

CAS in Systems Engineering, Teamwork & Leadership

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cas-syseng](https://hslu.ch/cas-syseng)



Content and Planning

Concept

Master complexity through Systems Engineering – and grow as a technical leader.

Our CAS program equips you to address multifaceted engineering challenges using systems engineering methods. You will learn to navigate technical complexity, manage interdisciplinary processes, and make sound decisions in dynamic environments.

Leadership is woven throughout the curriculum — helping you collaborate effectively in multicultural teams, align diverse stakeholders, and take on greater responsibility with confidence. Prepare to lead with clarity, connect the technical and the human, and drive impactful results.

Objectives

The objectives of this CAS program are to provide knowledge of Systems and Requirements Engineering, from Stakeholders to fully developed solutions.

In addition, you will obtain a 360° holistic view on the subject and directly adjacent fields, such as:

- project management
- risk and quality assurance
- intellectual property
- digital transformation
- leadership & collaboration

Finally, and importantly, you will learn to apply new knowledge through group work based on examples, as well as in your project assignment.

Target Audience

If you have graduated in engineering or natural sciences at university level, are working in the field of engineering, and would like to take the next step towards being responsible for larger systems, then this CAS program is for you.

The CAS sessions combine formal lessons with group work, enabling you to begin applying the presented topics in practice.

Systems- and Requirement Engineering

The CAS starts with an intensive week, focusing on the basics of systems engineering and requirements management. Here you will obtain fundamentals on the following topics:

- the relevance of systems and requirements engineering for the industry
- stakeholder, stakeholder analysis and stakeholder management
- requirements engineering methods
- system architecture and system description
- interfaces and interface management
- verification and validation

Model Based Systems Engineering (MBSE)

This is a 3-day course with the goal to understand what MBSE is, the possibilities it opens, important issues when you start with it and which resources are available. The goal is to be able to apply MBSE pragmatically within your organizational context.

Topics covered include

- Models, Modeling & using Models in Engineering
- MBSE Use Cases, Benefits & Foundations
- Applying MBSE in an Organization
- MBSE Tools & Resources, Case Study Exercise

As a systems engineer, you will also need leadership and collaboration skills to guide the different team members to converge to a sound technical solution. In this respect, you will also need to interact with project management, legal as well as quality assurance. The following modules shall introduce these topics.

Project Management and Lean Methods for Systems Engineering

In this 1.5 days course you will learn to design, deliver, and close complex projects with clarity – aligning teams, simplifying problems, and securing strong management support.

- Break down complexity to secure buy-in
- Create a canvas with clear team roles and goals
- Drive sprints with visual tools and Six Questions
- Maintain alignment by active, transparent updates
- Wrap up with a structured review
- Apply the methods in your project

Leadership & Collaboration

In complex project settings with various partners, the ability to actively participate, facilitate, or apply good communication skills become crucial. You will develop your leadership communication skills and explore different methods to reach consensus.

The work within this 1.5-day course will touch the following aspects:

- Active Listening
- Moderation and Facilitation
- Negotiation and Culture

Digital Transformation and Systems Engineering

One key aspect of the modern industry is undoubtedly digitalization, Industry 4.0, IoT etc. Regarding systems engineering, the focus is not the contributing technologies, but rather a holistic view of the global system and the customer value. During this course you will learn to work in this context based on a case study:

- Business level outcomes will be mapped and KPIs identified
- The interaction between people, machines and equipment will be clarified
- Critical actor and business level value proposition will be described

Quality Assurance and Systems Engineering

A one-day course focusing on aspects of product quality assurance and their connection to systems engineering

- Quality definitions and principles
- QA main elements and concepts
- Exercises
- Applied QA examples
- Self-study

Intellectual Property Basics

To get an insight on the landscape of intellectual property rights, this course will focus on:

- Innovation protection as investment protection
- Portfolio of immaterial goods rights (brand, patent, design, author...)
- “SMART” case study
- Freedom to operate
- Law enforcement in this field

Systems Engineering Project

To conclude the program, you will complete a real-life project (preferably within your own company). This is your opportunity to apply everything you have learned!

Timetable

The actual timetable is available under hslu.ch/cas-syseng.

The CAS will take place once a year. The following table provides a brief overview:

		One calendar year, starting in January							
		January–June					July–November		
Topics ↓	Duration: [days] →	5	3	1.5	2	1	0.5	1.5	22.5
Systems- and Requirements Engineering		■							
Model Based Systems Engineering			■						
Project Management and Systems Engineering				■					
Digital Transformation and Systems Engineering					■				
Quality Assurance and Systems Engineering						■			
Intellectual Property Basics							■		
Leadership and Collaboration								■	
Systems Engineering Project				■	■	■	■	■	■

Formal administration aspects

Admission requirements

University level graduation (Bachelor or Master) in engineering or natural science and a minimum of 2 years of practical experience.

Applicants with a degree in higher vocational education and training must demonstrate at least two years of professional experience in a field relevant to this continuing education and training programme. By the end of the programme, they are expected to have acquired the necessary scientific knowledge pertinent to the subject area of the programme.

Persons without a tertiary degree will only be admitted in exceptional cases in a sur-dossier procedure.

Please refer to the Academic Regulations for more detailed information.

Costs

Information on costs and general conditions is available on our website and part of the application form hslu.ch/cas-syseng. Concerning attendance of complementary courses with our partners, please contact the head of program.

Location

The classes will be held at the Lucerne School of Engineering and Architecture in Horw (Technikumstrasse 21). The campus is easily accessible by public transport.

Duration and Time Allocation

The CAS program is taught over 14 full days 1 to 5 day blocks. Spread over a calendar year. It corresponds to roughly 122 hours of lessons, 77 hours of self-study and 180 hours for the Systems Engineering Project. The exact dates can be found at hslu.ch/cas-syseng.

Application

The application form can be found at hslu.ch/cas-syseng

Certificate

The Certificate of Advanced Studies of the Lucerne School of Engineering and Architecture in Systems Engineering will be awarded upon successful completion of the course's final exams and successful completion of the Systems Engineering project assignment. As an attendee, you will obtain 15 ECTS credits.



Prof Dr Gerhard S. Székely
Head of Program

**Registration and
further information**
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For more information about
our CAS in Systems Engineering