



Lean Construction
EDUCATION PROGRAM

AGC of America
THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA
Quality People. Quality Projects.



INSTRUCTOR REQUIREMENTS AGC'S LEAN CONSTRUCTION EDUCATION PROGRAM

UNIT 1: VARIATION IN PRODUCTION SYSTEMS

Lean Construction Education Program Overview

To develop the tools needed to build lean, the AGC of America has developed the Lean Construction Education Program. Construction professionals at all experience levels will learn the building blocks necessary to transform their projects and companies into a lean operating system. This series of courses will progressively cover a range of topics essential to Lean Construction including:

- Variation and pull in production
- Lean Workstructuring
- The Last Planner® System
- Lean supply chains and assembly
- Lean design and pre-construction
- Problem-solving principles and tools

Overview of *Variation in Production Systems*

Unit 1: Variation in Production Systems is a half-day, instructor-led course that is designed to introduce the concept of variation. The course is divided into three sessions:

- Session 1 introduces you to variation and variability and the concepts of cycle time, throughput, and work in progress.
- Session 2 examines variation's effect on operations, helps to define and describe the impact of variation on workflow, and explains the relevance of variation to construction operations.
- Session 3 teaches you how to apply the concepts learned in Sessions 1 and 2 to mitigate variation in a construction setting. Planning and execution failures and lean strategy for mitigating variation will be introduced.

Course Learning Objectives

Following successful completion of this course, participants 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

Session Learning Objectives

Following successful completion of Session 1, participants will be able to:

- Define variation
- Define work in progress, throughput, and cycle time

- Identify the relationship between wait time and capacity
- Recognize common strategies for variation mitigation
- Differentiate between variation and variability

Following successful completion of Session 2, participants will be able to:

- Define workflow
- Describe the impact of variation on workflow
- Explain the benefits of variation reduction on construction operations

Following successful completion of Session 3, participants will be able to:

- Explain planning and execution failures
- Describe lean strategies for variation mitigation
- Identify examples of performance variation in practice settings

Minimum Instructor Qualifications

AGC of America has established the following minimum Lean Construction experience requirements for instructors. Please check the boxes indicated below to note that you have complied with each requirement.

Foundation of Lean Construction

- Have experience in implementing Lean Construction on several projects as a construction professional
- Have an understanding of Lean concepts and terminology, including roles and responsibilities of project team members
- Have experience implementing Lean within a construction firm

Please provide specific examples of how you meet the above requirements

Teaching and Facilitation Skills

In addition, excellent communication and listening skills with individuals from varied backgrounds are required, including the ability to paraphrase and summarize lessons and participant discussions.

Facilitators must:

- Be skilled with leading class activities and ensuring that learners actively engage with course content and activities
- Encourage everyone's participation in the discussions keeping the group focused and on track without dominating discussion and group processes
- Maintain a positive attitude and professional approach to the presentation of course material representing the industry

Proficiency with Course Materials

AGC of America offers several resources to instructors in order to help enhance training results.

- The Instructor's Guide and accompanying CD contain PowerPoint slides for use during the course, slide-by-slide guidance for the instructor, copies of the course worksheets, and an optional hard-copy evaluation. **Instructors must purchase/receive and review a copy of both the Instructor's Guide and the Participant's Manual for the course prior to being approved to facilitate.**
- Each participant must have a copy of the Unit 1: *Variation in Production Systems* Participant's Manual during the course and return the **original** Participant's Registration form with your signature to attest to this.
- Instructors should be well-versed in the contents of the course materials, knowledgeable of the course format and committed to helping the attendees achieve the learning objectives for the course. The question on the exam to obtain the Certificate of Management—Lean Construction (CM-LC) credential will be directly derived from the learning objectives so be sure you cover each one.
- The course materials provide a minimum of information for the instructor to deliver. AGC of America welcomes and encourages instructors to add personal experience, case studies, examples, exercises and visual aids to enhance course content without changing the intent.
- Instructors should be familiar with the subjects covered in all Lean Construction Education Program courses to avoid unnecessary repetition of the course material.
 - To familiarize myself with *Lean Construction 101* I have:
 - Purchased and reviewed *Lean Construction 101*
 - Studied the course learning objectives
 - I have previously attended a *Unit 1: Variation in Production Systems* course.
 - To familiarize myself with *Unit 2: Pull in Production* I have:
 - Purchased and reviewed the Participant's Manual
 - Purchased and reviewed the entire Instructor's Guide packet
 - Attended a *Unit 2* course
 - To familiarize myself with *Unit 3: Lean Workstructuring* I have:
 - Purchased and reviewed the Participant's Manual
 - Purchased and reviewed the entire Instructor's Guide packet
 - Attended a *Unit 3* course
- The AGC of America curriculum staff can hold individual conference calls with instructors to provide additional insight and direction, as needed, to ensure consistent and quality delivery of the course.
 - I would like to schedule a conference call.

Instructor Statement of Qualifications

Instructors should read the statements below check the following box to indicate that they meet the requirements for instructing the course, and then sign and submit the form. Please submit the signed form to the AGC of America staff contact for this course with a copy of your most recent biographical sketch and curriculum vitae for approval.

- I read the statements above regarding the minimum qualifications for instructing this course and proficiency with the course materials, knowledge of learning objectives, and I meet those requirements.
- I have watched the *Variation in Production Systems* Instructor Orientation video, found at www.agc.org/LCEP and have an understanding of the instructional intent of the material.

- I have purchased and reviewed the *Unit 1: Variation in Production Systems* Instructor's Guide (and the included Participant's Manual) and feel I can successfully present this course.
- Attached is a recent biographical sketch and curriculum vitae highlighting my Lean Construction experience.
- I have the following questions (please list): _____

Signed Name

Date

Printed Contact Information:

Name: _____

Title: _____

Company Name: _____

Full Address: _____

Phone Number: _____ Fax: _____

Email Address: _____

Lean Construction Education Program Host Chapter/Organization: _____

Lean Construction Organization Affiliations (if any): _____

AGC of America Staff Contact

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