

# Everyone - Everywhere

## Lean Six Sigma

## Yellow and Green Belt Certification



### Our Mission:

We facilitate our participants' knowledge, skills, and personal development. Our aim is to develop **highly effective, innovative and responsible decision-makers** who foster the **transformation of organizations and society**.

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## Lean Six Sigma with us?

**TUM Lean Six Sigma** courses develop your competence to improve business processes in production and services. Theory and practice are aligned with ASQ<sup>1)</sup> standards and ISSSP<sup>2)</sup> recommendations. With four international awards, they are among the most successful courses for massive and blended learning.



The three courses of our **Yellow Belt Program** include 30 hrs. video lectures, 500 interactive exercises, homework problems, and individual performance assessments. Our **Yellow Belt certificate** meets and exceed the ASQ<sup>1)</sup> requirements for **Green Belts** and offer the fundamentals for our **Green Belt Certification**.

Our **Green Belt Certification course** requires the identification, implementation and evaluation of an individual **certification project** - as recommended by the ISSSP<sup>2)</sup>. We offer three alternative certification paths - with individual business-projects **for employees** and our predefined sustainability-project **for students**.

Each **project** will be **digitally guided** by our learning material, and must be **documented** in a story-book. Projects will also be **personally guided** in weekly online lectures, individual project reviews, and coaching.

**Since 2015** our courses have overall attracted **350k learners - 25% female - in 180 countries**. Two of our four MOOCs belong to the most successful business courses - with worldwide positive evaluations. Our learners especially like that **we take care of individual needs**. And the complete Lean Six Sigma Certification program received four awards in 2020 and 2021 from IELA and QS Reimagine Education.



1) American Society for Quality  
2) International Society of Six Sigma Professionals

## TUM Lean Six Sigma Yellow Belt Certificate

### Yellow Belt Program : 3 MOOCs

#### 1 Six Sigma

- Define &
- Measure



#### 2 Six Sigma

- Analyze,
- Improve &
- Control



#### 3 Lean Production

- Theory
- + Practice



### TUM Lean Six Sigma Yellow Belt

The **Yellow Belt Program** includes **three courses**:

1. **Six Sigma: Define & Measure**
2. **Six Sigma: Analyze, Improve & Control**
3. **Lean Production**

The course encompasses 30 hours of video lectures, 500 interactive exercises and homework problems with cultur-free, transferable mini-projects and case studies.

**Teaching objectives** address the competence levels: *remember*, *understand*, and *apply*. They are aligned with the ASQ<sup>1)</sup> requirements for their **Green Belt certificate**. It is offered on the E-Learning platform [edX](https://www.edx.org/).

The **TUM Lean Six Sigma Yellow Belt certificate** is the **prerequisite** for our **Green Belt certification**.

### Advantages of the TUM Yellow Belt

- As the material is online, Yellow Belt candidates can complete the modules **at their own pace**.
- This also gives them **the opportunity to cover the breadth and depth required to master the theory up to a Green Belt level**, and the many practice and homework problems allow them to thoroughly apply and internalize the theory.
- For companies, this saves time and training costs and
- **ensures** that all Green Belt candidates have a **strong understanding of the Six Sigma methodology** and the related **qualitative and statistical tools**, as well as a solid **understanding of operations management** and the **tools used in Lean Production**.
- We take care of your individual subject-related questions and answer them in the course discussion boards. Our course management team will find the right answers to all further questions (p. 12).



## TUM Lean Six Sigma Green Belt Certification

**Yellow Belt Program : 3 MOOCs**

**1 Six Sigma**  
- Define &  
- Measure



**2 Six Sigma**  
- Analyze,  
- Improve &  
- Control



**3 Lean Production**  
Theory  
+ Practice



**4 Lean Six Sigma Green Belt Certification Project**



**TUM Lean Six Sigma Green Belt**

Project Paths	suited for	offered by	
<b>Business-Project medium</b>	Employees		
<b>Business-Project small</b>	Employees		
<b>Sustainability-Project</b> <small>SUSTAINABLE DEVELOPMENT GOALS</small>	Students Job-Seekers		

**Green Belt Program : 4 MOOCs + 3 optional Project Paths + Digital Guidance + Personal Guidance**

For our Lean Six Sigma Green Belt Certification you can choose between three paths:

- For **employees** we offer our **Certification** by individual **Business-Projects**. Both options - **medium** and **small** - offer the implementation of a specific medium or small improvement project.
- For **students and job-seekers** we offer a predefined **Sustainability-Project** on *Environmental Littering*. This topic follows the United Nations Sustainability Goals #11 and #12. It must be adapted to the local conditions and can be implemented by everyone and everywhere.

**Teaching objectives** address the competence levels: *apply*, *analyze*, and *evaluate*. With this implementation of an individual project we follow the **recommendation of the ISSSP<sup>1)</sup> for Green Belt certification**.

## Projects for Employees, Students, and Job-Seekers

	Business-Project medium	Business-Project small	Sustainability-Project UN SUSTAINABLE DEVELOPMENT GOALS
Prerequisite	Lean Six Sigma Yellow Belt Certificate		
Suited for	Employees	Employees	Students & Job-Seekers
Requires Support from Sponsor (Management) of company/ organisation	✓	recommended	recommended
Black Belt/ Master Black Belt of company/ organisation	./.	recommended	./.
<b>Project</b>			
Topic	individually defined	individually defined	Explore and reduce environmental littering in selected spots of your hometown
Size/ Complexity	medium	small	small
Impact/ Financial Benefit	important	less important	not important
<b>Course content and project guidance</b>			
ASQ & ISSSP conform content + TUM developments	✓	✓	✓
Course material videos, ebook, software	✓	✓	✓
Digital guidance via tool-sequence, project-story-book	✓	✓	✓
Lectures, Presentations, Q&A weekly via zoom	✓	✓	✓
Individual project reviews via project-story-book for each phase	✓	✓	✓
Confidentiality assured by non-disclosure agreement	✓	✓	✓
Individual project coaching on demand via zoom	up to 8 hrs.	up to 3 hrs.	./.
<b>Benefits</b>			
Choose this project	- for critical outputs in production and service - with significant process improvements and - financial benefits that exceed the course fee	- less critical outputs in production and service - primarily orientend on acquiring the competence - financial benefits are of secondary importance	- for students and job-seekers - primarily orientend on acquiring the competence - benefits are oriented to the environment
<b>Offer</b>			
Degree	Lean Six Sigma Green Belt Certification		
Fee	2.500 €	1.800 €    1900 € (can vary)	566 € (can vary)
Register at	<a href="#">TUM</a>	<a href="#">TUM</a> <a href="#">edX</a>	<a href="#">edX</a>

**Business-Project-Medium: Employees** who want to significantly improve a process of their company with a financial benefit implement this individually defined certification project. This project must be steered by a company sponsor. We support this project with phase reviews, weekly online lectures and up to 8 hrs. of individual coaching.

**Business-Project-Small: Employees** of companies who primarily want to acquire methodological competence implement this individually defined certification project, whose improvement effect and financial benefit are secondary. We support this project with phase reviews, weekly online lectures and up to 3 hrs. of individual coaching.

**Sustainability-Project: Students and job-seekers** implement our predefined certification project on Environmental Littering, according to the UNSDG<sup>1)</sup> #11/#12. The acquisition of methodological competence is a priority. Its benefit is a step towards the UNSDG<sup>1)</sup>. We support the project with phase reviews and weekly online lectures.

The degree of improvement and the type of benefit is in none of these projects a certification criterion.



## Digital Guidance

The combination of our **digital course** material - videos, documents, software, templates, control questions, project tasks, with **personal guidance** - weekly lectures, project reviews and individual coaching offers a **blended learning** experience to support the **transfer from the scenario to your own project**.

**The course material includes:**

**Videos:** Animated content of the project scenario (43 lessons, 6hrs.)

**eBook:** Six Sigma Green Belt Certification Project - mirroring the videos (259 pp.)

**sigmaGuide:** Software guide for Six Sigma projects (32 tools and charts along the DMAIC)

**Project-Story-Book:** PowerPoint template for project documentation (60 slides)

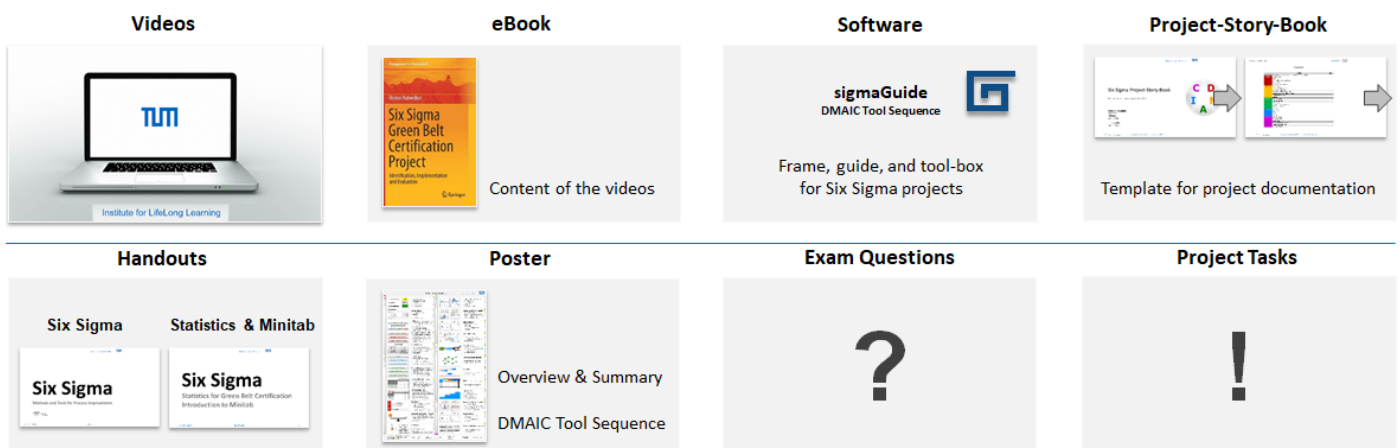
**Handout Six Sigma:** All figures and tables of the videos/ eBook (90 slides)

**Handout Statistics:** Statistics with Minitab (140 slides)

**Project Poster:** Overview guide with the DMAIC phases and related tools

**Control Questions:** Examination of the Six Sigma related course objectives

**Project Tasks:** Concretize the transfer from the scenario to the own project.



There are different views in literature, organizations, and practice on the purpose of the DMAIC phases, the tasks, on the selection and on the sequence of tools. From the perspective of empirical research, we adjusted the scope, purpose, and tasks of the phases and ordered the related tools in the necessary sequence. The inputs and outputs of the tools were formalized and parameterized. The result is a sequence of 30 tools developed in **sigmaGuide**. This software provides a chronological, seamless sequence of tools, from the identification of a project topic to the control of the project success, each with defined inputs, activities, and outputs, as an intermediate result in the project and as data for the following tool. **sigmaGuide allows to run a project as a standardized process.**



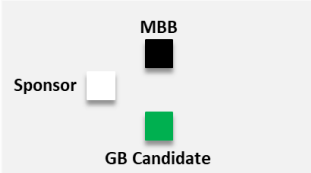
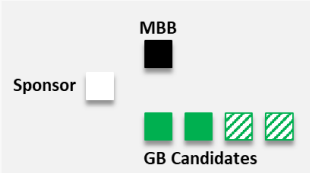
The results, interpretations and implications of each applied tool must be documented in an individual **Project-Story-Book**. This performance record serves our concurrent DMAIC phase reviews and is the basis of our final certification.



## Personal Guidance

In 1924 Walter Andrew Shewhart recognized that quality assurance is dysfunctional and expensive if defects are only detected at the end of a process in the finished output. He developed control charts, which monitored the product during its production, enabling him to intervene immediately in case of deviations. With our digital and personal guidance, the identification, implementation, and evaluation of a Six Sigma project becomes a standardized process with your Project-Story-Book as output. And we also do not evaluate your completed project first but **review your results** in each DMAIC phase and provide feedback. Our Business-Projects must additionally be reviewed by a company sponsor to steer the project from the management point of view. Sponsors can adapt the scope of the project and demand adjustments. The sponsor also decides on the implementation of measures and must approve the achieved benefit of the project.

**Personal learner guidance includes:**

Reviews	Online Lectures	Individual Coaching	Team-Coaching
 <p>Project-Story-Book</p> <ul style="list-style-type: none"> <li>• Review</li> <li>• Assessment</li> <li>• Feedback</li> </ul> <p>for each DMAIC phase</p>		 <p>Sponsor</p> <p>MBB</p> <p>GB Candidate</p>	 <p>Sponsor</p> <p>MBB</p> <p>GB Candidates</p>
<b>Project-Reviews:</b>	Review, assessment, and feedback for each DMAIC phase		
<b>Online-Lectures:</b>	<b>Series of 16 lectures</b> with theory and practice, presentations, Q&A's in weekly open <a href="https://tum-conf.zoom.us/j/96975983511">zoom lectures</a> <sup>1)</sup> on Tuesdays, at 8:00UTC and 15:00 UTC		
<b>Individual Coaching:</b>	Business-Project-Medium: up to <b>8 hrs.</b> Business-Project-Small up to <b>3 hrs.</b>		
<b>or</b>			
<b>Team-Coaching:</b>	For 2-4 learners, working on different aspects of the same project		

In our **weekly lectures**, details about the method tools are deepened, questions about the transfer to other projects are answered, best practice Sustainability-Projects are presented, and complementary topics are introduced, e.g. process mining and Kata.

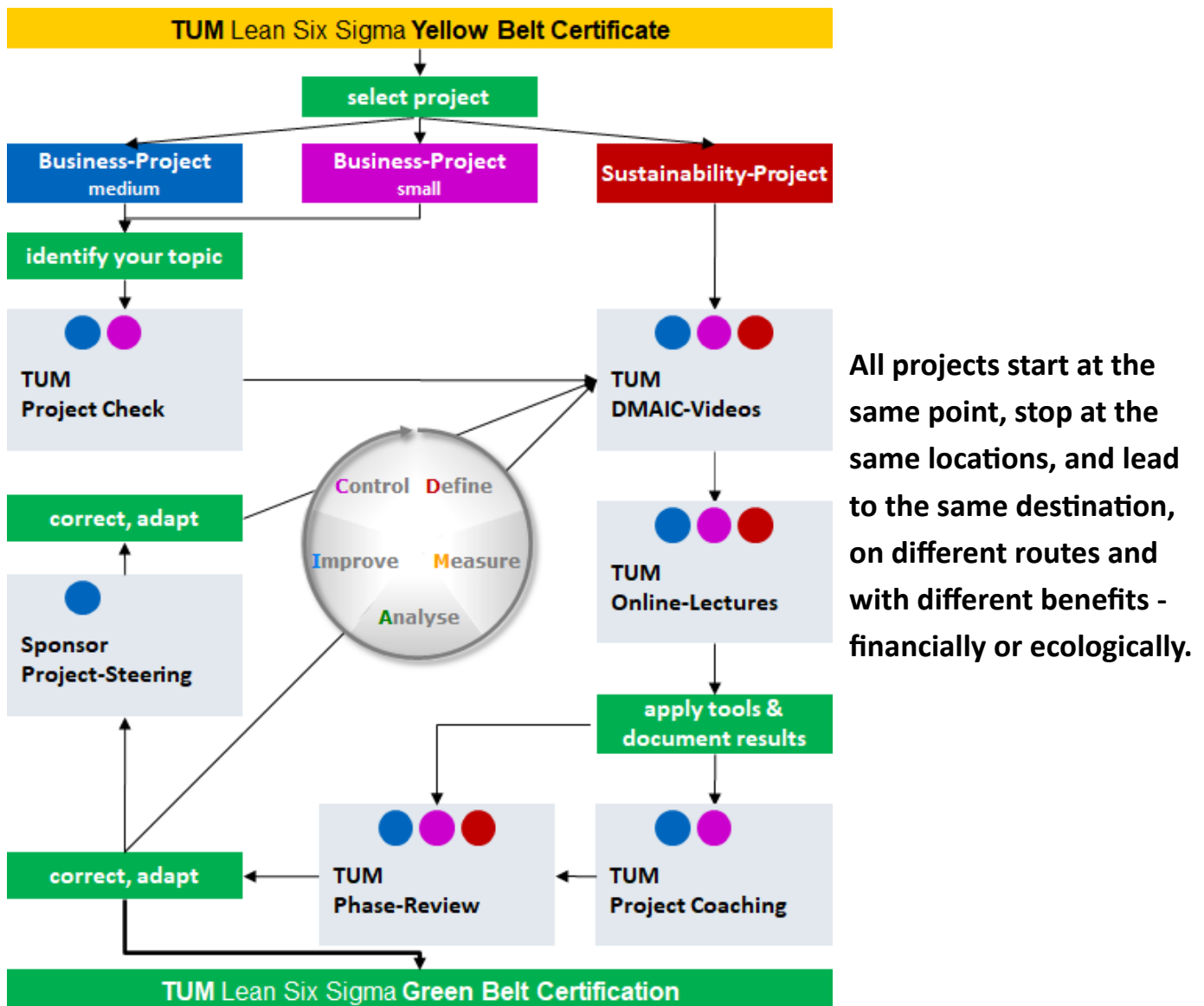
The three projects differ in the extent of **individual project coaching**. The Business-Project-Medium includes up to 8 hrs. of individual coaching and the Business-Project-Small includes up to 3 hrs. It is possible for several participants from one company to share the same project if they work on different aspects of the project. For this case, we offer team coaching for 2-4 participants to provide individual support and to coordinate the overall project. Coaching takes place at defined points in DEFINE, MEASURE and ANALYSE to prepare you for next steps, and as needed for individual errors in the Project Story Book.

No coaching is provided for our predefined Sustainability-Project.

## Three Projects, three Paths, one Certification

After earning our TUM Yellow Belt certificate, you can enroll in one of our three projects for TUM Lean Six Sigma Green Belt Certification: Individual **Business-Project small, medium** and our predefined **Sustainability-Project**. The paths to certification differ between these projects but will lead to the same Certification.

All projects are based on the same course material but differ in the extent of our personal guidance. For the **Sustainability-Project**, please first watch the videos and visit our online lectures. Then you can apply the tools of the sigmaGuide and document the results in your Project-Story-Book. We will review your documentation and send it back to you with feedback.



For the **Business-Projects**, we will first check the suitability of your project for Six Sigma in a free coaching session. In further individual coaching sessions we will methodically manage each phase together, i.e. correct errors and plan next steps. For the **Business Project medium**, you must also have the results of each phase reviewed and steered by your sponsor before you can move on to the next DMAIC phase. All other steps are identical to the Sustainability-Project path. Once you have successfully completed all phases, you will receive our **TUM Lean Six Sigma Green Belt Certification**, no matter which kind of project you completed. The degree of improvement and the type of benefit is in none of these projects a certification criterion.

A typical Green Belt project can be implemented within half a year but you overall have two years to complete your project.

## Lean and Six Sigma - Two Sides of a Coin

Lean and Six Sigma are management systems to reduce costs and increase customer satisfaction by improving the creation of products and services.

### What is Lean?

**Lean** is a concept and the ratio of value and waste in processes - applicable in the workplace and the entire organization

Lean combines scientific principles and common sense in rules and procedures to **continuously eliminate all waste and losses**, related to consumption of inputs and resources, bad practices, and poorly coordinated activities

Lean programs serve to **increase the value added of all processes** in an organization

Lean supports sustainable thinking

### What is Six Sigma?

**Six Sigma** means **problem solving**, methodically and organizationally structured by the **DMAIC** phases of a **project**

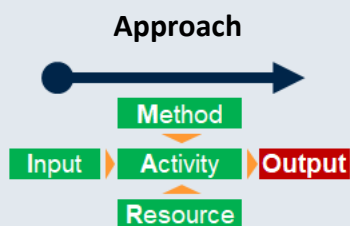
Each phase includes qualitative and statistical tools serving to **Define** the problem, to **Measure** the problem and its potential causes, to test corresponding hypotheses and **Analyse** the root causes, eliminate them to **Improve** the outputs and to finally **Control** the sustainability of the success

Six Sigma programs coordinate the **selection, implementation, and evaluation of projects** in an organization

Six Sigma supports decisions

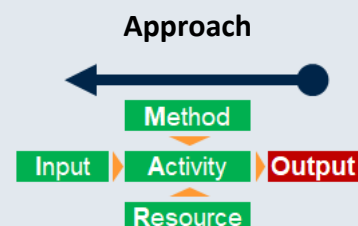
The sigma level indicates the process performance

**Lean is like a general fitness program** aiming to improve the value/ waste ratio thus increasing the efficiency of a process



[see Video 43 Lean vs Six-Sigma - Comparison of Characteristics](#)

**Six Sigma is like a specific medical intervention** aiming to solve a specific problem of the output thus increasing the effectiveness of a process



**Lean + Six Sigma = Efficiency + Effectivity**

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## Course Management

### Interested in Sustainability-Projects for Students and Job-Seekers?

Answers to further questions can be found in the [course description](#) and the related FAQ's.

### Interested in Business-Projects for Employees?

For our Business-Projects we offer and recommend a 1h zoom session with our Master Black Belt before the course starts. In this free kick-off for Belt candidates and project Sponsors, we will discuss

- identification and suitability of project topics,
- our approach and support, and
- common steering of the project

Register for a free consultation [here](#).

### Questions left?

**Get in touch** with our dedicated program managers and share your wishes.

We are happy to find the right answers for you and offer our consultation free of charge.



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