# LEAN CONSTRUCTION

The highly interactive Lean Construction Education Program (LCEP) provides 35 hours of instruction and training to provide construction industry professionals at all levels with the knowledge and skills to take advantage of the benefits of Lean Construction.

## Unit 1 | Variation in Production Systems

*Variation in Production Systems* is an introductory unit in the Lean Construction Education Program. This instructor-led unit teaches the concept of variation. Following this unit, you will be able to:

- Define the different types of variation
- Explain the concept of throughput
- Distinguish the concepts of throughput and work in progress
- Describe the role of variation in production operations
- List sources of variation in construction settings
- Explain variation mitigation techniques
- Contrast variation mitigation techniques

## Unit 2 | Pull in Production

*Pull in Production* is an instructor-led unit that explains the concept of pull as a means to reliable production workflow. Following this unit, you will be able to:

- Compare batch-and-queue and continuous-flow production systems
- Distinguish push systems from pull systems
- Describe the impact of pull on production systems
- Explain pull strategies in construction operations

## Unit 3 | Lean Workstructuring

*Lean Workstructuring* is the first of two units introducing the Last Planner® System (LPS). This system was developed by the Lean Construction Institute (LCI) to plan projects in a way that produces predictable workflow and rapid learning. This instructor-led unit describes the process of Lean Workstructuring. Following this unit, you will be able to:

- Apply the methods and tools utilized in pull planning
- Describe the concept of Lean Workstructuring
- Outline the desired outcomes of Lean Workstructuring
- Describe the characteristics and application of the Last Planner® System

**Unit 4 | The Last Planner® System**

*The Last Planner® System* is the second of two units introducing the Last Planner® System (LPS). This system was developed by the Lean Construction Institute (LCI) to plan projects in a way that produces predictable workflow and rapid learning. This half-day, facilitator-led course shows how to conduct make-ready and weekly work planning sessions. Following this unit, you will be able to:

- Apply the Last Planner System to a project
- Hold make-ready and weekly work planning sessions
- Calculate, track and analyze the percent plan completed for a project

**Unit 5 | Lean Supply Chain and Assembly**

*Lean Supply Chain and Assembly* is an instructor-led unit that explains the concept of lean supply chain and assembly. Following this unit, you will be able to:

- Differentiate between traditional procurement practices and lean supply chain applications
- Identify waste and value-adding activities within the supply chain and assembly
- Evaluate the impact of using lean supply chain on waste elimination, continuous flow, and site operations pull
- Identify strategies needed at the project and company levels to support the lean supply chain
- List examples of process improvements to the lean supply chain
- Expand lean beyond the individual project
- Create a value stream map to diagnose and improve the supply chain

**Unit 6 | Lean Design and Pre-Construction**

*Lean Design and Pre-construction* is an instructor-led course that explains the concepts of value-based management, lean in the design process, and relational contracting. Following this unit, you will be able to:

- Distinguish between the varying definitions for design
- Define value and commonly used methods to maximize it
- Discuss waste and commonly used methods to minimize it
- Differentiate between traditional project methods and lean design
- Explain the various lean tools used in the design and how to deploy them

**Unit 7 | Problem-solving Principles and Tools**

***Problem-solving Principles and Tools*** is an instructor-led unit that describes the Lean Problem-Solving Process and illustrates how to use tools to solve problems in a lean manner. Following this unit, you will be able to:

- Define the difference between traditional and lean problem solving
- Describe how to create a team environment to solve problems
- Explain how to create trust to avoid problems
- Describe Observation Walks
- Identify root causes of problems