**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.
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| **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.
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| **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
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| **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)
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| **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**
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