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

***Training Programme on***

**“Jig & Fixture Design”**

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| **Sr No.** | **Course Contents** |
| **Week-1** | * Introduction of Jig & Fixture * Use of Jigs & Fixtures * Types of Jigs, Basic * Designing Principles * Practicing of Jig Designing. |
| **Week-2** | * Tolerance * Advantages of Tolerance * How to mention Tolerance * Calculate Tolerance for a Machinist * Types of Tolerance. Fits, their Types and use. * Allowance and its types. * Manufacturing Aspects of Jig & Fixture Design * Economical Aspects * Locating and Locating Devices * Locating a component. |
| **Week-3** | * Gears, Difference between Gear, Pinion & Rack. * Use / function of rack. Types of Gears * Gearing Systems and their difference * Calculation of Spur Gears with exercise * Bushes Types for Jigs & Fixtures, Bushes Material, Plate Thickness * Safe Fastening rules. * Selection / location of fasteners and dowel pins * Designing of Drilling Jig * Swarf disposal ways * Supply line of Cutting Oil with proper location |

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(**Jig & Fixture Design Cont…. P/2)**

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| **Sr No.** | **Course Contents** |
| **Week-4** | * Threads their use and types. * Introduction of Knuckle / Bottle Threads and their form. * Trigonometry, Calculation of a right angle triangle. * Introduction of Industrial Standards. * Introduction and practicing of Fixtures. * Different types of fixtures. * Clamping techniques / methods * On Board Training |
| **Week-5** | * Heat Treatment * Advantages of Heat Treatment * Type / classifications of Steel * Hardness Testing Machines and Scales * Heat Treatment Processes (Hardening, Tampering, Annealing, Normalizing, Carburizing, Induction Hardening). * Difference between Welding & Brazing. * Component drawing for designing of Milling (Slotting Fixture) |
| **Week-6** | * Practicing of Slotting Fixture. * Assembly and detail drawings of Fixtures. * On Board Training * Visit of different shops of PITAC for Practical observation * **QCT** (Quick Check Test) * **Final Evaluation Test + Viva** |