductance type |
| 3rd | Revision |
| WEEK 16 | 1st | Previous years question papers | 1st | With the help of given data, plot X and R, P  and C charts |
| 2nd | Previous years question papers |
| 3rd | Previous years question papers |