**Lesson Plan**

Name of the Faculty : Ravi kant

Discipline : Mechanical Engg.

Semester : 6th

Subject : IQC

Lesson plan duration : 15 weeks (from February, 2024 to June, 2024)

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| **Week** | **Theory** | | **Practical** | |
| Lecture Day | Topic (including assignments /tests) | Practical Day | Topic |
| 1st Week | 1st | **Inspection**: Introduction, units of measurement, | 1st | Introduction to the subject, why we should study it? |
| 2nd | standards for measurement and interchangeability | 2nd | Applications in industry, Scope, factors affecting it. |
| 3rd | International, national and company standard, line and wavelength standards |
| Week 2 | 1st | Planning of inspection: what to inspect? When to inspect? Who should inspect? Where to inspect? | 1st | Use of dial indicator for measuring taper. |
| 2nd | Types of inspection: remedial, preventive and operative inspection, | 2nd | Use of dial indicator for measuring taper / practical sessions |
| 3rd | Incoming, in-process and final inspection. |
| Week 3 | 1st | Study of factors influencing the quality of manufacture | 1st | Practice & VIVA |
| 2nd | **Measurement and Gauging** : Basic principles used in measurement and gauging, |
| 3rd | Principles: mechanical, optical, electrical and electronic.. | 2nd | Use of combination set for measuring taper |
| Week 4 | 1st | Study of various measuring instruments like: calipers, micrometers, dial indicators surface plate, straight edge, try square, protectors, sine bar, clinometer | 1st | Use of combination set for measuring taper / practical sessions |
| 2nd | Comparators – mechanical, electrical and pneumatic. |
| 3rd | Slip gauges, tool room microscope, profile projector | 2nd | Use of bevel protector for measuring taper |
| Week 5 | 1st | Limit gauges: plug, ring, snap, taper, thread, height, depth, form, feeler, wire | 1st | Use of bevel protector for measuring taper / practical sessions |
| 2nd | applications for linear, angular, surface, thread and gear measurements, gauge tolerances |
| 3rd | **Geometrical parameters and errors:**  Errors & their effect on quality, concept of error. | 2nd | Use of sine bar for measuring taper / practical sessions |
| Week 6 | 1st | measurement of geometrical parameter such as straightness, flatness and parallelism | 1st | Measurement of thread characteristic using vernier |
| 2nd | Study of procedure for alignment tests on lathes, drilling and milling machines |
| 3rd | Testing and maintenance of measuring instruments | 2nd | Measurement of thread characteristic using vernier / Practical Sessions |
| Week 7 | 1st | Test | 1st | Use of slip gauge in measurement of center distance between two pins. |
| 2nd | **Statistical Quality Control**: Basic statistical concepts |
| 3rd | empirical distribution and histograms |
| Week 8 | 1st | frequency, mean, mode, standard deviation, | 1st | Use of tool maker’s microscope and comparator |
| 2nd | normal distribution, binomial and Poisson |
| 3rd | Simple Problems on distribution | 2nd | Use of tool maker’s microscope and comparator / Practical Sessions |
| Week 9 | 1st | Introduction to control charts X, R Charts | 1st | Plot frequency distribution for 50 turned components. |
| 2nd | P and C charts & Applications |
| 3rd | Assignment on Control Charts | 2nd | Plot frequency distribution for 50 turned components. / Practical Session |
| Week 10 | 1st | Sampling plans, selection of sample size, method of taking samples, frequency of samples | 1st | Practice & VIVA |
| 2nd | Inspection plan format and test reports |
| 3rd | **Modern Quality Concepts**: Concept of total quality management (TQM) | 2nd | With the help of given data, plot X Chart |
| Week 11 | 1st | National and International Codes. | 1st | With the help of given data, plot X Chart / Practical Session |
| 2nd | ISO-9000, concept and its evolution |
| 3rd | QC tools | 2nd | With the help of given data, plot R Chart |
| Week 12 | 1st | Introduction to Kaizen, 5S | 1st | With the help of given data, plot R Chart / Practical Session |
| 2nd | Assignment on TQM, QC tools |
| 3rd | Revision | 2nd | With the help of given data, plot P Chart |
| Week 13 | 1st | **Instrumentation**: Measurement of mechanical quantities | 1st | With the help of given data, plot P Chart / Practical Session |
| 2nd | Displacement- by electro mechanical transducers, |
| 3rd | Vibration- by electro mechanical transducers | 2nd | With the help of given data, plot C Chart |
| Week 14 | 1st | Frequency- by electro mechanical transducers | 1st | With the help of given data, plot C Chart / Practical Session |
| 2nd | Pressure, temperature- by electro mechanical transducers |
| 3rd | Types of Electro Mechanical Transducers: resistance, | **2nd** | Measurement of thread characteristic using Gauges |
| Week 15 | 1st | capacitance type | **1st** | Measurement of thread characteristic using Gauges / Practical Sessions |
| 2nd | inductance type |
| 3rd | Revision | **2nd** | Practice & VIVA |