



# INDUSTRIAL ENGINEERING: SMART INDUSTRY



Our Partner:



## About Industrial Engineering – Smart Industry

Artificial Intelligence (AI) and data analytics have become new alternative methods that are frequently used for systems optimization in the era of Industry 4.0, for example in process automation, e-commerce, business intelligence and analytics, and predictive maintenance. Utilizing AI and data analytics for improving engineering and business systems requires good understanding and competences in operations management, logistics and supply chain, human factors, economy, and optimization methods. These competences assure that the investment on new sophisticated technology implementation could lead the organization to higher performance and efficiency, along with better sustainability.

In order to support the Indonesian government's initiatives in Industry 4.0 and circular economy, along with the needs of digital talents that rising in the future of works, Industrial Engineering: Smart Industry of Swiss German University facilitates with the curriculum and conducts collaborative programs with industry and partner universities that are aligned with the needs of human capitals that have competences to optimize the performance of engineering and business systems with artificial intelligence and data analytics.

### Why Industrial Engineering – Smart Industry?

Studying Industrial Engineering with a concentration in Smart Industry is essential because it equips you with cutting-edge skills and knowledge in Industry 4.0 technologies, making you highly sought after by employers. This specialization opens doors to diverse career opportunities, as companies increasingly adopt smart industry practices to optimize operations. Your interdisciplinary skill set, combining engineering, data analytics, and management, positions you as a valuable asset in a rapidly evolving global job market. With a focus on efficiency, sustainability, and innovation, this concentration prepares you to contribute to a more sustainable and competitive future. Ultimately, it offers a competitive advantage and ensures long-term career relevance in the dynamic world of industrial engineering.

### Career Prospect

Industrial Engineering: Smart Industry comes with such a wide range of skills, that makes them adaptive and resilient to changes, therefore an industrial engineer from smart industry specialization can work in both technical and managerial positions.

- Leading a Digital Transformation team, in engineering systems and in business systems (i.e., Business Development and Innovation)
- Artificial Intelligence and Data Analytics for Business and Industrial Systems Optimization (i.e., data driven decision making, risk analyst etc.)
- Optimizing facility and equipment utility and reliability by implementing data science and analytics (i.e., predictive maintenance)
- Designing and developing smart system for operations of manufacturing, logistics and supply chain
- Utilizing additive manufacturing in Product Design and Development, Smart Product Lifecycle Management, etc.
- Occupational health and safety manager, especially by involving smart technologies.
- Quality engineer and quality assurance inspector
- Consulting and computer automation.

### International Academic Experience:

- Joint Degree Program with **Fachhochschule Südwestfalen** (approx. 7 months), get Sarjana Teknik (S.T.) and Bachelor Engineering (B.Eng) degrees.
- Internship program to ensure students receive global professional experience.
- Experience student exchange in several **European** and **Asian** countries
- Accelerate Success with the **SGU-University of Missouri - Kansas City** Fast Track Program.

# CURRICULUM

DOUBLE DEGREE WITH FACHHOCHSCHULE SÜDWESTFALEN  
Academic Year 2024/2025

## SEMESTER 1

English 1  
Calculus  
Physics 1  
Physics 1 Laboratory  
Algorithm, Programming and Data Structure  
Chemistry 1  
Material Science  
Technical Drawing  
Introduction to Industrial Engineering  
[Extracurricular Courses](#)  
German Language and Culture 1

## SEMESTER 2

English 2  
Linear Algebra  
Physics 2  
Statics and Strength of Materials  
Modern Manufacturing Process  
Modern Manufacturing Process Lab + Work  
Chemistry 2  
Statistics and Lab  
Pancasila and Civic  
Ethics and Religious Philosophy  
[Extracurricular Courses](#)  
German Language and Culture 2

## SEMESTER 3

English 3  
Operation Research  
Production Planning and Control + Lab  
Ergonomics and Work System Design + Lab  
Cost Control and Analysis  
Indonesian Language and Culture  
Economy and Engineering Economy  
Product Lifecycle Management  
[Extracurricular Courses](#)  
German Language and Culture 3

## SEMESTER 4

English 4  
Logistics and Supply Chain System  
Quality Control and Assurance + Lab  
Human Machine Interaction  
Lean Operations  
Optimization with Artificial Intelligence  
System Modeling and Simulation + Lab  
Integrated Industrial Engineering Laboratory

## SEMESTER 5

Internship 1 (Indonesia)  
Industrial Automation  
Circular Economy and Sustainability  
Project Management  
Service System Engineering and Management  
Elective Subject 1  
Elective Subject 2  
[Extracurricular Courses](#)  
German Language and Culture 4

## SEMESTER 6

Basic of Electrical Engineering  
Introduction to Project Management  
Model Based Design  
Internship-2\*  
[List of elective \(FH Soest\)](#)  
Current Developments in Business IT: Basics in Python  
Advanced Programming  
IS-Project

## SEMESTER 7

English 5  
Research Methodology  
Industrial Engineering System Design  
Enterprise and Industrial Information System  
Human Capital Management and Organizational Behaviour  
Business Intelligence, Analytics, and Data Science  
Industrial System Maintenance  
Facilities Planning and Analysis  
Optional: Internship in Germany

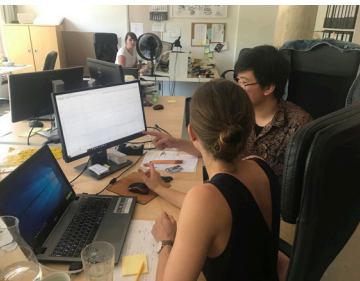
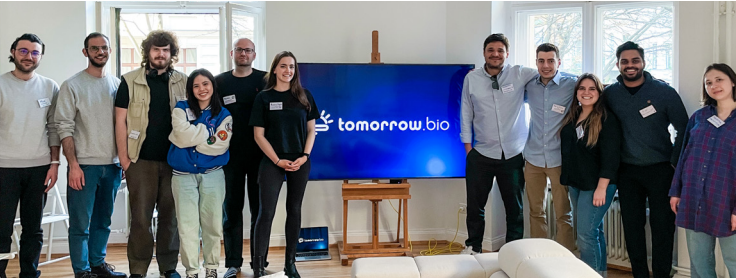
## SEMESTER 8

Professional Competence Assessment (PCA)  
Character and Professional Development Program  
Thesis

Alumni of the Industrial Engineering Study Program have been accepted into top-tier firms, and the study program has established industry partnership, such as:



# INTERNSHIP EXPERIENCES



Contact Us:

**SWISS GERMAN UNIVERSITY**

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