# Certified in Planning and Inventory Management

## Lean Environments, Scheduling, and PAC

# CPIM On-Demand Training for Self-Study Professionals

**Are you preparing for the CPIM certification through self-study?** As an experienced supply chain professional, you already have strong practical knowledge—but some topics may still need expert clarification. Fhyzics Business Consultants bridges that gap with on-demand, topic-oriented CPIM training sessions designed specifically for self-learners.

Whether you need guidance on a single concept or an entire module, our focused training helps you master complex areas quickly and confidently. Get personalized support, strengthen your exam readiness, and elevate your supply chain expertise—on your schedule.

Mobile: +91-900-304-9000 (WhatsApp)
Email: Certifications@Fhyzics.net

# Lean Environments, Scheduling, and PAC

## 1. Principles of Lean Manufacturing

Lean manufacturing focuses on eliminating waste, improving flow, and maximizing customer value. It emphasizes continuous improvement, employee involvement, and systematic problem-solving. Lean impacts PAC by reducing unnecessary transactions, minimizing WIP, and simplifying scheduling. Understanding lean principles helps planners design pull-based workflows, reduce variability, and achieve predictable output. Concepts like takt time, pull vs. push, visual management, and leveling (heijunka) are core to creating a stable scheduling environment. Lean principles ultimately reduce lead times, improve responsiveness, and increase capacity without additional resources.

## 2. Seven Forms of Waste (Muda)

Lean identifies seven wastes—overproduction, waiting, transport, overprocessing, inventory, motion, and defects. In scheduling and PAC, understanding these wastes helps planners spot inefficiencies embedded in workflows. Scheduling systems should avoid overproduction (biggest waste) by aligning output with actual customer demand. Reducing WIP, transportation steps, and motion increases flow efficiency while lowering PAC workload. Identifying waste provides the foundation for kaizen improvements, line balancing, and flow redesign. Reducing waste frees capacity and stabilizes schedules, improving delivery reliability.

### 3. Takt Time and Line Balancing

Takt time defines the pace of production required to meet customer demand. In lean scheduling, matching cycle times to takt time ensures synchronized workflow and prevents bottlenecks. Line balancing ensures tasks across workstations are evenly distributed, promoting smooth flow with minimal waiting. Accurate takt time calculation helps PAC establish realistic schedules and resource plans. Understanding variations between actual cycle times and takt highlights improvement opportunities. When lines are balanced to takt, throughput increases, and schedule adherence improves significantly.

### 4. Pull Systems and Kanban

A pull system authorizes production based on downstream demand rather than forecasts. Kanban signals control the replenishment of materials and WIP. For PAC, kanban drastically reduces administrative workload by replacing push-based dispatch lists with visual triggers. Kanban limits WIP, preventing overproduction and stabilizing flow. Understanding kanban sizing, card rules, and replenishment logic ensures optimal material availability without excess inventory. Pull systems improve responsiveness, reduce lead times, and support predictable schedules.

### 5. One-Piece Flow and Work Cells

One-piece flow means producing products one unit at a time with minimal waiting or batching. Implementing cellular manufacturing reduces transport, changeover times, and inventory buffers. For PAC, one-piece flow simplifies scheduling because materials move continuously without requiring batch-based planning or detailed job sequencing. Work cells improve visibility, accountability, and teamwork. By reducing variability in flow, PAC can maintain stable schedules and better predict cycle times.

**6. Standard Work**

Standard work establishes consistent, documented methods for performing tasks. In lean scheduling, standard work stabilizes cycle times, enabling accurate takt alignment and improving schedule reliability. PAC depends on predictable process times to generate realistic dispatch lists and capacity plans. Well-defined standard work also supports training, error reduction, and continuous improvement. Standard work is updated regularly as improvements are made.

**7. SMED and Changeover Reduction**

Single-Minute Exchange of Dies (SMED) is a lean technique to dramatically reduce setup/changeover times. Shorter changeovers improve scheduling flexibility, reduce batch sizes, and support flow. PAC benefits from increased machine availability and smoother transitions between jobs. Changeover reduction helps organizations implement pull systems, shorten lead times, and respond faster to demand changes. SMED also improves asset utilization and lowers inventory requirements.

**8. 5S and Workplace Organization**

5S—Sort, Set in Order, Shine, Standardize, Sustain—is critical for maintaining efficient, reliable operations. A well-organized workplace reduces motion waste, shortens cycle times, and decreases errors. For PAC, 5S supports visual control systems and stable workflows, making scheduling more predictable. A clean, standardized workspace helps operators follow standard work and maintain flow. 5S also promotes safety and builds a culture of discipline required for lean success.

**9. Visual Management**

Visual management uses signage, color codes, boards, and indicators to show process status, inventory levels, and abnormalities. It replaces complex paperwork with intuitive visual cues, simplifying PAC. Kanban boards, andon lights, and hourly production boards help teams manage flow in real time. Visual systems allow operators, planners, and supervisors to quickly identify problems and adjust schedules or priorities. This increases transparency and promotes faster decision-making.

**10. Heijunka (Production Leveling)**

Heijunka smooths production volumes and product mix to minimize variability in schedules. Leveling prevents peaks and valleys that stress resources and cause unreliable output. PAC relies on stable, repeatable loads to generate effective dispatching. Heijunka reduces the need for WIP buffers, shortens lead times, and improves quality. It is essential for environments with high product mix and fluctuating demand.

**11. JIT (Just-in-Time) Production**

JIT aims to produce only what is needed, when needed, and in the quantity needed. It minimizes inventory, reduces waste, and increases responsiveness. PAC in JIT environments emphasizes rapid problem resolution and real-time replenishment. JIT requires disciplined processes, reliable suppliers, and consistent flow. Understanding JIT helps planners shift from forecast-driven scheduling to demand-driven production.

**12. Theory of Constraints (TOC) and Drum-Buffer-Rope**

TOC focuses on identifying and exploiting constraints to maximize throughput. Drum-Buffer-Rope (DBR) is a scheduling system that protects the bottleneck with strategic buffers and synchronizes flow. PAC uses TOC tools to prioritize work, reduce WIP, and increase throughput. Managing the constraint ensures the entire system performs effectively and avoids excess inventory in non-bottleneck areas.

**13. PAC in Lean Environments**

Production Activity Control in lean systems focuses on managing workflow rather than executing detailed job instructions. PAC enables real-time monitoring, bottleneck management, visual controls, and rapid response to disruptions. It reduces administrative burdens associated with push systems. Understanding PAC's role in lean is crucial for responding quickly to problems and maintaining flow.

**14. Scheduling in Lean vs. Traditional Systems**

Lean scheduling minimizes batch sizes, emphasizes takt time, and uses visual methods instead of complex MRPs. Traditional scheduling relies heavily on detailed capacity planning and job sequencing. Knowing the differences helps planners apply the right tools. Lean scheduling is simpler, more adaptive, and better suited to high-mix environments. The focus is on controlling WIP and stabilizing processes.

**15. Load Leveling and Capacity Smoothing**

Load leveling (heijunka) spreads work evenly across resources. Capacity smoothing involves adjusting workloads to prevent overutilization or underutilization. Both improve schedule adherence and throughput. PAC uses leveling to reduce firefighting and maintain predictable flow. Stable schedules reduce operator stress and improve morale.

**16. Work-in-Process (WIP) Management**

Lean philosophy insists that reducing WIP reveals problems and forces process improvement. PAC must monitor WIP levels closely using kanban limits or visual controls. Lower WIP reduces lead times, improves quality, and enhances responsiveness. Understanding Little's Law helps in designing optimal WIP caps. Effective WIP management ensures steady throughput.

**17. Quality at the Source and Error-Proofing (Poka-Yoke)**

Lean emphasizes preventing defects rather than detecting them later. Quality at the source empowers operators to stop production when abnormalities occur. Poka-yoke devices prevent errors or alert users instantly. For PAC, fewer defects mean fewer disruptions, rework loops, and schedule changes. This stabilizes output and improves delivery performance.

**18. Continuous Improvement (Kaizen)**

Kaizen focuses on incremental, frequent improvements. It encourages operators and planners to identify root causes and remove waste. PAC becomes more effective as processes stabilized through ongoing improvement. Kaizen events often target bottlenecks, flow interruptions, and excessive inventory. Continuous improvement strengthens competitive advantage.

**19. Supplier Integration in Lean Systems**

Lean scheduling depends on reliable, frequent deliveries. Integrating suppliers through JIT deliveries, vendor-managed inventory, and long-term partnerships improves flow stability. PAC benefits from reduced stockouts, shorter lead times, and better schedule adherence. Supplier integration ensures material availability without excess buffers.

**20. Lean Metrics for Scheduling and PAC**

Lean relies on metrics such as throughput, takt adherence, WIP levels, cycle time, OEE, and lead time. Unlike traditional systems that emphasize utilization, lean metrics focus on flow. PAC uses these metrics to maintain stability and identify bottlenecks. Understanding these indicators is vital for effective decision-making and improvement.

*****

# Micro-Learning Programs in Supply Chain Management & Procurement

Enhance your professional edge with Fyzics Business Consultants' Micro-Learning Programs in Supply Chain Management and Procurement. Designed as focused, two-hour Executive Development Programs, these sessions deliver practical insights and tools to solve real-world business challenges. Conducted in small batches for personalized learning, participants gain a deeper understanding of key supply chain and procurement strategies that drive efficiency and profitability. Each participant receives a certificate of completion, adding value to their professional profile and career growth. Whether you aim to advance in your current role or explore new opportunities, this program equips you with the knowledge and confidence to excel.

# Micro-Learning Programs in Supply Chain Management

1. Fundamentals of Supply Chain Management
2. Supply Chain Planning and Optimization
3. Demand Forecasting Techniques
4. Inventory Control and Management
5. Distribution and Logistics Strategy
6. Warehouse Layout and Operations Efficiency
7. Supply Chain Risk Management
8. Supply Chain Performance Metrics (KPIs)
9. Lean Supply Chain Practices
10. Agile and Responsive Supply Chains
11. Sales and Operations Planning (S&OP)
12. Supply Chain Network Design
13. Supply Chain Digital Transformation
14. AI and Data Analytics in Supply Chain
15. Supply Chain Sustainability and Green Logistics
16. Reverse Logistics and Returns Management
17. Supply Chain Collaboration and Integration
18. Supplier Relationship Management in SCM
19. Global Supply Chain Strategy
20. Transportation Management Systems (TMS)
21. Inventory Optimization Models
22. Demand-Driven MRP (DDMRP) Concepts
23. Blockchain Applications in Supply Chain
24. Supply Chain Cost Reduction Techniques
25. SCOR Model and Process Improvement

# Micro-Learning Programs in Supply Chain Management ...

26. Capacity Planning and Resource Allocation
27. Managing Supply Chain Disruptions
28. End-to-End Supply Chain Visibility
29. Cold Chain Logistics Management
30. Supply Chain Compliance and Ethics
31. Import–Export Procedures and Documentation
32. Managing Third-Party Logistics (3PL) Providers
33. Supply Chain Collaboration Technologies
34. Production Planning and Scheduling
35. Strategic Supply Chain Design Using Case Studies
36. Circular Economy in Supply Chain
37. Vendor-Managed Inventory (VMI)
38. Transportation Optimization Techniques
39. E-Commerce Supply Chain Models
40. Omni-Channel Fulfillment Strategies
41. Warehouse Automation and Robotics
42. SCOR DS Roadmap for Supply Chain Excellence
43. Customer-Centric Supply Chain Strategies
44. Supply Chain Finance and Working Capital Management
45. Supply Chain Data Visualization Using Power BI
46. Strategic Sourcing in Supply Chain Context
47. Supply Chain Benchmarking and Best Practices
48. Integrated Business Planning (IBP)
49. Supply Chain in Crisis Management and Recovery
50. Future Trends and Technologies in Supply Chain

# Micro-Learning Programs in Procurement

1. Fundamentals of Procurement Management
2. Strategic Sourcing and Category Management
3. Supplier Selection and Evaluation
4. Contract Management Essentials
5. Cost and Price Analysis in Procurement
6. Negotiation Strategies for Procurement Professionals
7. E-Procurement and Digital Tools
8. Procurement Planning and Budgeting
9. Risk Management in Procurement
10. Supplier Relationship and Performance Management
11. Sustainable and Ethical Procurement
12. Total Cost of Ownership (TCO) Analysis
13. Make-or-Buy Decision Frameworks
14. Procurement Policies and Governance
15. Procurement in Public vs. Private Sectors
16. Procurement Audit and Compliance
17. Procurement Data Analytics and Reporting
18. Procurement Scorecards and KPIs
19. Strategic Supplier Partnerships
20. Category Strategy Development
21. Managing Global and Offshore Procurement
22. Negotiation Simulation Workshop
23. Contract Law for Procurement Managers
24. Cost Reduction Strategies in Procurement
25. Supplier Risk Assessment Models

# Micro-Learning Programs in Procurement …

26. Procurement Process Mapping and Improvement
27. Procurement Automation and AI Applications
28. Managing Procurement Teams Effectively
29. Procurement Ethics and Transparency
30. Procurement in the Digital Supply Chain
31. Vendor Consolidation Strategies
32. Spend Analysis and Optimization
33. Demand Forecasting for Procurement
34. E-Auction and Reverse Bidding Techniques
35. Inventory and Procurement Alignment
36. Procurement in Project-Based Organizations
37. Supplier Onboarding and Development
38. Procurement Market Intelligence
39. Measuring Supplier Innovation
40. Procurement in Times of Supply Disruption
41. Cross-Functional Collaboration in Procurement
42. Writing Effective RFPs, RFQs, and RFIs
43. Contract Negotiation Best Practices
44. Green Procurement and Circular Economy
45. Legal Aspects of Procurement Contracts
46. Performance-Based Contracting
47. Procurement Leadership and Strategic Influence
48. Cost Avoidance and Value Creation in Procurement
49. Managing Procurement with Power BI Dashboards
50. Future Skills and Trends in Procurement

**Fhyzics Business Consultants Pvt. Ltd.**
Professional Training Partner of ASCM, USA
www.Fhyzics.net

ASCM Referral Code
**XEFHYZ88**

Certifications@Fhyzics.net
**+91-900-304-9000**

CPIM aspirants may buy the CPIM Learning System and Examination Credits directly through ASCM Portal. When purchasing CPIM Examination Credit, please enter Referral Code **XEFHYZ88** to receive CPIM Recertification Guidance for life.