**Pakistan Industrial Technical Assistance Centre** (PITAC), **Lahore**

***Training Programme of***

**“Cutting Tools & Gauge Design”**

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| **Sr No.** | **Course Contents** |
| **Week-1** | * **Introduction to Cutting Tools** * Parts of Single Point Tool * Types of Form Tools   (Flat & Circular Form)   * Design Aspects of Flat Form Tool * Selection of Material * Introduction of Piercing Die * On Board Training / Practicing by Analytical Method |
| **Week-2** | * **Introduction and Application of:-** * **Tolerance** * Advantages of Tolerance * Types of Tolerance * Tolerance Showing Method and its calculations * **Allowance** * Types of Allowance * **Fits** * Types of Fits * ***Exercise of Flat Form Tool***  (By using Calculation Method) |
| **Week-3** | * Definitions of **Gea**r, **Pinion** and **Rack** * Difference between **Gear** and **Pinion** * Use of **Rack** and **Pinion** * Nomenclature of a **Gear** * Types of **Gears** * Left and Right Hand **Helical Gears** * Gearing Systems (**D.P., Module & C.P System**) * Difference between **D.P., Module & C.P System** * Calculations of **Spur Gears** * Practice of Spur Gear Calculations (Assignment No. 1) * ***Briefing and Practicing of Circular Form Tools*** * On Board Practice |

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(**Cutting Tools & Gauge Design Cont…. P/2)**

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| **Sr No.** | **Course Contents** |
| **Week-4** | * **Introduction of Threads** * Primary and Secondary Function of Threads * Threads types and their use including Knuckle (Bottle) Threads * Trigonometry * Parts of Tri-angle * Trigonometric Functions * Calculations of a right angle tri-angle * Practice of calculations of a right angle triangle * Introduction of Various types of Industrial Standards * Practice / on Board Training |
| **Week-5** | * **Definition of Heat Treatment** * Advantages of Heat Treatment * Classifications of Steels * Hardness Measuring Scales * Heat Treatment Processes   (Hardening, Tampering, Annealing, Normalizing, Carburizing)   * Introduction of Induction Hardening Machine * Brief introduction of Welding & Brazing and their difference * Selection of Material for Cutting Tools * Practice / on Board Training |
| **Week-6** | * ***Design Aspects of Gauges*** * Methods of Designing Ring, Plug, Snap Gauges * Visit of different shops of PITAC for Practical observation * **QCT** (Quick Check Test) * **Final Evaluation Test + Viva** |