

Certificate course



Lean Management 4.0 Production Expert

Implementing Lean Production Management
in the digital transformation process

Overview of the certificate course

▶ What we offer:

The certificate course offers extensive expertise to understand and apply, within the work process, through the use of Lean methods in the design of workflows using potential from innovative Industrie 4.0 environments in production. Lean Thinking can demonstrably improve competitiveness in conjunction with increasing employee skills. The LEI certificate course counteracts the shortage of skilled workers and the resulting turnover in Mexico. Moreover, it leads to a sustained increase in efficiency and lead-time in companies. In this course, the actors are empowered to tap potentials and implement them through targeted lean measures based on the five basic principles of lean strategy: customer value, value stream, flowing processes, pull and perfection.

▶ Target group:

Specialist and operational executives entrusted with the implementation of organizational change processes in the areas of production, administration, maintenance and development.





Course objective:

The Lean Enterprise Institute certificate course Lean Management 4.0 Production Expert deals with the program module „Integrate Lean Principles in the Process of Digital Transformation“ as part of the E-Mas continuing education offer for operative production management. By means of this course, participants will be enabled to implement design principles in an innovative and solution-oriented manner in accordance with the lean strategy through employee participation. High acceptance of the concepts is specifically promoted. The participants learn u. a. How to sustainably support your colleagues on the way to successful lean management in Industry 4.0. They learn how to design Lean principles in their work environment so that the principles of Lean-Pull-Pull-zeros can be achieved. The various didactic methods of mediation, augmented by the building blocks of blended learning, are at your disposal. It provides a hands-on overview of how the principles of lean management in the diversity of companies act as a successful planning system in the implementation of change as guard rails and enable directional organizational development. Through the certificate course, participants acquire application knowledge about the task-appropriate selection of methods and their application for Lean Production. They will be qualified to adapt the learned measures to their business environment and to implement them in teams after the successful completion of the course.



Key skills to be acquired:

After completion of the course the participant will be successfully able to:

- Initiate change processes in the company and supervise their implementation,
- Recognize wastefulness and actively avoid and eliminate it,
- Actively convey Lean Methods to the employees, put them into practice and develop them together,
- Know important organizational differences between the automobile industry in Germany and Mexico and consider this knowledge in their change processes,
- Moderate a continuous improvement process in the company,
- Identify critical success factors and key indicators and visualize their development in the context of a regular shopfloor management with regard to their impact on processes,
- Recognize potentials and challenges in cooperation and create synergies.



Certificate and Examination modalities:

The qualification in Lean Management 4.0 Production Expert is designed as a certificate course. Successful participation and approval of the examination is evidenced by a certificate with a detailed description of the course content. A repetition of the test in case of failure is possible.



Course concept:

Face-to-face courses are combined with digital media to enable trainers to hold conversations in a teaching environment in real and digital classrooms. Appropriate teaching concepts, such as interactive workshops, webinars and live streams of business games as well as a media library should enable participants direct problem-oriented to learn and independent self-study the topics. The exact combination of analogue and digital teaching and learning methods is designed and aligned according to the needs of the respective companies and the individual requirements of the actors.

Organization



The certificate course Lean Management 4.0 Produktion Expert is an exclusive offer for Mexican companies provided by the Lean Enterprise Institute (LEI) in cooperation with the Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM).

LEI has more than 30 years of experience and it is an institute operating internationally in association with partner organizations with around 50 employees. LEI was founded in 2010 from a group of companies at RWTH Aachen University. We offer lean qualification in the fields of innovation, production, administration and maintenance and support our partners in sustainable implementation. The bundle of experience that we have gained and acquired over the years in cooperation with renowned partners flows into the course we offer for targeted further training in the Mexican automotive sector.



Module overview “Lean Management 4.0 Production Expert”



Module 1 Lean Production

Lean production refers to the implementation of lean management principles in the respective production process. It is shown which structures exist or should be introduced to correspond to the basic idea of lean thinking. Lean implementation is not only limited to the productive areas, but also includes the interfaces to administrative order processing.

- **Topic 1: Fundamentals of Lean Enterprise**

For decades, Lean Management has proven to be an efficient and successful concept not only for manufacturing companies, but also for other industries. Starting with production companies, the lean production approach based on the Toyota principle has established itself. The successful application at Toyota, which is explained and clarified with regard to the underlying lean principles, is fundamental here. Their company-related implementation is questioned and the framework conditions of their application are described. Exercises and field reports complement this part.

Production refers to the realization of the Lean Management principles in production. Customer orientation and continuous improvement with economic and efficient processes can be achieved through transparency concerning availability, quality and individuality of the service. This holds true for almost all industries, but especially for the automotive industry. The design of efficient structures and processes using lean principles can be achieved in harmony with productivity and employee satisfaction. In this topic area, the fundamental interrelationships between the lean concept and the lean production principles are presented, starting with the development of technical operations management. Using examples, the effect of lean tools will be explained with appropriate measures and ways to introduce them will be presented. Furthermore, the determination of the Lean maturity level and the role of leadership in a Lean company will be discussed. By means of descriptive practical examples the procedure is clarified and possible undesirable developments are avoided.

- **Topic 2: Application of Lean Methods**

In line with the five basic principles of Lean, customer benefit, value stream, flow principle, pull control and perfection (Zero Defect), Lean consistently pursues the goal of creating value without waste.

The use of tried and tested lean methods and tools for implementing lean processes in the company requires a basic understanding among the employees concerned. Knowledge about the effect of Lean Tools and their application are components of success. Employees must understand and be able to comprehend the benefits of these tools. Essential methods and tools are explained in their interaction.

The build-up and development of lean competencies among employees are essential. Sustainable acceptance requires the setting of clear and transparent goals that are comprehensibly relevant and as measurable as possible. In practical method training courses, exemplary success experiences will be conveyed which help to ensure acceptance.

Important Lean Methods include:

- The 5S/6S method for order and cleanliness,
- Value stream analysis and value stream design (Value Stream Mapping),
- The standardization of work methods (Standardized Work),
- Working in customer contact,
- A change towards the Pull System (Kanban) and supermarket,
- The creation of a fluent material flow (Work in Process).

Method 6S (5S) is presented and explained as a system for order and cleanliness. The 6S and 5S levels are explained exemplarily and illustrated with examples. An understanding for the topic and the necessary exchange of information is developed in teams.

Module overview “Lean Management 4.0 Production Expert”

The method Value Stream Design, as one of the most important methods for Lean Production, is introduced by means of examples. The description concept and the established symbolism are to be applied.

This requires the provision of appropriate human and financial resources, which remain stable even in the event of organizational changes. Theoretical learning discussions are combined with practical exercises and realistic business games. The interactive dialogue between the learning groups is also important in order to exchange insights and jointly develop synergies and solutions.

- **Topic 3: Sustainability and competences for Lean Production**

Critical success factors such as framework conditions, problems and possible solutions are highlighted. The prerequisites for the introduction and for a stable sustainability are explained. Knowledge about Lean Tools and their application are building blocks of success. Employees must be able to recognize and understand their benefits. In this topic area, essential methods are taught in their interaction.

Critical success factors for stable sustainability are presented. The findings are based on comparative studies in which the companies explained concrete implementation experiences and their effects. Examples of good practice for implementation processes are discussed. Principles and experiences of shop floor management are presented.

In a certificate examination, the acquired competences are tested using competence-oriented multiple-choice questions and a certificate is issued upon successful completion.

Learning goals: The graduates will know the requirements for the sustainability of lean production and have the knowledge about its application. They will understand the needs and will be able to explain them. They will know critical success factors that influence the sustainability of the introduction of lean production.



Module 2 Excellent Lean Management

Lean Management 4.0 is the synergetic interaction of lean principles in the environment of Industry 4.0. Lean Management 4.0 extends the benefits of cyberphysical systems based on the lean thinking concept. Intelligent networking now enables communication and information provision based on real-time data provided in digital service platforms for specific tasks. The classic separation between production and service is increasingly mixed from the customer's point of view, and products are also becoming digital information carriers.

- **Topic 1: Leadership methods and standards**

The success of Lean Management can be measured rather in the medium term, which means that a basic conviction of success as a strategic position must be present among managers from the very beginning. In this topic area, we will point out which demands managers must meet in the Lean environment and how they must be prepared for this.

The design of leadership within the company is a critical success factor for the implementation and acceptance of lean management. An appropriate leadership span is just as important as the selection of the right executives. This applies not only to the management level, but to all levels up to the shop floor. It is not enough just to want lean; managers must see themselves as coaches for their employees and actively want and live the lean culture. Lean management sees employees as the greatest asset. They are also the focus of implementation in Lean Enterprise.

Critical success factors such as framework conditions, problems and possible solutions are clarified. Prerequisites for the introduction of lean in production and for accepted sustainability are presented. Knowledge about the effect of lean tools and their application are building blocks of success. Employees must be able to recognize and understand their benefits. In this topic area, the essential fundamentals are explained in their interaction. Furthermore, the determination of the Lean maturity level and the role of management in a Lean company will be discussed. By means of clear practical examples, the procedure is clarified and possible undesirable developments are avoided.

The methods for the analysis of the respective value creation process and the associated key figures are presented and interpreted.

- **Topic 2: Digital transformation process and roadmap**

The interaction of lean principles in the environment of an Industrie 4.0 will be discussed. Lean Management 4.0 extends the benefits of cyber physical systems based on the Lean Thinking concept. Intelligent networking now enables communication and the provision of information based on real-time data, which is made available in digital service platforms for specific tasks.

The classic separation between production and service is increasingly blurring for the customer and products are turning into digital information carriers. The use of these data sources requires close coordination between customers and suppliers in order to guarantee the greatest possible data and system security.

The increasing digitalization and networking within companies enables a remarkable increase in the efficiency of value creation. The process of digital transformation is driven by the agile development of IT infrastructures and accompanied by a change in engineering. Existing competences in the companies must be adapted, supplemented and developed by further training. Digital factories with a future need employees with new competence profiles. The production process with assigned administration and development is assisted by digital twins with up-to-date analysis data.

Man and machine interact and increasingly collaborate. Digital control systems offer user-friendly assistance systems for programming and machine control. They simulate production processes with foresight. Customers are involved in the order progress.

Integrated into holistic production systems, task-appropriate and personalized information systems can be configured in such a way that coordinated decentralized access to production data is possible on a short-cycle basis, including central order data.

Learning goals: Graduates of this learning unit will understand the concept of Lean Leadership, recognize the importance of the necessary change process and discern ways to a Lean Enterprise of their company. They will know the importance of digital transformation in companies and will be in a position to initiate projects to this end.





Certificate Course

Lean Management 4.0 Production Expert

Integral implementation of lean in the
digital transformation process

Organization

- Course duration: 5 Days classroom training
- Course location: The Course will take place at various ITESM campuses in almost all Mexican states.
We also offer the course in-house in your company.
- Course fee (plus tax): € 1.750 (€ 350 / Person / Day)
Course materials, refreshments, lunches and two exclusive evening events are included in the price.

The composition and duration of the modules, subject areas and learning units can be individually adapted for your company. If you are interested in an in-house course, we can arrange a customized quotation. An in-house course requires a minimum of 12 participants.

Registration

We recommend a simple and quick online registration (<https://e-mas.de/course-registration/?lang=en>). Alternatively and for more information; you can contact us on our website: <https://e-mas.de/contact/?lang=en>. A reservation by telephone is also possible. If we do not receive the written registration within four weeks after the reservation by telephone, we reserve the right to assign your provisionally reserved place to another interested party. Registrations will be taken into account in the order in which they are received. If a registration is cancelled later than four weeks before the start of the event, a processing fee of 50% of the participation fee will be charged. If the organizer receives a cancellation later than two weeks before the start of the event, the full participation fee must be paid. The FIR reserves the right to cancel the course due to a shortage of registrations. The course fee will be refunded. The program is subject to alteration.



Day 1: Module 1 Lean Production	Day 2: Module 1 Lean Production	Day 3: Module 2 Excellent Lean Management
<p>Fundamentals of Lean Enterprise</p> <p>09:00 – 09:30 Welcome</p> <p>09:30 – 11:00 Introduction to Lean Enterprise</p> <p><i>11:00 Coffee break</i></p> <p>11:15 – 12:45 Lean Production Basics</p> <p><i>12:45 Lunch</i></p> <p>13:45 – 15:15 The 6S method: introduction, simulation game and implementation</p> <p><i>15:15 Coffee break</i></p> <p>15:45 – 17:15 Value Stream Method – Design and Analysis</p> <p>19:00 – 22:00 Dinner</p>	<p>Application of Lean Methods</p> <p>09:00 – 11:00 Practical example: Value Stream Analysis and Design – current process</p> <p><i>11:00 Coffee break</i></p> <p>11:15 – 12:45 Practical example: Value Stream Analysis and Design – target process</p> <p><i>12:45 Lunch</i></p> <p>13:45 – 15:45 Production Management – selected methods</p> <p><i>15:45 Coffee break</i></p> <p>16:15 – 17:45 Optimization of setup processes – SMED</p>	<p>Leadership methods and standards</p> <p>09:00 – 11:00 Lean Leadership – Kaizen</p> <p><i>11:00 Coffee break</i></p> <p>11:15 – 12:45 Lean Audits and Maturity Level</p> <p><i>12:45 Lunch</i></p> <p>13:45 – 15:45 Shopfloor Management</p> <p><i>15:45 Coffee break</i></p> <p>16:15 – 17:45 Value stream oriented production planning</p>
Day 4: Module 2 Excellent Lean Management	Day 5: Module 1 and Examination Lean Production	
<p>Digital transformation process and roadmap</p> <p>09:00 – 11:00 Data analysis in production – potentials of real-time data</p> <p><i>11:00 Coffee break</i></p> <p>11:15 – 12:45 Examples of application from companies</p> <p><i>12:45 Lunch</i></p> <p>13:45 – 15:45 Learning project for the development of a lean roadmap</p> <p><i>15:45 Coffee break</i></p> <p>16:15 – 18:15 Conceptualization and presentation of Lean Innovation</p> <p>19:00 – 22:00 Exclusive evening event</p>	<p>Sustainability and competences for Lean Production</p> <p>09:00 – 11:00 Establishing sustainability of Lean Management 4.0</p> <p><i>11:00 Coffee break</i></p> <p>11:15 – 12:45 Written Exam</p> <p><i>12:45 Lunch</i></p> <p>13:45 – 15:15 Summary and farewell</p>	

*This Itinerary is an example. Customized changes and adjustments are available upon request.

Course instructor / Contact



Dr.-Ing. Gerd Conrads
Lean Enterprise Institut GmbH
Campus-Boulevard 57 · 52074 Aachen · Germany
Phone: +49 241 51031-404
Mobile: +49 151 180 459 35
E-Mail: gerd.conrads@lean-enterprise-institut.com
www.lean-enterprise-institut.com

Dr.-Ing. Gerd Conrads graduated from the University of Applied Sciences Cologne and RWTH Aachen University with a degree in automotive engineering. Subsequently, he worked as sub-project manager in power plant construction. He then returned to RWTH Aachen University, where he worked at the Institute of Industrial Engineering and also obtained his doctorate. He then worked as a sector consultant, association engineer, managing director and trainer in industrial engineering and lean management for recognized institutions before taking up his current position as senior trainer at the Lean Enterprise Institut (LEI) at RWTH Aachen Campus. Within the scope of his work at LEI, Dr. Conrads has helped to build up the qualification field 'Lean' in work organization in the digital transformation process and has worked in various projects, including in the automotive sector, on the sustainable implementation of a more efficient and effective work organization in companies.

If you have any questions or suggestions about the E-Mas training program or the LEI certificate course "Lean Management 4.0 Expert", we look forward to hearing from you!

PROMOTED BY



Bundesministerium
für Bildung
und Forschung

ADMINISTERED BY



Deutsches Zentrum
für Luft- und Raumfahrt e.V.
Projektträger im DLR

www.e-mas.de
www.e-mas.mx