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COURSE BROCHURE

Production Engineering and Process Planning Training Course

18 – 22 July 2027
Cairo

Production Engineering and Process Planning Training Course

Ref: 851_32256 **Date:** 18 – 22 July 2027 **Location:** Cairo **Fees:** 4000 GBP

Production Engineering and Process Planning is a 1-week training course for production engineers, manufacturing engineers and process planners who turn drawings into timed, costed operations, ending with a production engineering process plan for a real component. Shorter product lives, tighter cost targets and mixed-model lines now make the quality of routing and tooling decisions a direct driver of margin and delivery. Jupiter Prime Training offers this course on Production Engineering and Process Planning.

Why Production Engineering and Process Planning Matters Now

Three forces shape the discipline today. Customers expect more variants in smaller batches, so routings and set-ups must change quickly. Experienced machinists and planners are retiring, so method knowledge has to be written into operation sheets rather than held in memory. An organisation that plans operations well launches parts with stable cycle times and predictable cost; one that plans badly carries scrap, bottleneck stations and quotations that lose money. The course rests on established work study practice, predetermined motion time systems PMTS and design for manufacture and assembly DFMA.

Who Gains Most from Production Engineering and Process Planning

- Engineers who convert drawings and tolerances into operation sequences and machine choices
- Planners who set standard times and labour content for routings
- Engineers who specify jigs, fixtures, cutting tools and gauges for new parts
- Specialists who arrange cells and lines and balance station workloads
- Estimators who build part cost from cycle times, rates and materials

A plant engineering group sending its routing, tooling and costing members together gains most.

Production Engineering and Process Planning Capabilities

Participants move from a drawing to a timed, costed route the shop floor can run.

- Specify an operation sequence from datum, tolerance and feature analysis — the routing approved for release
- Calculate standard times using time study and PMTS data — labour content and line rate
- Select fixtures and tooling against the 3-2-1 locating principle — repeatability and set-up time
- Design a cell or line layout with balanced stations — capacity and floor space
- Build a part cost estimate from cycle time and machine rates — quotation and make-or-buy
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Communicate the process plan to production, quality and purchasing — launch readiness

Key Production Engineering and Process Planning Terms

- Routing — the ordered list of operations, work centres and times needed to make a part.
- Standard time — the time a qualified operator needs for a task at normal pace, including allowances.
- Datum — a reference surface or point from which features are located and measured during machining.
- Fixture — a device that locates and clamps a workpiece so each part is processed in the same position.
- Line balancing — assigning tasks to stations so each station's work content stays close to takt time.
- Machine hour rate — the hourly cost of running a machine, combining depreciation, energy, upkeep and floor space.

Production Engineering and Process Planning Day by Day

Day 1: From Drawing to Manufacturing Route

- Drawing and Tolerance Interpretation — Which Features Drive Process Choice
- DFMA Review of Part Geometry — Design Changes Before Tooling Commitment
- Process Selection Matrices — Casting, Forming or Machining for Volume
- Datum Strategy and Operation Grouping — Number of Set-Ups Required
- Operation Sheet Structure — What the Shop Floor Must Receive

Day 2: Work Measurement and Standard Times

- Method Study and Flow Process Charts — Removing Non-Value Motions
- Stopwatch Time Study and Rating — Basis for Labour Standards
- PMTS Data for New Operations — Times Before the Line Exists
- Relaxation and Contingency Allowances — Realistic Versus Optimistic Standards
- Machining Cycle Time from Feeds and Speeds — Spindle Load Decisions

Day 3: Tooling, Fixtures and Set-Up

- 3-2-1 Locating and Clamping Design — Repeatable Part Position
- Cutting Tool and Insert Selection — Tool Life Against Cycle Time
- Gauge and Inspection Point Planning — Where Quality Is Verified
- SMED Set-Up Reduction — Batch Size and Changeover Frequency
- Modular Versus Dedicated Fixtures — Investment for Expected Volume

Day 4: Line Layout and Part Costing

- Product, Process and Cellular Layouts — Flow Pattern for the Part Family
- Takt Time and Station Balancing — Number of Operators Needed
- Bottleneck and Capacity Check — Second Shift or Extra Machine
- Machine Hour Rate Build-Up — Cost of Each Work Centre
- Part Cost Estimate Sheet — Quotation and Make-or-Buy Choice

Day 5: Practising the Production Engineering Process Plan

- Route Sequencing for a Sample Component — Applying Datum and Grouping Choices
- Standard Times for Each Operation — Applying Time Study Results
- Fixture and Tooling List — Applying Locating Principles
- Cell Layout and Balance Sheet — Applying Takt Calculations
- Production Engineering Process Plan Assembly — Release to Production

Applying Production Engineering and Process Planning After the Course

- Re-time one high-volume routing with time study and PMTS data and compare it with the current standard
- Run a SMED review on the longest changeover in the plant and update its operation sheet

Production Engineering and Process Planning Questions FAQ

What is Production Engineering and Process Planning and why does it matter now?

Production Engineering and Process Planning is the work of turning a design into a sequenced, timed and costed route. It matters now because variant-rich demand and cost pressure punish routings that are slow to set up or poorly balanced.

Which roles gain most from Production Engineering and Process Planning?

Manufacturing engineers, process planners, tooling engineers and cost estimators gain most.

How does Production Engineering and Process Planning differ from production planning and control?

Production Engineering and Process Planning decides how a part is made. Production planning and control decides when and how many are made, using the routings and standard times this course teaches you to build.

What do you bring back from Production Engineering and Process Planning?

You bring back a process plan for a real component. It holds the sequence, standard times, fixture list, layout and cost estimate.

Production Engineering and Process Planning: The Way Forward

The production engineering process plan first informs whether a part is released to an existing cell or needs new tooling. Production supervisors, quality engineers and buyers use it to prepare launch. After its first run, compare actual cycle times and scrap against the plan, then revisit the datum strategy and allowances that diverged most.