Engineering Digital Transformation and Automation Training Course

16 - 20 Nov 2026

Boston

7500 € (Per Person)

Ref: #CAD1116_85415

Course Introduction / Overview:

This course provides a comprehensive roadmap for navigating the complexities of digital transformation and automation within the engineering sector. It is designed to equip professionals with the strategic foresight and technical knowledge required to lead their organizations into the era of Industry 4.0. The curriculum moves beyond theoretical concepts to offer a practical framework for assessing, planning, and implementing digital initiatives that drive efficiency, innovation, and competitive advantage. Drawing on principles outlined by thought leaders like Klaus Schwab in his work "The Fourth Industrial Revolution," the course explores the convergence of physical and digital worlds through technologies such as IoT, AI, and digital twins. Participants will learn to build robust strategies that integrate new technologies seamlessly into existing engineering workflows. BIG BEN Training Center has developed this program to empower engineers and managers to not only adapt to change but to become the architects of their company's digital future, ensuring sustainable growth and operational excellence in a rapidly evolving industrial landscape.

Target Audience / This training course is suitable for:

- Engineering Managers and Team Leaders.
- Project and Program Managers.
- Operations and Production Managers.
- Process and Automation Engineers.
- IT Professionals supporting engineering functions.
- Research and Development Specialists.
- Quality Assurance and Control Professionals.
- Senior Executives and Strategic Planners.

Target Sectors and Industries:

- Manufacturing and Industrial Production.
- Energy, Oil, and Gas sectors.
- Construction and Infrastructure Development.
- Aerospace and Defense.
- Automotive and Transportation.
- Pharmaceuticals and Biotechnology.
- Governmental bodies and Public Works agencies.
- Telecommunications and Utilities.

Target Organizations Departments:

- Engineering and Design Departments.
- Operations and Maintenance Departments.
- Information Technology (IT) and OT Security.
- Research and Development (R&D).
- Project Management Office (PMO).
- Quality Control and Assurance.
- Strategic Planning and Corporate Development.
- Supply Chain and Logistics.

Course Offerings:

By the end of this course, the participants will have able to:

- Develop a strategic roadmap for digital transformation tailored to engineering environments.
- Evaluate and select appropriate automation and digital technologies for specific applications.
- Integrate Internet of Things (IoT) devices and sensors for real-time data acquisition.
- Apply data analytics and machine learning principles for predictive maintenance and process optimization.
- Design and manage the implementation of digital twin technology for asset lifecycle management.
- Lead change management initiatives to foster a culture of digital innovation.
- Identify and mitigate cybersecurity risks associated with industrial control systems.
- Measure the return on investment (ROI) of digital transformation projects.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be highly interactive, immersive, and practical, ensuring that participants can directly apply their learning to real-world engineering challenges. Our approach blends expert-led presentations with collaborative group discussions, allowing for a rich exchange of ideas and experiences. A significant portion of the course is dedicated to hands-on workshops and simulation exercises where participants will work on developing a digital transformation roadmap. We utilize a case study approach, analyzing successful and unsuccessful digital initiatives from various engineering industries to extract critical lessons. Participants will engage in teamwork to solve complex problems, fostering skills in collaboration and strategic thinking. Continuous feedback is provided by the instructor throughout the sessions to guide learning and reinforce key concepts. This dynamic and engaging learning environment ensures a deep understanding of both the technological and strategic aspects of engineering digital transformation and automation, empowering attendees to drive meaningful change within their organizations.

Course Agenda (Course Units):

Unit One: Foundations of Engineering Digital Transformation

- Defining Digital Transformation in the Engineering Context.
- The Pillars of Industry 4.0 and Smart Manufacturing.
- Key Drivers and Business Imperatives for Change.
- Assessing Digital Maturity and Organizational Readiness.
- Understanding the Convergence of IT and Operational Technology (OT).
- Global Trends and Benchmarks in Engineering Automation.
- The Role of a Chief Digital Officer in Engineering Firms.

Unit Two: Core Technologies Driving Automation and Connectivity

- The Industrial Internet of Things (IIoT) and Sensor Technology.
- Artificial Intelligence (AI) and Machine Learning (ML) for Engineers.
- Digital Twins and Simulation for Prototyping and Operations.
- Cloud Computing and Edge Computing Architectures.
- Robotics and Robotic Process Automation (RPA) in Engineering Workflows.
- Additive Manufacturing (3D Printing) for Rapid Prototyping.
- Big Data Analytics for Predictive and Prescriptive Insights.

Unit Three: Developing a Strategic Digital Roadmap

- Conducting a Comprehensive Needs and Gap Analysis.
- Defining a Clear Vision and Strategic Objectives.
- Building a Phased Implementation Roadmap with Milestones.
- Stakeholder Management and Securing Executive Buy-in.
- Developing a Business Case and Calculating ROI.
- Resource Planning and Budget Allocation for Digital Projects.
- Selecting Technology Partners and Vendors.

Unit Four: Implementation and Agile Project Management

- Applying Agile and Scrum Methodologies to Engineering Projects.
- Data Integration Strategies for Legacy and Modern Systems.
- Managing Pilot Projects and Proof-of-Concept Initiatives.
- Ensuring Interoperability and Scalability of Solutions.
- Cybersecurity for Industrial Control Systems (ICS) and OT Environments.
- User Acceptance Testing (UAT) and System Commissioning.
- Monitoring Key Performance Indicators (KPIs) for Success.

Unit Five: Leading Change and Cultivating a Digital Culture

- Principles of Change Management in a Technical Environment.
- Developing Communication Plans for Digital Initiatives.
- Upskilling and Reskilling the Engineering Workforce for the Future.
- Fostering a Culture of Continuous Improvement and Innovation.
- Ethical Considerations in Automation and AI.
- Measuring the Long-Term Impact of Digital Transformation.
- Future Outlook: Quantum Computing, 6G, and Beyond.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

How can engineering firms balance the rapid adoption of automation technologies with the ethical considerations of workforce displacement and the need for human oversight?

What unique qualities does this course offer compared to other courses?

This training course distinguishes itself by offering a holistic and strategic perspective on digital transformation, specifically tailored for the engineering domain. Unlike programs that focus narrowly on specific technologies, this course integrates technology, strategy, and leadership into a cohesive framework. Its primary emphasis is on empowering participants to build a practical, actionable roadmap, moving them from conceptual understanding to confident implementation. The curriculum is built around real-world case studies and interactive workshops, ensuring that learning is applied and relevant. Furthermore, it uniquely addresses the critical human element of transformation, dedicating significant time to change management, workforce upskilling, and fostering an innovative culture. The course avoids a vendor-specific approach, instead teaching participants how to critically evaluate and select technologies that align with their organization's unique strategic goals. This strategic, people-centric, and implementation-focused methodology provides a more profound and lasting value than purely technical training.