



Deutscher Akademischer Austauschdienst
German Academic Exchange Service



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Master's degree



Master in Industrial Informatics

Hochschule Emden/Leer - University of Applied Sciences • Emden



Overview

Degree	Master of Engineering
Teaching language	<ul style="list-style-type: none">English
Languages	English is the compulsory language of all modules and courses. There is the possibility for students with enough knowledge of the German language to attend compulsory optional subjects in German.
Programme duration	3 semesters
Beginning	Winter and summer semester
Application deadline	Non-EU applicants, winter semester – 30 May Non-EU applicants, summer semester – 30 November German & EU applicants, winter semester – 15 July German & EU applicants, summer semester – 15 January
Tuition fees per semester in EUR	None
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	<p>We are witnessing rapid changes in the industrial environment, mainly driven by business and societal needs towards production customisation and the digitalisation of the economy. In 2006, the term "Cyber-Physical Systems" (CPS) was coined to refer to "the integration of computation with physical processes". CPS can be described as smart systems that encompass hardware and software as well as computational and physical components. These are seamlessly integrated, closely interacting to sense and to control the changing state of the real world in real time. These systems involve a high degree of complexity at numerous spatial and temporal scales, and highly networked communications integrating their computational and physical components. As such, CPS refers to Information-Communication-Control-Mechatronics Systems (sensing, actuating, computing, communicating, etc.) embedded in physical objects, interconnected through several networks including the internet, and providing citizens and businesses with a wide range of innovative applications based on digitalised data, information, and services.</p> <p>Ontologically, the term Cyber-Physical Systems means hardware-software systems that tightly</p>

couple the physical world and the digitalised (virtual) world. In a CPS ecosystem, on the one hand every real physical object (things/assets) has one or more cyber representations, and on the other hand a cyber component or system can be linked to a physical representation, i.e., an object in the three-dimensional human-tangible world. Moreover, these things are increasingly interconnected in real-operational time, either permanently networked or communicating in an asynchronous manner from time to time, using the Internet (Internet-of-Things, IoT). Digitalised data and information associated to functions of these things are then exposed as services in the Internet (Internet-of-Service, IoS) and they can be consumed by any other CPS for performing business. Industrial Cyber-Physical Systems (ICPS) forge the core of real-world networked industrial infrastructures that have a cyber representation through digitalisation of data and information across the enterprise, along the product and process engineering life cycle, and from suppliers to customers along the supply chain. As such, the competitive performance of an ICPS mainly depends on the ability to effectively collect, analyse, and use large-scale digitalised data and information from many different and often heterogeneous sources in order to sustainably and efficiently manage, supervise, and operate in the industrial environments. This effective information-driven interaction of ICPS with other real-time critical CPS like IT-enterprise systems, extending to all business processes, is viewed as vital to modern industries. There are many challenges ahead in the convergence of computing, control, mechatronics, communications and software programming for CPS ecosystems. There is a need for investigating and learning a wide spectrum of foundations, research, and technological fields. In this context, the Master in Industrial Informatics with a specialisation in ICPS addresses the penetration and proliferation of such ecosystems in the industrial environments, taking into account that the same trend is also evident in other domains such as energy, healthcare, manufacturing, military, transportation, consumer, enterprise, robotics, and smart cities, among others.

Course Details

Course organisation

Summer semester:
 Industrial Cyber-Physical Systems: 5 CP
 Digitalisation and Virtualisation of ICPS: 5 CP
 Industrial Data Transport Technologies: 5 CP
 MII Project One: 10 CP
 Compulsory Optional Subject One: 5 CP: e.g. Innovation Management

Winter semester:
 Robotic Systems: 5 CP
 Engineering ICPS: 5 CP
 Analytics and Mathematics: 5 CP
 MII Project Two: 10 CP
 Compulsory Optional Subject Two: 5 CP: e.g. Digital Economy and Society

Third semester:
 Master's thesis: 30 CP

The courses are organised in lectures, projects, and laboratory work.

A Diploma supplement will be issued

Yes

International elements

- International guest lecturers
- Specialist literature in other languages
- Projects with partners in Germany and abroad
- International comparisons and thematic reference to the international context

Description of other international elements

It is possible for students to earn a double Master's degree from an Argentinian university (Universidad Tecnológica Nacional, Facultad Regional Santa Fe [UTN-FRSF]) with financial support from the Deutsch-Argentinisches Hochschulzentrum (CUAA-DAHZ). For more information, please

click [here](#).

Integrated internships Students may engage in voluntary internships and projects. This gives them a practical approach to their Master's theses, in a cooperation with industry and other academic institutions, both in Germany and other European countries.

Course-specific, integrated German language courses No

Course-specific, integrated English language courses No

Costs / Funding

Tuition fees per semester in EUR None

Semester contribution Students will pay a semester contribution fee of approx. 270 EUR per semester. This covers the cost of the student union contribution and includes the "Semester Ticket", which covers the costs for all modes of public transport in and around the city.

Costs of living Compared to other cities in Germany, the living expenses in Emden are rather low. An accommodation costs approximately 200 to 300 EUR per month.
<https://www.hs-emden-leer.de/en/institutions/international-office/international-students/living-expenses/>

Funding opportunities within the university Yes

Description of the above-mentioned funding opportunities within the university Application and enrolment for scholarships are allowed upon arrival at the campus. The scholarships are limited and only available during a certain period of the year. The following scholarships are provided upon application: Deutschlandstipendium, Niedersachsenstipendium.

Graduation scholarships offered by the University of Applied Sciences Emden/Leer can be reviewed [here](#).

Female students can also apply for a "[fem:talent](#)" scholarship.

Requirements / Registration

Academic admission requirements Requirements for admission to the Master's programme in Industrial Informatics, specialisation "Industrial Cyber-Physical Systems" (MII-ICPS) are:

- A Bachelor's degree (BA) of a university belonging to one of the Bologna Signatory States (210 ECTS):
 - BA Electrical Engineering
 - BA Computer Science
 - BA Mechatronic Engineering
- Or an equivalent degree at a German or foreign university in a technically appropriate study

programme (the equivalence is set according to the requirements of the assessment proposals of the Corporate Centre for Foreign Education at the permanent registry of the Conference of German Culture Ministers [<http://anabin.kmk.org/anabin.html>])

Remark: Basic knowledge about real-time-critical systems and software engineering (including programming of industrial software systems) are essential requirements to successfully participate in this Master's programme.

Language requirements	Proficiency in English: TOEFL-CBT > 220 TOEFL-iBT > 83 TOEFL-PBT > 500 IELTS >= 6 ELSA > 100 EPT > 500
Application deadline	Non-EU applicants, winter semester – 30 May Non-EU applicants, summer semester – 30 November German & EU applicants, winter semester – 15 July German & EU applicants, summer semester – 15 January
Submit application to	Applicants with a foreign higher education entrance qualification (EU and non-EU) apply directly online via uni-assist . German applicants apply via " Mein persönliches Hochschulportal ".

Services

Possibility of finding part-time employment	Research and innovative work for the Master's projects and Master's thesis is usually performed in cooperation with local industries, e.g. VW, Honeywell, InproElectric, Thyssen Krupp, or Enercon. Remark: Foreign students with a residence permit according to § 16 AufenthG in accordance with § 16 (3) may work 120 whole days or 240 half days per calendar year and have the possibility to pursue student jobs.
Accommodation	In Emden, the "Studentenwerk Oldenburg" offers accommodation for students in four houses of residence. All residences are a good choice for both short-term and long-term accommodation. Located at a comfortable distance from the University of Applied Sciences, the houses provide single rooms only. Availability of rooms depends on the demand and cannot be guaranteed. Additionally, the International Office has various contacts for students who seek private accommodations. https://www.hs-emden-leer.de/en/institutions/international-office/international-students/housing/
Career advisory service	We work in close collaboration with our Career Service and MyCampus. Thus, we support students in their professional orientation and career entry.
Support for international students and doctoral candidates	<ul style="list-style-type: none">• Welcome event• Buddy programme• Accompanying programme

Hochschule Emden/Leer - University of Applied Sciences



Studying in Emden or Leer means studying at a modern university with a personal atmosphere. Besides the mere facilitation of technical know-how, our educational goals additionally entail fostering creativity and the capacity for teamwork as well as equipping our students with key qualifications. Our highly motivated academic staff enhances the appeal of our study programmes with efficient learning methods and the commitment to ensuring individual support for each and every student.



University location

The course of study takes place in the town of Emden (population 50,000), which is one of the locations of the University of Applied Sciences Emden/Leer. Today, 4,296 students study at the various faculties. Because of their coastal location, the region of East Frisia and the city of Emden are popular holiday destinations and offers numerous cultural and recreational facilities.

We invite you to visit the beautiful landscape in which Emden resides (the Wadden Sea, registered on UNESCO's World Heritage List). The cost of living is fairly low. Cities such as Hamburg or Amsterdam are within 300 km of Emden.

For more information, please visit the official website of the town at: <http://www.emden.de>.

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🌐 Course website: <https://www.hs-emden-leer.de/en/current-students/faculties/technology/study-programs/industrial-informatics-master>

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International Programmes in Germany - Database

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Disclaimer

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