Academic Guide Exchange 2023-2024

Faculty of Technology, Innovation & Society

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Courses offered in English

THE HAGUE
UNIVERSITY OF
APPLIED SCIENCES

Academic Guide Exchange 2023-2024

Faculty of Technology, Innovation & Society

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Content

Courses

Course title	ECTS	Semester 1 Term 1	Semester 1 Term 2	Semester 2 Term 3	Semester 2 Term 4	Location
Living Labs 1 & 2	30	x		x		Delft
EPS Smart Manufacturing and Robotics	30	x		x		Delft
EPS Sustainable Urban Engineering	30	x				The Hague
EPS (Sustainable) Packaging Design and Innovation	30	x		x		The Hague
EPS BE SMART: Strategies for Smart Sustainable Cities	30	x				The Hague
Embedded Systems	30	x				Delft
Robotics and Vision Design part 1 & 2	30			x	x	Delft
Design with Nature	30			x		The Hague
Prototyping and Craftsmanship	30	x				The Hague

About the Faculty of Technology, Innovation and Society

The world faces big challenges, and we are looking for new answers and technical innovations to solve them. We need to be critical and look ahead to make improvements to the world we live in, from harnessing renew-able energy supplies for sprawling cities to using robots to improve quality of life. At the Faculty of Technology, Innovation and Society (TIS), students work on real life commissions from businesses and government organisations to help make a better world, working alongside multidisciplinary students in an international setting.

International programmes

The Faculty of Technology, Innovation and Society offers a range of international programmes. These include bachelors taught in English, minors, exchanges and five European Project Semester (EPS).

International minors

Co-production, reflection, networking, energy and inspiration are at the core of our international minors. For example, in our Climate Change minor, students examine this crucial issue from an international perspective. While they learn to innovatively deploy robots in industry, agriculture and care in our Robots and Vision Design minor.

Did you know that embedded systems are found in many devices and applications, for example, washing machines, telephones, heating devices, cars, medical appliances, measuring devices and internet connected devices? Students can discover more on the two-part Embedded Systems minors. Or delve into the creativity, production, design, ergonomics and marketing of packaging on Packaging Design and Innovation.

If you are interested in studying a minor at the study programme Process and Food Technology, please send an email to tis-international@hhs.nl.

Exchange programmes

An exchange at THUAS is a truly international experience. THUAS welcomes more than 500 exchange students from around 50 nationalities every academic year. Our academic year is divided into two semesters, which start in September and the end of January.

All exchange students must be proficient in the English language. Exchange students can choose from the subjects offered within a faculty or select one or more of our minors. These 15 ECT courses are available to all students at THUAS, including exchange students.

Our exchange students gain a rich cultural experience by working alongside the large number of international full-time students on English-language bachelor's degree programmes. Our high-quality programmes encourage students to explore each other’s cultures to become open-minded and independent thinkers - essential qualities in today’s market. Working in a multicultural and cosmopolitan environment becomes second nature to our students.

The Faculty TIS has two campuses:

The Hague and Delft. Each location has its own character. The main campus in The Hague is the largest and characterized by a vibrant and international atmosphere. The campus in Delft is located on the premises of TU Delft. Please note on which campus your course takes place.

European Project Semester

The European Project Semester (EPS) programme is offered by 18 European universities in 12 countries to students who have completed at least two years of study. EPS is aimed at engineering students, but students on engineering projects are also welcome.

EPS is design orientated and arms students with all the necessary skills to face the challenges of today's world economy.

It incorporates a blend of projects and problem-based learning. You'll work in international and interdisciplinary teams on assignments. Some of these are run in partnership with businesses and industries. You'll learn to take responsibility for your project work and develop your inter-cultural and communication skills.

Please note that for all EPS programmes the following documents are needed when you apply.

1. Motivation Letter
2. Curriculum Vitae
3. Transcript of records

You can send the documents to tis-international@hhs.nl

EPS subjects

The Faculty of Technology, Innovation and Society offers five EPS subjects, which will be explained in the following pages:

- Living Labs
- Smart Manufacturing & Robotics
- Sustainable Urban Engineering
- Packaging Design & Innovation + Sustainable Packaging Design & Innovation
- BE SMART: Strategies for SMART Sustainable Cities

EPS Living Labs

Title course	
Credits	30 ECTS
Code	TBK-HMVT21-LL30
Entry requirements	An application letter including a detailed portfolio / curriculum vitae and grades to the contact person of this minor
Semester	1 or 2
Method	Lecture, project work, assessment
Lecturer(s)	Eveline Kapteijn-Kruijswijk
Learning outcomes	Learning to work together in multidisciplinary projects
Recommended or required reading/tools	t.b.d
Assessment methods	Attendance, project work and assessment
Level	Third or fourth year
Course content	This minor is the first of two minors. This minor is continued by the minor International Project 2 (IP2). In the environment of a complex multidisciplinary engineering project students originating from several European and non-European countries will broaden and/or deepen their professional knowledge and skills depending on their discipline, interest and experience within one of the three main processes of the project, i.e. project management, engineering and support.

Contact

Eveline Kapteijn-Kruijswijk

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EPS Smart Manufacturing and Robotics

Title course	
Credits	30 ECTS
Code	W-HMVT18-SMR
Entry requirements	• you have a basic knowledge of production technology • you are a student in Electrical Engineering, Mechatronics, Applied Physics, Robotics, Technical Business Administration, HBO-ICT, Applied Mathematics, Mechanical Engineering or similar • your English is good enough to be able to participate in group work, understand lectures and written materials
Semester	1 or 2
Method	Lecturers, practicums, tutorials and projects
Lecturer(s)	ir. T. Brilleman (Thijs)
Learning outcomes	Learning to deploy robots in manufacturing environments. Gaining practical knowledge and skills in programming production robot setups and implementing the use of vision, external sensors, actuators and machine learning in these setups
Recommended or required reading/tools	t.b.d
Assessment methods	2 projects and 2 sets of practicals

Level	Third or fourth year
Course content	Smart manufacturing combines the advantages of mass production and piecewise production to bring about a fundamental change in the way production processes are designed, built and executed. This industrial robot automation focused minor prepares you – by hands-on practice and theory – for this change. You will learn to design and simulate an entire factory. In addition, you will deploy robots in manufacturing environments. You will gain practical knowledge and skills in programming production robot setups and implementing the use of vision, external sensors, actuators and machine learning in these setups. The minor consists of two projects of 10 weeks. In the first 2-3 weeks of each project, courses and practicums are taught to get you quickly acquainted with hardware and software skills in order to successfully finish the projects. There will be various practicums and tutorials on state-of-the-art robot control, vision, programming, designing and intercultural teambuilding. In the remaining weeks, you will be working on your project with your group members. For more information and past projects, please refer to: http://www.robotminor.nl.

Contact

ir. T. Brilleman (Thijs)

- +31 15 260 6270
- t.brilleman@hhs.nl
- www.robotminor.nl

EPS Sustainable Urban Engineering

Title course	
Credits	30 ECTS
Code	RO-HMVT19-SUE
Entry requirements	Students must have at least 90 credits in their major.
Semester	1
Method	Lectures, guest-lectures, workshops and group project
Lecturer(s)	Anton Hanemaaijer
Learning outcomes	Students apply the knowledge and insight gained through their own study programmes within a multi-disciplinary team, required in the planning and design of a multifunctional urban construction.
Recommended or required reading/tools	t.b.d
Assessment methods	Short assignements, group project
Level	Third or fourth year
Course content	The main semester task is the making of initial design and a 25-year project plan for a multi-functional urban construction that comprises farming, working & living functions. The initial design and project plan contains the architectural, engineering and managerial solutions to make an energy-positive, sustainable, circular proof and long-term economically feasible urban construction. The main project is based on an actual case and involving a genuine commissioning party from the industry to whom the students will present their initial design and project plan at the end of the semester. There is special attention for team work within interdisciplinary and intercultural teams. Systems engineering and multidisciplinary design methods are common themes that run throughout all subjects. Three teaching modules are offered during the semester: • Smart Design • Building Systems • Sustainable Exploitation

Contact

A.M. Hanemaaijer

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- a.m.hanemaaijer@hhs.nl
- http://www.sustainableurbanengineering.nl/program/

EPS (Sustainable) Packaging Design and Innovation

Title course	
Credits	30 ECTS
Code	IPO-HMVT16-PDI, IPO-HMVT16-SPDI
Entry requirements	Packaging Design & Innovation: Student must have completed their first year. Sustainable Packaging Design & Innovation: the minor Packaging Design & Innovation (PDI) has to be successfully completed.
Semester	1 or 2
Method	Design education, lectures, company visits / excursions, Self-tuition
Lecturer(s)	W.H. Colenbrander, G.J. de Koning
Learning outcomes	The goal is not only to gain knowledge about the complexity of packaging design but also to work on relevant skills, such as doing research, presentations (oral and written), designs, generating ideas, different alternatives and assess the suitability of solutions.
Recommended or required reading/tools	t.b.d
Assessment methods	Project work and written report
Level	Second, third or fourth year
Course content	Packaging Design & Innovation: This minor has been developed within the programme Industrial Product Design for the specialization Pack-aging Design. The minor is intended as an introduction to the field of packaging and packaging design. The overall objective of this minor is to get acquainted with the process of designing packaging. The student combines creativity, knowledge of production, design, ergonomics and marketing. The student is introduced in a relatively short time to know another area of expertise. Sustainable Packaging Design & Innovation: Subject of this minor is redesign of an existing packaging concept centered around sustainability as explained in the text above. The actual assignment, the design project, will be formulated in cooperation with a company. Examples of design projects are industrial packaging, consumer packaging or last-minute-packaging (packaging which is applied at the very last moment of sale). Research skills are being trained by so-called student lectures. Students prepare these lectures by doing research about a selected theme and writing a detailed report.

Contact

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- W.H.Colenbrander@hhs.nl

G.J. de Koning
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- G.J.deKoning@hhs.nl

BE SMART: Strategies for Smart Sustainable Cities

Title course	
Credits	30 ECTS
Code	RO-HMVT20-BES
Entry requirements	An application letter including a detailed portfolio / curriculum vitae and grades to the contact person of this minor.
Semester	1
Method	Lecture, tutorials, excursions
Lecturer(s)	C. Verweij, B. Hilckman
Learning outcomes	Obtain knowledge regarding the challenges that the Sustainable Development Goals pose to urban development • Learning analysis, design and intervention methods to stimulate and manage urban transitions
Recommended or required reading/tools	t.b.d
Assessment methods	Ex.: Project work, attendance & participation
Level	Third or fourth year
Course content	World-wide, people are migrating to cities. Today, more than half of the world's population is living in urban areas and this share will rise. Meanwhile, cities should also reduce their emissions of greenhouse gases, reduce their consumption of resources and pollute less. The combination of these challenges requires tremendous efforts. Creating change in the city is not easy: systematic change is needed but can hardly be achieved due to lock-in. Short term optimisations might sometimes turn out to be leading nowhere. Stakeholders need to be well informed, and their support is crucial for success. This minor will teach students to gather data and analyse cities, and develop technological and organisational options to solve problems. This minor program is particularly interesting for students that want to contribute to sustainable cities. Particularly students of architecture, spatial planning, management, public administration, social sciences, civil engineering, mechanical engineering.

Contact

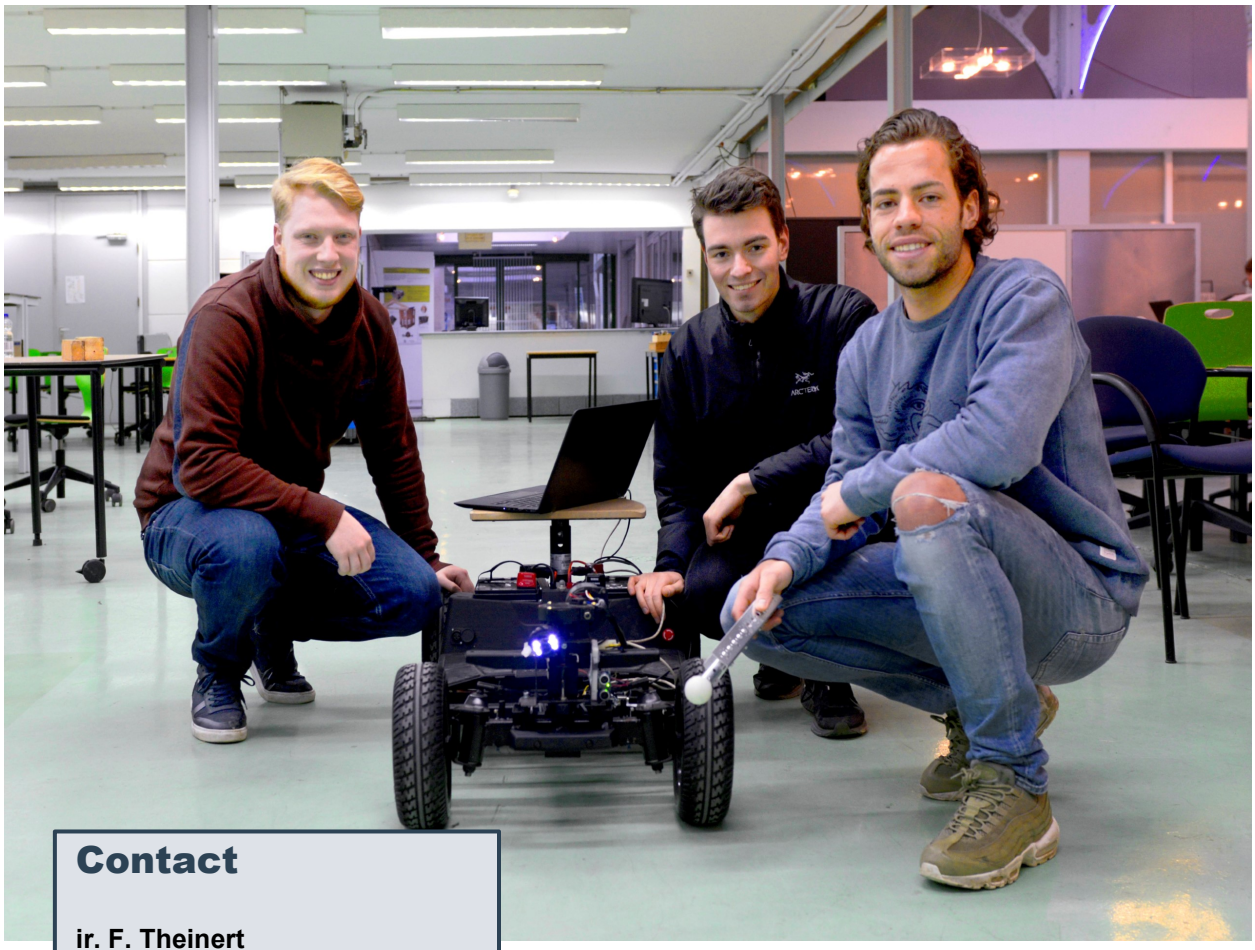
C.Verweij
- +316 21261232
- C.Verweij@hhs.nl

- **Stephan van Berkel**
  s.vanberkel@hhs.nl

Embedded Systems (EMES)

Title course	
Credits	30 ECTS
Code	E-HMVT20-ES
Entry requirements	The student should have relevant experience in the following fields: • Programming skills: basic experience in writing programs for a compiler or interpreter language, such as C, C++, Python, Pascal or Matlab• Mathematics: Matrix vector processing, solving sets of linear equations• Basics of control engineering: transfer functions, block schemes, system responses• Project management: experience with working in project groups, writing a plan of approach, parallel planning, goal oriented working• Basic skills in digital electronics, reading and drawing schematics • Experience with real-time systems and/or data-communication is an advantage.
Semester	1
Method	Lectures, workshops
Lecturer(s)	ir. F. Theinert
Learning outcomes	By following the minor Embedded Systems the student will learn to design state-of-the-art microcontroller systems and will thereafter be able to apply this
Recommended or required reading/tools	t.b.d
Assessment methods	Written exam
Level	Third or fourth year
Course content	Your phone contains an embedded system. Your dishwasher, fitness tracker and smart thermostat do as well. You probably were aware of that, but most users aren't. What is an embedded system? Well, it's a combination of computer hardware and software designed for a specific function. Embedded systems may also function within a larger system. The systems can be programmable or have a fixed functionality. Do you want to design new things and improve existing devices and instruments? Then this minor is for you. What will you be doing? By following the Minor Embedded Systems you will learn to design and program state-of-the-art microcontroller systems and work with embedded vision systems. You will be able to find intelligent solutions for the internet (internet of things, IoT), industrial or consumer appliances.

	The minor consists of 4 courses with 4 corresponding practical lab-/ workshops, accompanied by a project with a researcher or a company acting as customer. The theory and application of techniques and methods are offered in the courses and workshops. The project will offer the learning experience of integrating embedded systems as well as dealing with personal, group, project-management and customer management issues.



Contact

ir. F. Theinert

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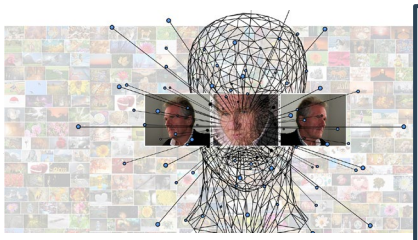
- J.F.Theinert@hhs.nl

Robotics and Vision Design part 1 & 2

Title course	
Credits	30 ECTS
Code	ME-HMVT19-RVD
Entry requirements	Matrix calculus: matrix vector multiplication, solving set of linear equations; • Dynamics: speed, acceleration, free body diagrams and equation of motion; • Basics of control engineering: transfer functions, block schemes, system responses; • Introduction in programming: some experience with writing of programs in a compiler or interpreter language, such as C, C++, Python or Matlab; • Experience with design projects: knowledge of the V-model, functional decomposition, experience with working in project groups, writing a plan of approach, parallel planning, goal oriented working.
Semester	2
Method	Lecture, project, tutorials
Lecturer(s)	dr. ir. P.R. Fraanje
Learning outcomes	You will learn how to:• model the kinematics and simulate (arm-type and mobile) robotic systems; • design a robot controller and implement it on a platform such as ROS, the Robot Operating System; • translate control tasks into optimization problems and how to solve these with a computer program; • design a vision system (optics and image capturing) for robotic systems; • apply various image processing techniques to extract relevant features; • design and evaluate learning algorithms to learn complex behavior using data from different types of sensors; • analyze design problems of an external stakeholder in which intelligent robots will be used; • investigate and evaluate results from (scientific) literature and exploit these for the purpose of the project; • design, implement, test and integrate robotic and vision subsystems to realize an intelligent robot product for an external stakeholder; • guarantee the quality of the design and the realized product by performing a rigorous requirements analysis and verification.
Recommended or required reading/tools	t.b.d
Assessment methods	Project work, attendance & participation
Level	Third or fourth year
Course content	Today robots are being applied in many fields, from industrial automation and defence to agriculture, health care and assistance of handicapped persons. By following the minor Robotics and Vision Design, you will learn the state-of-the-art of robotics and vision techniques and you will learn to apply this knowledge to design and realize an intelligent robot prototype using commercial-off-the-shelf (COTS) equipment.



Contact

dr. ir. P.R. Fraanje

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- P.R.Fraanje@hhs.nl

Design with Nature

Title course	
Credits	30 ECTS
Code	DE-HMVT18-DWN
Entry requirements	Students should submit a Letter of Motivation (500 words in English) that explains their interest in the field of design with nature, what they would like to learn and achieve by taking this minor. Letter of motivation should be sent to Laura Stevens l.l.stevens@hhs.nl at the time of online enrolment. The applicants will be informed about the result of their application within 10 working days after the submission of the letter.
Semester	2
Method	Lectures, workshops, teamwork
Lecturer(s)	Laura Stevens
Learning outcomes	Learn to use tools/techniques learned from nature (Biomimicry) 2. Learn about the Global Goals of the United Nations (also known as Sustainable Development Goals) 3. Work together with students and professionals of different disciplines such as software engineering, biology and life sciences and Industrial design to form and implement product concepts 4. Use rapid prototyping tools and techniques to test your ideas 5. Be urged to participate in the Biomimicry Global Design Challenge 6. Reflect on your role as an open innovator in the edge of design and as a Biomimicry designer (practitioner).
Recommended or required reading/tools	t.b.d
Assessment methods	Project work
Level	Third or fourth year
Course content	Nature is probably the world's most effective designer, having solved many big and small challenges in the course of evolution and adaptation. Do you want to learn how to create solutions by taking inspiration from nature (biomimicry) or even participate in design (biodesign)? This is your chance!

	What will you be doing? During this minor you will be trained to seek solutions for a wide of range of challenges and to design products by learning about strategies and mechanisms from nature. Understanding the basics of life sciences, applying biomimicry methods and using open source tools to implement in your design are at the center of attention during this semester. The course includes weekly lectures and hands-on workshops on diverse topics that support the project you and your (multidisciplinary) group are conducting.

Contact

Laura Stevens

- l.l.stevens@hhs.nl

Prototyping and Craftsmanship

Title course	
Credits	30 ECTS
Code	IDE-HMVT18-PRCR
Entry requirements	You should have completed the propaedeutic exam and obtained at least 60 ECTS of the main phase of your study
Semester	1
Method	Project work, lectures, workshops, excursions
Lecturer(s)	S. Kabbes
Learning outcomes	To apply craftsmanship skills and techniques at an advanced beginner level on different assignments to make prototypes by combining different materials to make use of design methods, workshop facilities and tools efficiently to apply design process methods to accomplish personal expression in all assignments to reflect on the design decisions that are being made on the production of models and prototypes and to document these key decisions to optimize time and materials to accomplish the production of models and prototypes at an advanced beginner level in your project
Recommended or required reading/tools	t.b.d
Assessment methods	Attendance & participation, project work
Level	Third or fourth year
Course content	Learn how to apply prototyping methods and techniques into a design project! The design project is provided by a company or organization and it is your learning field throughout the semester. Exercises on quality and precision will challenge your ideas and encourage interesting discussions about what constitutes 'good work' within the design practice. The Prototyping and Craftsmanship minor is a self-directed learning semester in which you follow weekly workshops about design process, prototyping methods and use of materials. You will discover methods and techniques that help you in the process of making design decisions concerning materials, prototyping methods to measure results, iteration and evaluation.

Contact

S. Kabbes

- +31 70 445 8956
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Process and Food Technology minors

An academic year is divided into four terms. You can choose the following subjects:

- **Term 1**
  Minor programme on Food Product Design or subjects of year one
  (Block 1.1 Water Treatment)

- **Term 2**
  Subjects from year 2 (Block 2.2 - Food Processing) or subjects from year 1
  (Block 1.2 - Food Products)

- **Term 3**
  Subjects from year 2
  (Block 2.3 - Responsible Operations) or year 1 (Block 1.3 - Inorganic Products)

- **Term 4**
  Subjects of year 3 (
  Specialization 1) or year 2 (Block 2.4 - Polymer Science) or year 1 (Block 1.4 - Organic Products)

You can request the manuals of the different subjects by sending an email to tis-international@hhs.nl. Please contact lecturer Mr. Maikel Maloncy (m.l.maloncy@hhs.nl) when you have questions about the courses.

Studying in The Netherlands

There are many good reasons to study in The Netherlands. Dutch education is one of the most innovative and forward thinking systems in the world. It's based on student-led learning, debate and hands-on experience.

The Netherlands also offers a high standard of living at a fairly low cost. Dutch society is liberal and open-minded with a vibrant cultural scene. You'll be part of a dynamic cosmopolitan and multi-cultural community right in the heart of Europe.

It is a small country with a big international presence and is the 21st largest economy in the world. Some of the world's biggest multinationals, including Philips, Heineken, KLM, Shell, ING Bank and Unilever are Dutch. Sony, Sara Lee and Microsoft all have their European HQs here.

The Netherlands has two main types of higher education institutions - research universities and universities of applied sciences. Research universities are mainly responsible for offering research-oriented programmes, while universities of applied sciences offer programmes which focus on the practical application of arts and sciences.

Campus life

THUAS has campuses in The Hague, Zoetermeer and Delft. You'll find the Faculty of Technology, Innovation and Society in both The Hague and Delft.

The main campus in The Hague is centrally located close to parliament and world-famous international organisations like the International Criminal Court.

Since the Delft campus opened in 2009, it has earnt itself an excellent reputation in higher technical education and now offers eight degree programmes - Applied Mathematics, Electrical and Electronic Engineering, Engineering Project Leader associate degree, Industrial Engineering and Management, Computer Science, Engineering Physics, Mechanical Engineering and Mechatronics.

Delft is a high-tech and scientific hub with research centres and environmental technology companies - the perfect place to nurture your skills. Companies cluster in the Clean Tech Delta and Medical Delta. The Technological Innovation Campus is a hot bed for environmental research into sustainable energy sources and biofuels and cancer treatments. We work with institutions like TNO, Deltares, UNESCO-IHE, DSM and Exact.

More information?

- Please also check the website for information:
www.thehagueuniversity.com/programmes/other-courses/exchange-programmes/what-can-i-study

- Do you want to apply?
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