



Study Abroad - Certificate in Industrial Engineering

30 ECTS credit program

Program Modules:

Module	ECTS
Green Energy & Mobility	5
Digital Production	5
Entrepreneurship	5
Digital Customer and Competition Management	5
Controlling - Business Intelligence	5
Management and Leadership	5

Further Information / Contact:

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International relations

Study Abroad Certificate in Industrial
Engineering
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Study Abroad Certificate in Industrial Engineering

Module: Green Energy & Mobility

Key facts

Workload	ECTS	
150 h	5	
Parts of the module	Contact time	Self-study time
	60 h	90 h
Module leader	Assessment	
Prof. Dr. Andrew Carruthers	Assignment and presentation	

Curriculum Outline

Electromobility or e-mobility is the use of electric cars, but also e-bikes or pedelecs, electric motorbikes and e-buses and e-trucks. What they all have in common is that they are fully or partially electrically powered, carry an energy storage unit and draw most of their energy from the power grid. To date, electric cars have mainly been used in cities, where they are quiet, efficient and produce low emissions. They are also ideal for delivery services, taxis and car sharing.

Key content

- Economic and political guidelines for new mobility solutions
- Innovative technologies in the automotive industry
- The changing automotive industry
- Alternative drive concepts
- Energy demand & supply
- Electromobility
- Mobility concepts of the future

Study Abroad Certificate in Industrial Engineering

Module: Digital Production

Key facts

Workload	ECTS	
150 h	5	
Parts of the module	Contact time	Self-study time
	60 h	90 h
Module leader	Assessment	
Prof. Dr. Markus Rehfeldt	Assignment and presentation	

Curriculum Outline

The Digital Production course deals with the topics of the "digital factory", which is defined as follows: "The digital factory is a generic term for a comprehensive network of digital models, methods and tools - including simulation and three-dimensional visualization - that are integrated through end-to-end data management. Its aim is the holistic planning, evaluation and continuous improvement of all essential structures, processes and resources of the real factory in connection with the product." [VDI 4499 Sheet 1, 08].

Key content

- Autonomous driving simulation with Unity
- Denso Roboter
- HoloLens
- Mixed Reality
- Business Intelligence

Study Abroad Certificate in Industrial Engineering

Module: Entrepreneurship

Key facts

Workload	ECTS	
150 h	5	
Parts of the module	Contact time	Self-study time
	60 h	90 h
Module leader	Assessment	
Prof. Dr. Lutz Sommer	Assignment and presentation	

Curriculum Outline

Entrepreneurship in the broader sense means "entrepreneurship", i.e. the complete range of business management with the additional component of "entrepreneurial spirit": How do I find worthwhile business ideas and opportunities? How do I set goals and achieve them? How do I organise and develop the company? How do I lead teams? How do I enable growth? While most of the points are normal management topics, the entrepreneurial spirit factor stands out in particular: Entrepreneurship means believing in your own ideas, accepting uncertainty, taking risks, inspiring investors, teams and customers and making courageous decisions.

Key content

Students develop a business idea, a canvas and the corresponding business plan. This is presented at the end of the semester in the form of a pitch to a jury of company representatives.

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Module: Digital Customer and Competition Management

Key facts

Workload	ECTS	
150 h	5	
Parts of the module	Contact time	Self-study time
Lecture + seminar	60 h	90 h
Module leader	Assessment	
Prof. Dr. Klaus Frank	Assignment + presentation	

Curriculum Outline

The students

- master the special features of digital marketing and the necessary marketing tools
- can classify and apply the marketing tools presented in everyday business life
- master the methods for solving competitive and customer-related management challenges
- assess the importance of information from the markets for management decisions
- develop an understanding of the necessity of marketing tools, especially brand relevant aspects in everyday business (understanding)

Key content

- Capital goods marketing
- Buying center analysis in connection with digital communication options (e.g., Chat GPT, metaverse, influencer marketing, customer journey) (with group work)
- Methods of competitor monitoring (with case study)
- Case study on the marketing concept (elaboration of the marketing mix)
- Building a brand for a B2B company (with case study)
- Digital possibilities in the context of marketing mix instruments (with short case study)

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Module: Controlling – Business Intelligence

Key facts

Workload	ECTS	
150 h	5	
Parts of the module	Contact time	Self-study time
Lecture and project	60 h	90 h
Module leader	Assessment	
n.n.	Oral exam, lab work	

Curriculum Outline

The students

- have broad and integrated knowledge including the scientific foundations of controlling, the practical application of business intelligence and a critical understanding of the most important theories and methods, as well as broad and integrated professional knowledge in SAP BI.
- have knowledge of the further development of methods in the field of business intelligence.
- have relevant knowledge of interfaces to ERP systems
- have a very broad spectrum of methods for dealing with complex problems in controlling and business intelligence.
- can develop new solutions and assess them in accordance with different standards, even when requirements change frequently.
- can work responsibly in expert teams or lead groups or organizations. The students can focus complex technical problems and solutions to experts and develop them further with them.

Key Content

- Controlling as a management tool, strategic and operational controlling
- Components of a controlling system
- Data warehouse systems
- Business Intelligence
- Fundamentals of investment and financing, methods of investment calculation,
- case studies on investment and financing calculation
- Case studies with the business information systems S/4HANA and BW/4HANA (SAP).

Study Abroad Certificate in Industrial Engineering

Module: Management and Leadership

Key facts

Workload	ECTS	
150 h	5	
Parts of the module	Contact time	Self-study time
	60 h	90 h
Module leader	Assessment	
Prof. Dr. Andreas Mockenhaupt	Oral exam	

Curriculum Outline

The students

- have a broad and integrated knowledge including scientific and practice-oriented basics in Management & Leadership issues
- can plan the Leadership and Communications processes using scientific means and have the ability to make theoretical assessments and transfer this to application i.e., Technical Sales
- In addition, they have the skills to conduct structured employee and customer conversation (i.e., sales talks) alone or in a team with targeted communication in business and sales
- develop an understanding of role behavior and individual objectives in negotiations

Key content

- Theoretical foundations for Management and Leadership as an engineering or sales task
- Auditing, Technical negotiations, Industrial procurement
- Basics of communication theory and its application in business and sales
- QM Auditing, Business and Sales pitch management
- Objection handling
- Exercises (case studies, role plays, price negotiations)