



*Certification Paths and Process*

# Lean Six Sigma Green Belt Certification



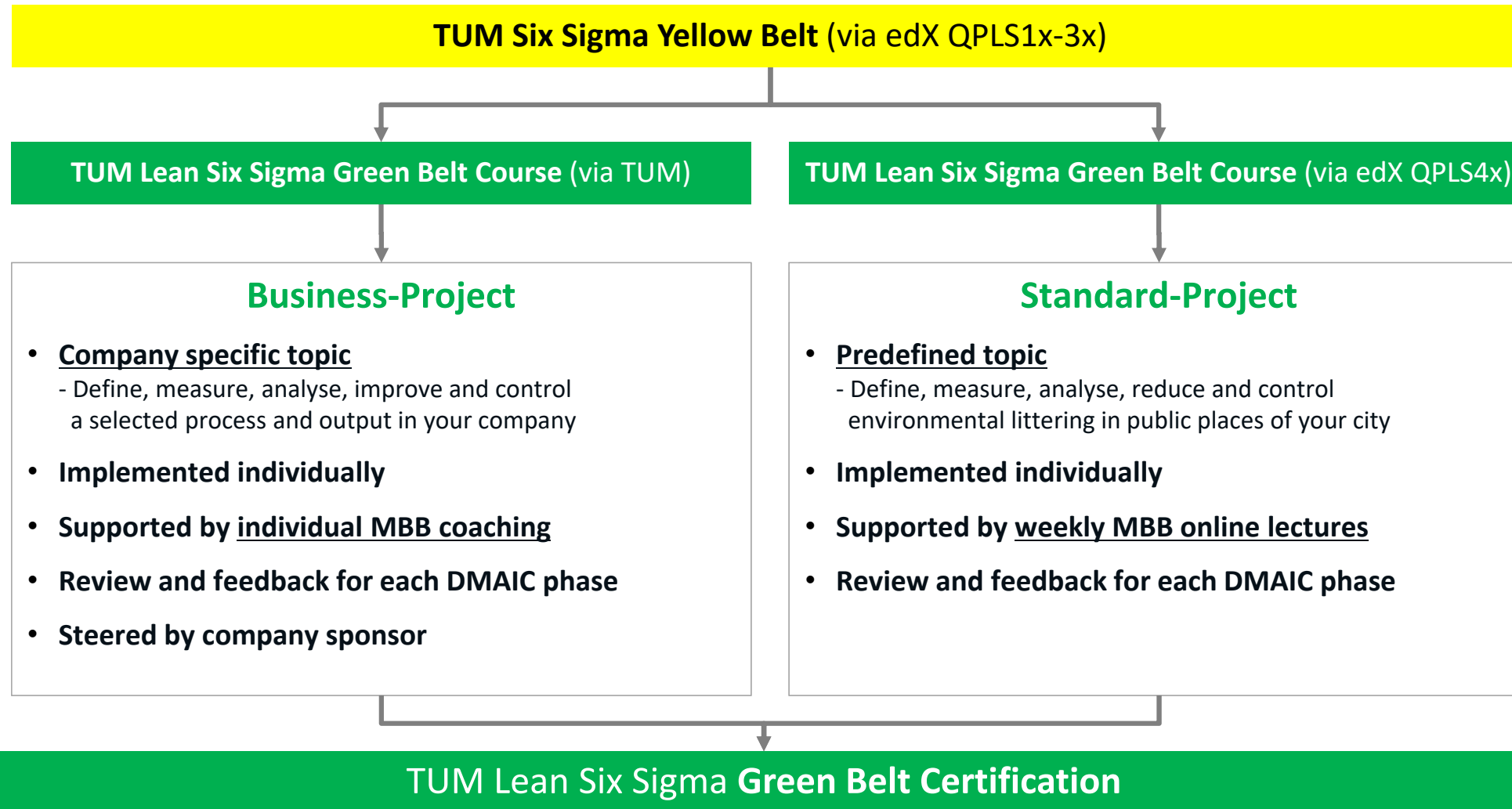
## Comparison of Six Sigma Green Belt Certificates and Certification

**Wikipedia:** “Criteria for Green Belt and Black Belt certification vary; some companies simply require participation in a course and a Six Sigma project. There is no standard certification body, and different certification services are offered by various quality associations and other providers against a fee.”

TUM Lean Six Sigma Green Belt Certification		Requirements		Certification Project <small>Recommended by: International Society of Six Sigma Professionals - ISSSP</small>	Online Support		Target Group	Benefit	Certificate
		Theory Exam	Prior Work Experience		Lectures	Coaching			
edX	TUM	TUM Lean Six Sigma Yellow Belt Teaching Objectives  <small>based on ASQ Green Belt Body of Knowledge</small>	no	<b>predefined Standard-Project</b> <small>based on: United Nations Sustainability Development Goals - UNSDG</small>	yes	no	Students & Employees	Participant & Community	Lean Six Sigma Green Belt Certification
offered via edX				<b>company specific Business-Project</b> <small>based on: Specific Company Improvement Potential</small>	yes	individual	Employees	Participant & Company	
TUM	edX			offered via TUM		<b>selected Award-Project</b> <small>based on: United Nations Sustainability Development Goals - UNSDG</small>	yes	group	
TUM	edX	offered via TUM							
American Society for Quality ASQ		ASQ Green Belt Body of Knowledge	3 years, full time, under supervision of a BB	no	no	no	Employees	Participant	Certified Six Sigma Green Belt

**International Society of Six Sigma Professionals (ISSSP):** “Students with Green Belt or Black Belt training, who have not yet completed a live project, should receive a Six Sigma certificate. Once he/she completes a live project, the individual would be considered certified.”

***Our TUM Green Belt certification requires our TUM Six Sigma Yellow Belt Certificate ...***

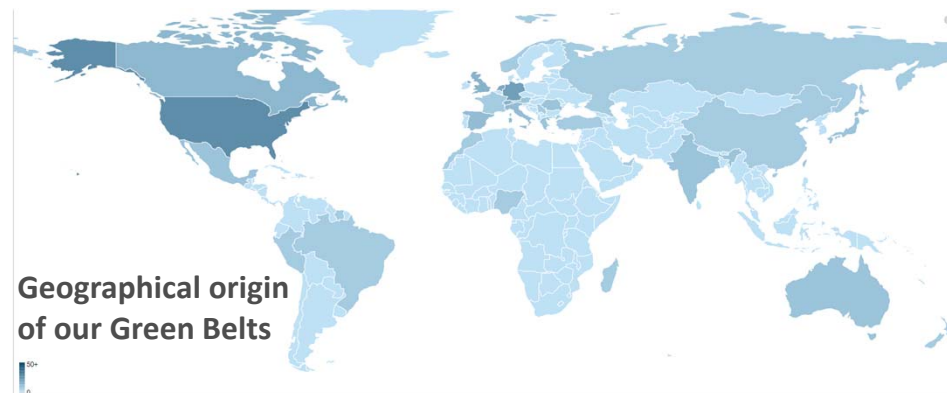


***... and the implementation of a company-specific Business-Project or our predefined Standard-Project***

***Our worldwide Business-Projects show a variety of company specific problems ...***

<b>Agriculture:</b>	Optimise sowing and harvesting cycles in a tulip farm Reduce broken olives for Queen Variety Rubber losses during harvesting
<b>Chemistry/ Pharmacy:</b>	Optimize pump maintenance intervals Reduce effort/ errors in recipe-specific drug production Reduce the variation of the colours of car coatings
<b>Construction:</b>	Accelerate service contracts to establish department stores Quality defects and delays in delivery of precast concrete parts
<b>Data Processing :</b>	Abandonment rate in online payment process Errors in translation and legal information of multilingual webpages Improve on-boarding of applications for specific business needs Increase permission rate/ channels for customer contact Optimize bonus distribution for customer types Reduce accounting errors in the commissions of sales employees Reduce contact frequency of frequent callers in hotline Reduce fraud rate on game & video downloads/ on prepaid contracts Reduce waiting times in hotline queue
<b>Finance:</b>	Cycle times and compliance with rules for credit decisions

<b>Manufacturing:</b>	Bristle losses in street cleaning machines Contact faults in wiring harnesses for cars Decreasing performance of condensate removal pumps Delayed drawing creation for chimney pipes Errors and high expenditure of time with storage of supplied parts High reject rate of gravity die cast pistons Improve maintenance orders for helicopters Incident management errors and delays for automotive parts Increase reusability of masks in semiconductor manufacturing Increase start-up speed in paper production Length deviations for aluminium rods Material losses during vulcanization of tyres Pinholes in blister packages Reduce pinholes in powder coating of steel profiles Reduce scrap rate for injection moulded parts Reducing waste of cutting insulating blankets for aircrafts Scratches and mounting errors on bicycles Sterilization of medical products
<b>Mining/ Oil/ Gas:</b>	Improve filling of LPG cylinders Problems resulting from drawing standards of deep sea supply units Reduce errors in welding seams Scope of component maintenance of oil platforms
<b>Retail:</b>	Secure increasing order volume with constant resources of car sales
<b>Technical Service:</b>	Increase OLED lifetime Resource optimization in prototype development



**Our participants originate from more than 35 countries**

***... and illustrate the application range of Six Sigma***

***Our Standard-Project follows the United Nations Sustainable Development Goal 11:***



**11 SUSTAINABLE CITIES AND COMMUNITIES**  
**MAKE CITIES AND HUMAN SETTLEMENTS INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE**

**Human settlements**

... Urban planning, transport systems, water, sanitation, **waste management**, ... are all relevant issues to sustainable urban development.

Local and regional governments have a wealth of valuable experience in the "localization" of the 2030 Agenda, where they provide leadership in the mobilization of a wide range of stakeholders, the facilitation of "bottom-up" and inclusive processes, and the formation of multi-stakeholder partnerships.

United Nations: <https://sdgs.un.org/goals/goal11>

**< Make cities and human settlements inclusive, safe, resilient and sustainable >**

## Our way to your Lean Six Sigma Green-Belt Certification ...

Certification Process		Introduction	DEFINE (part 1 & 2)	DEFINE (part 3)	MEASURE	ANALYSE	IMPROVE	CONTROL
Course Content	all Projects ▶	Videos, Course Book, Handouts	Videos, Course Book, Handouts, sigmaGuide, Project-Story-Book	Videos, Course Book, Handouts, sigmaGuide, Project-Story-Book	Videos, Course Book, Handouts, sigmaGuide, Project-Story-Book	Videos, Course Book, Handouts, sigmaGuide, Project-Story-Book	Videos, Course Book, Handouts, sigmaGuide, Project-Story-Book	Videos, Course Book, Handouts, sigmaGuide, Project-Story-Book
		1 Certification Process 2 Course Introduction 3 Six Sigma Introduction: Overview 4 Six Sigma Introduction: Improvement Program 5 Six Sigma Example: Cookie du Chef 6 Six Sigma Introduction: DMAIC 7 Six Sigma Introduction: Process-Problem-Solving-Model 8 Six Sigma Introduction: Problem-Solving-Principles 9 Six Sigma Introduction: Statistical-Basis 10 Six Sigma Introduction: Linking Reality, Model, and Statistics	11 sigmaGuide 12 DEFINE Overview 13 DEFINE Project-Topic 14 DEFINE Project-Definition 15 Project-Story-Book	16 DEFINE SIPOC 17 DEFINE Voice-to-Critical 18 DEFINE Project-Charter 19 DEFINE Stakeholder-Communication	20 MEASURE Overview 21 MEASURE Input-Analysis 22 MEASURE Process-Mapping-Analysis 23 MEASURE C&E-Matrix 24 MEASURE Data-Collection-Plan 25 MEASURE Hypotheses	26 ANALYSE Overview 27 ANALYSE Data-Evaluation 28 ANALYSE Process-Performance 29 ANALYSE Hypotheses-Tests 30 ANALYSE Root-Cause-Analysis - Preparation 31 ANALYSE Root-Cause-Analysis - Implementation	32 IMPROVE Overview 33 IMPROVE Development and Selection of Solutions 34 IMPROVE Measures, Risks (FMEA) and Implementation	35 CONTROL Overview 36 CONTROL Data Evaluation 37 CONTROL Process-Performance 38 CONTROL Improvement-Verification and Benefits 39 CONTROL Process-Management-Plan 40 CONTROL Project-Completion 41 Six Sigma Project-Guideline <b>Addendum</b> 42 Lean and Six-Sigma - Roots and Development 43 Lean vs Six-Sigma - Comparison of Characteristics
Tasks & Requirements	all Projects ▶	- TUM Lean Six Sigma Yellow Belt Certificate	- Project tasks - sigmaGuide: Application of related tools - Results edited in Project-Story-Book (D----)	- Project tasks - sigmaGuide: Application of related tools - Interviews with: process owner (VoB) and customer (VoC) - Results edited in Project-Story-Book (D----)	- Project tasks - sigmaGuide: Application of related tools - Workshop I: Process-Mapping & -Analysis - Statistics: Worksheet with collected data - Results edited in Project-Story-Book (DM---)	- Project tasks - sigmaGuide: Application of related tools - Workshop II: Root-Cause-Analysis & Solutions - Statistics: Data Inspections and Analyses - Results edited in Project-Story-Book (DMA--)	- Project tasks - sigmaGuide: Application of related tools - Implementation of measures - Results edited in Project-Story-Book (DMAI-)	- Project tasks - sigmaGuide: Application of related tools - Statistics: - Process-Capability & Control-Charts; - Verification of benefits - Results edited in Project-Story-Book (DMAIC)
Group Online Lectures	Standard-Project ▶ optional for Business-Project ▶	<b>Weekly repeated series with 10 online lectures for the Standard-Project to:</b> - Introduction of methods, tools, and tasks along the DMAIC phases - Participants present chapters of their Project-Story-Book - Discussion about transfer to own working environment <b>Participation in all 10 lectures of the series is mandatory for Standard-Projects (If you are unable to attend certain lectures in a series, then attend these lectures in one of the following series)</b>						
Individual Online Coaching	Business-Project ▶	<b>On demand 5 - 16 individual online sessions for Business-Projects to:</b> - Discussing the results of the Project-Story-Book - Planning of the next steps and - Clarifying urgent questions <b>At least 1 individual online coaching for each DMAIC phase, up to 16 overall</b>						
MBB Reviews	all Projects ▶	- Review: Each DMAIC phase of Project-Story-Book - Feedback on the success and necessary corrections						- Master Black Belt decides on certification
Management Steering	Business-Project ▶	- Confirmation letter of a company manager - Non-Disclosure-Agreement - Present Project-Story-Book to your Sponsor - Sponsor decides on the focus of the project, necessary adjustments and on the implementation of solutions						- Sponsor decides on the project completion
<b>Timeline (Example)</b>								
Start of Phase		01 - Jan - 20xx	16 - Jan - 20xx	24 - Jan - 20xx	15 - Feb - 20xx	23 - Mar - 20xx	21 - Apr - 20xx	27 - May - 20xx
Duration (days)		14	7	21	35	28	35	28
End of Phase		15 - Jan - 20xx	23 - Jan - 20xx	14 - Feb - 20xx	22 - Mar - 20xx	20 - Apr - 20xx	26 - May - 20xx	24 - Jun - 20xx

**... via a predefined Standard-Project or an individual Business-Project**