BACHELOR (B.ENG.)
ROBOTICS

Mobility, healthcare, agriculture, and more—supply chains across the globe are becoming more and more dependent on robotic technology. Robots are creating faster, more efficient ways to design, construct, monitor, inspect, and transport with precision and agility. They may be programmed to take on many roles, yet industries still rely on talented professionals to design, test, and build robotic technology and ensure safety and reliability. Robotics is a huge and rapidly growing market, with vast career potential for those with the right expertise. Through a mix of theoretical principles and practical projects, you will acquire all the necessary skills to build a career as a robotics specialist in this bachelor's programme. The study contents deliver relevant technical skills, hands-on experience, and contextual knowledge of the latest technology and industry trends. As a result, you gain a solid foundation in the fundamentals of robotics and expert insights into the Internet of Things (IoT) and automation.

Degree
Bachelor of Engineering (B.Eng.)

Study start
Start online studies: Anytime

Study model and accreditation
– Online studies
– German accredited institution, recognised by ZFU (German Central Office for Distance Learning)

Duration
Online: 36, 48, or 72 months

Credits
180 ECTS credits

Apply Now

iu INTERNATIONAL UNIVERSITY OF APPLIED SCIENCES

Study Content (180 ECTS credits)

MODULE TITLE	SEMESTER	CREDITS (ECTS)	TEST TYPE
	1		
Introduction to Robotics		5	E/WAWA
Mathematics II		5	E
Fundamentals of Physics		5	E
Introduction to Academic Work		5	BWB
Technical Drawing		5	E
Mathematics: Analysis		5	E
	2		
Mathematics: Linear Algebra		5	E
Mechanics – Statics		5	E
Signals and Systems		5	E
Production Engineering		5	E
Introduction to Programming with Python		5	E
Mechanics – Kinematics		5	E
	3		
Project: Design with CAD		5	OPR
Mechanics – Dynamics		5	E
Programming with C/C++		5	P
Electrical Engineering		5	E
Sensor Technology		5	E
Collaborative Work		5	OA
	4		
Mechatronic Systems		5	E
Control Systems Engineering		5	E
Project: Robotics		5	OPR
Embedded Systems		5	E
Project: Applied Robotics with Robotic Platforms		5	OPR
Seminar: Robots and Society		5	WARE
	5		
Project: Modeling and Simulation of Robots		5	WAPR
Project: Introduction to Robot Control		5	WAPR
Elective A		10	
Seminar: Human-Robot Interaction		5	WARE
Elective B		10	
	6		
Safety of Industrial Plants and Machines		5	E
Elective C		10	
Thesis & Colloquium		10	WABT & PC

CHOOSE YOUR ELECTIVES

Choose one elective from "Electives A" list:
- Industrial Robotics and Automation
- Introduction to Cognitive Robotics
- Service Robotics

Choose two electives from "Electives B & C" list:
- AI Specialist
- Autonomous Driving
- Career Development
- Data Science and Deep Learning
- Foreign Language French
- Foreign Language Italian
- Foreign Language Spanish
- German Language
- Industrial Robotics and Automation
- Internship**
- Introduction to Cognitive Robotics
- IT Security
- Mastering Prompts
- Mobile Software Engineering
- Python for Software Engineering
- Service Robotics
- Studium Generale

*Each elective module can only be chosen once.
**Only available for on campus study programmes.

AWB = Advanced Workbook, BWB = Basic Workbook, BG = Business Game CWB = Creative Workbook, OA = Oral Assignment, CS = Case Study, WA = Written Assignment, E = Exam, E/OA = Exam or Oral Assignment, E/CS = Exam or Case Study, E/WA = Exam or Written Assignment, E/AWB = Exam or Advanced Workbook, ME = Module Exam, PO = Portfolio, PP = Proof of Participation, PR = Project Report, OPR = Oral Project Report, RE = Research Essay, T = Thesis, CO = Colloquium

ELECTIVES

In this programme, you can choose electives in order to learn more about a field you're interested in. Here's a short introduction to a few electives.

INDUSTRIAL ROBOTICS AND AUTOMATION

Typical handling devices such as industrial robots are program-controlled. In this module you will first gain an overview of the standards of conventional handling technology. You'll then deepen your knowledge in the field of flexible handling technology, especially with characteristic placement applications, grippers, manipulators and end effector technology. Automation technology will be a key focus in your degree. Modern automation systems are characterized by the combination many different devices such as actuators, sensors, and machines that must be able to perform coordinated actions and exchange data with each other. You'll get to know these processes as well as learn about current challenges and trends, and the communication technologies to build effective industrial automation networks.

SERVICE ROBOTICS

The modern robot is mobile, can move around rooms and perform tasks autonomously. In this module you'll gain an introduction to robot movement before diving deeper into the kinematics and dynamics of mobile robots. You'll explore to what extent a mobile robot can perceive its environment, with central topics such as sensors, robot vision, image processing, localization, mapping, movement, task planning and mobile manipulators. In recent years, the field of robotics has been strongly influenced and inspired by biological processes. Instead of rigid structures, compliant, organic-like materials and surfaces have created a new generation of innovative, soft robotics. These are used in applications where highly dynamic tasks must be performed in unsafe or harsh environments and are especially useful for applications where human-robot interaction is involved. In this module, you'll learn all about service robots, soft robotics, materials, technologies, innovative sensors, and various modelling approaches companies, tech and government agencies on an international level.

CAREER OUTLOOK

With a Bachelor of Robotics, you'll be a technical professional with robotics expertise and the necessary overview of relevant concepts such as cyber security. You'll possess key knowledge of artificial intelligence (AI), analysis of Big Data and the use of simulation software and hardware platforms. These qualifications offer you brilliant career prospects in automation technology, aerospace, chemical and pharmaceutical industries, automotive, mechanical and plant engineering, logistics, and more. You could, for example, work as an automation or control technician, mechatronics engineer or software developer for robotic systems. You might even become a specialist for system integration as a Production Engineer, lead projects and products as an R&D Engineer or enter project management in an exciting field.

ADMISSION

We try to keep admission as simple as possible at IU. To successfully enrol, there are just a few requirements we need you to prove.

ADMISSION REQUIREMENTS
– Higher Secondary School Leaving Certificate such as A-Levels or IB Diploma and your transcript of records.
– A subject-related higher education entrance qualification.

Depending on your qualifications, you might have to meet additional requirements, such as successfully passing a university entrance examination or one of the following programmes to make sure you are ready to study with us:
– Bachelor Entrance Examination (included in Scholarship Program)

Please get in touch with our Study Advisory Team to find out the exact requirements applicable for your application.

SCHOLARSHIP PROGRAMME
Start in our Scholarship Programme as a participant with immediate access to 50% of your courses. You can do this by taking our Entrance Examination which will be included in your course as part of the Scholarship Programme. Once admission and the courses are completed, you can finish your degree.

Questions? Speak to your study advisor, they will guide your through every step of the process.

PROOF OF ENGLISH LANGUAGE SKILLS
At IU, we teach in English to prepare you for the international market. We, therefore, ask for proof of your English language skills.*
– TOEFL (minimum 80 points) or
– IELTS (minimum Level 6) or
– Duolingo English-Test (min. 95 points) or
– PTE Academics (minimum 59 points) or
– Cambridge Certificate (minimum Grade B)

*Proof must be provided before the start of the study and must not be older than five years.

8 STEPS TO COMPLETE YOUR STUDIES

1 Register and apply online

2 Choose your course

3 Download your study scripts

4 Work independently with study scripts

5 Take part in Q&A sessions

6 Prepare for exams and take them either:
– directly online, or
– at an IU examination centre (remember to register in time).

7 Bachelor thesis and colloquium

8 Complete your studies with certificate