Course offer for Exchange Students Industrial Engineering & Management

Course offer 2020-2021

UNIVERSITY OF APPLIED SCIENCES

INDUSTRIAL ENGINEERING & MANAGEMENT

The course Industrial Engineering & Management teaches you how to use technology, management theory and business economics in such a way that you will be able to improve production processes and to make organizations profitable or more sustainable.

You have an interest in technology, you enjoy coming up with smart solutions for the technical and management field. You are versatile and you can work in different branches of an organization, regardless whether it is the planning, purchasing, production or distribution department. With your problem-solving abilities, you are able to (re)design, improve and optimise production resources and processes by applying your knowledge on technology, business processes and change management.

You will develop a broad base of knowledge in technology, (business) economics, organization and management. Collaborating with the professional practice is the main driver from day one. You and your classmates will work together in project groups on assignments from the business sector relating to process optimisation,

This will introduce you to your future professional field. In the second year, you will deepen your knowledge of the company processes and you will work on more complex projects from the professional field, with a focus on the environment and sustainability as well. You could collaborate on a research project about the sustainable use and maintenance of offshore wind farms.

We welcome exchange students in the 2nd year of the IE&M programme either in the Fall and/or Spring semester. Based on your educational background the programme coordinator will determine whether you will be admitted.

For the courses below you and your classmates will be assigned into project groups. Two days a week (Tuesday and Thursday) your project group will be working on a project assignment at a host company;

- Project : Process design (10 ECTS in Fall semester)
- Project : Process re-design (10 ECTS in Spring semester)

More detailed information on the study programme can be found in the Implementation Regulations Industrial Engineering and Management

COURSE OFFER 2020-2021

FALL SEMESTER		SPRING SEMESTER	
BLOCK 5	BLOCK 6	BLOCK 7	BLOCK 8
Project: Process design (10 ECTS)		**Project: Process re-design (10 ECTS)**	
Special Material Conditions (2.5 ECTS)	**Material Design and Engineering** (2.5 ECTS)	**Mechanical Manufacturing Systems** (2.5 ECTS)	**Process Manufacturing Systems** (2.5 ECTS)
Organisational Behaviour (2.5 ECTS)	**Business Information Systems** (2.5 ECTS)	**Information and Technology Innovation** (2.5 ECTS)	**Corporate Social Responsibility** (2.5 ECTS)
Sustainability (2.5 ECTS)	**Innovation Management** (2.5 ECTS)	**Marketing** (2.5 ECTS)	**Supply Chain Management** (2.5 ECTS)
Marketing Fundamentals (1.25 ECTS)	**Free Composition Course** (1.25 ECTS)*	**Free Composition Course** (1.25 ECTS)*	**Change Management** (1.25 ECTS)
English for Industrial Engineering & Management (2.5 ECTS)		**English for Industrial Engineering & Management** (2.5 ECTS)	

*Free composition course for exchange students:
VCC Peer Project 1.25 ECTS
Dutch Culture & Language 2 ECTS (if possible schedule wise)

COURSE DESCRIPTIONS - FALL SEMESTER 2020-2021

During this semester the students will attend classes on Monday, Wednesday and Friday. On Tuesdays and Thursdays the students will work as part of a project team on an project assignment at an allocated host company in the region.

PROJECT: PROCESS DESIGN

Students will work in a project team on (several solutions for) a process design at a company for one semester. During this semester they will obtain a project assignment at the company. After having identified process objectives and having turned these into process demands, they will design a process in which all of the business needs are fulfilled. They will write a proposal which includes the project scope, a programme of requirements and a research approach. Each student works out one aspect of the assignment and students will collaborate in developing one or more solutions for the selected process. Students will incorporate knowledge and skills from courses followed previously as well as knowledge and skills gained from their own research and study activities during the project. Students will also have to consult experts to obtain additional information where necessary. Students may work together with students from other study programs (multi-discipline) to increase the (added) value of their design.

CONCEPTUAL COURSES:

SPECIAL MATERIAL CONDITIONS

The student will get an introduction of the various characteristics and structure property relationships, as well as processing techniques of materials, to make judicious materials choices in design based on these criteria. Special conditions covered are electrical and magnetic material properties, high temperature applications and corrosive conditions.

ORGANISATIONAL BEHAVIOUR

Students will deepen their knowledge on structures and behaviour and their relationship within organizations with the aim of understanding the social environmental and economic forces that affect our own careers nowadays. Students will gain knowledge about types of organisations and management styles as well as common theories and models that have been developed through decades to help analyse and address some managerial questions related to how to put strategy into practice, why some organisations are successful and others are not, or how to deal with new technologies, staff performance reward and talent management.

SUSTAINABILITY

During this course, students will get acquainted with norms, regulations and ethics regarding sustainability. Furthermore the students will work on understanding the effects of trends and developments regarding sustainability of organisations. The goal of the course is to provide the student with knowledge and tools to implement sustainability improvements in his/her future career. The student will gain a broad view of the complex matter of sustainable development and develop an understanding of the practice and implications of it.
The concept of sustainability will be discussed as well as the so-called people aspect of sustainable development and its effects on the long term.

MARKETING FUNDAMENTALS

The student will get an introduction to the principles of marketing, like definitions and marketing environment, buying behaviour, segmentation targeting and positioning and pricing.

MATERIAL DESIGN AND ENGINEERING

In addition to structure and properties of materials to students will learn about engineering and design processes, material processing and manufacturing performance. A theoretical design case will be used to guide the students through the learning process of material science and (product)design.

BUSINESS INFORMATION SYSTEMS

During this course students will work on their understanding of Information Technology. Students will not only get familiar with terminology, business IT alignment and IT governance, they will also learn some basics in database management language and mark-up language.

INNOVATION MANAGEMENT

Students will learn what innovation is, they will practise creative and innovation skills and they will gain insights on how to manage innovation at several levels (operational, tactical and strategical) within an organisation. Students will work with several models and will investigate approaches to innovation as seen in business.

ENGLISH FOR INDUSTRIAL ENGINEERING & MANAGEMENT

Level B2/B2+

The student will further develop his/her skills on the following subjects

- Essay writing
- Technical Report writing
- Reading and understanding (long) technical business texts and documents.
- Building and expanding relevant technical business vocabulary (portfolio).
- Describing properties, instructions and warnings
- Stipulating conditions
- Remedial grammar

FREE COMPOSITION COURSE

The educational programme of a study programme contains a free composition space of 1.25 academic credits in each semester. The student is allowed to earn Free Composition Credits with extracurricular activities such as: management activities, informational and promotional activities, cultural activities, knowledge sharing activities, project management activities or sports/training activities.

The student will submit proposals for the free composition space to the Study Career Coach prior to the activity. Afterwards, the Study Career Coach will assess if the activity was performed in a satisfactory manner as part of the personal development of the student.

COURSE DESCRIPTIONS - SPRING SEMESTER 2020-2021

During this semester the students will attend classes on Monday, Wednesday and Friday. On Tuesdays and Thursdays the students will work as part of a project team on an project assignment at an allocated host company in the region.

PROJECT: PROCESS RE-DESIGN

Students will work in a project team on (several solutions for) a process re-design at a company for one semester. During this semester they will obtain a project assignment at the company. They will write a proposal which includes the project scope and a division of tasks and subjects the student will cover. Each student works out one aspect of the redesign or a separate solution for the same process. Students will incorporate knowledge and skills from courses followed so far and during this project as well as knowledge and skills gained from their own research and study activities. Students will also consult with experts where necessary.

During this project it is important for the student to work together in a project team and with several stakeholders within the company.

CONCEPTUAL COURSES:

MECHANICAL MANUFACTURING SYSTEMS

The student will gain knowledge and insight on mechanical manufacturing technologies for metals and plastics and their industrial application, as well as basic knowledge about manufacturing automation

INFORMATION AND TECHNOLOGY INNOVATION

Students will gain insights on developments and trends in IT for business. Students will look into topics such as IT innovation, data science and block chain technology, but also into business opportunities provided by new developments.

MARKETING

During this course students will get the knowledge and necessary marketing theories for writing a marketing plan using the marketing principles as taught during course “Marketing Fundamentals”

FREE COMPOSITION COURSE

The educational programme of a study programme contains a free composition space of 1.25 academic credits in each semester. The student is allowed to earn Free Composition Credits with extracurricular activities such as: management activities, informational and promotional activities, cultural activities, knowledge sharing activities, project management activities or sports/training activities.

The student will submit proposals for the free composition space to the Study Career Coach prior to the activity. Afterwards, the Study Career Coach will assess if the activity was performed in a satisfactory manner as part of the personal development of the student.

ENGLISH FOR INDUSTRIAL ENGINEERING & MANAGEMENT IV

Level B2+

The student will further develop his/her skills on the following subjects:

1. Conducting and participating in formal meetings. Collaborative problem solving.
2. Persuasive presentations + explaining technology to non-specialists
3. Reading and understanding (long) technical business texts and documents.
4. Building and expanding relevant technical business vocabulary (portfolio).
5. Remedial grammar

PROCESS MANUFACTURING SYSTEMS

The student will learn to describe and explain the general design aspects of common physical production processes used in the industry and one specific industry application in detail. They will obtain the ability to read and explain key components in P&IDs, process models and control system configurations and to explain the different functions and

limitations of these components such as sensors and actuators. The student will be able to explain the implications of process dynamics, process safety and energy conservation requirements in the overall design and operations of industry processes.

CORPORATE SOCIAL RESPONSIBILITY

During this course, students will get acquainted with norms, regulations and ethics regarding corporate social responsibility. Furthermore the students will work on understanding the effects of trends and developments regarding corporate social responsibility on organisations.

SUPPLY CHAIN MANAGEMENT

Supply chain management (SCM) is "the management of the chain that connects independent customers and suppliers as if they were single entities with the aim of creating value and reducing waste through the coordination of goals and activities of all organizations in the chain." More than in the "ordinary" logistics field, organizations are nowadays looking for cooperation with other organizations within the own chain or beyond the boundaries of organizations in order to add value and reducing waste. Therefore, in this course he student will learn how interconnected members in a supply chain are related from the perspective of materials, information or financial means, in response to customers' demands.

CHANGE MANAGEMENT

Students will deepen their knowledge about organisational cultures and change. Students will gain insights on change management methods and methods to manage resistance against change. Students will learn approaches to implement and consolidate change within organisations.