CURRICULUM B.Eng. ROBOTICS

myStudies, 180 ECTS

Month	Model 1: Programme Start October			Model 2: Programme Start January				Model 3: Programme Start April				Model 4: Programme Start July			
	Courses			Courses				Courses				Courses			
Oct	Introduction to Robotics	Mathematics II	Fundamentals of Physics												
Nov															
Dec															
Jan	Introduction to Academic Work	Technical Drawing	Mathematics: Analysis	Fundamentals of Physics	Introduction to Academic Work	Technical Drawing	Mathematics: Analysis								
Feb															
Mar															
Apr	Mathematics: Linear Algebra	Mechanics - Statics	Signals and Systems	Mathematics: Linear Algebra	Mechanics - Statics		Signals and Systems	Fundamentals of Physics	Mathematics: Linear Algebra	Mechanics - Statics	Signals and Systems				
May															
Jun	Semester Break														
Jul	Production Engineering	Introduction to Programming with Python	Mechanics - Kinematics	Production Engineering	Introduction to Programming with Python		Mechanics - Kinematics	Production Engineering	Introduction to Programming with Python		Mechanics - Kinematics	Fundamentals of Physics	Production Engineering	Introduction to Programming with Python	Mechanics - Kinematics
Aug															
Sep	Semester Break														
Oct	Project: Design with CAD*	Mechanics - Dynamics*	Programming with C/C++	Introduction to Robotics		Mathematics II		Introduction to Robotics		Mathematics II		Introduction to Robotics		Mathematics II	
Nov															
Dec															
Jan	Electrical Engineering	Sensor Technology	Collaborative Work	Electrical Engineering	Sensor Technology		Collaborative Work	Introduction to Academic Work	Technical Drawing		Mathematics: Analysis	Introduction to Academic Work	Technical Drawing		Mathematics: Analysis
Feb															
Mar															
Apr	Mechatronic Systems	Control Systems Engineering*	Project: Robotics	Mechatronic Systems	Control Systems Engineering*		Project: Robotics	Mechatronic Systems	Control Systems Engineering*		Project: Robotics	Mathematics: Linear Algebra	Mechanics - Statics		Signals and Systems
May															
Jun	Semester Break														
Jul	Embedded Systems	Project: Applied Robotics with Robotic Platforms	Seminar: Robots and Society	Embedded Systems	Project: Applied Robotics with Robotic Platforms		Seminar: Robots and Society	Embedded Systems	Project: Applied Robotics with Robotic Platforms		Seminar: Robots and Society	Embedded Systems	Project: Applied Robotics with Robotic Platforms		Seminar: Robots and Society
Aug															
Sep	Semester Break														
Oct	Project: Modeling and Simulation of Robots*1	Project: Introduction to Robot Control*1	Elective A Course a	Elective A Course b	Project: Design with CAD*	Mechanics - Dynamics*	Programming with C/C++	Project: Design with CAD*	Mechanics - Dynamics*	Programming with C/C++		Project: Design with CAD*	Mechanics - Dynamics*	Programming with C/C++	
Nov															
Dec															
Jan	Seminar: Human-Robot Interaction	Elective B Course c		Elective B Course d	Seminar: Human-Robot Interaction	Elective B Course c		Elective B Course d	Electrical Engineering	Sensor Technology	Collaborative Work	Electrical Engineering	Sensor Technology		Collaborative Work
Feb															
Mar															
Apr	Safety of Industrial Plants and Machines	Elective C Course e		Elective C Course f	Safety of Industrial Plants and Machines	Elective C Course e		Elective C Course f	Safety of Industrial Plants and Machines	Elective C Course e		Elective C Course f	Mechatronic Systems	Control Systems Engineering*	Project: Robotics
May															
Jun	Semester Break														
Jul	Bachelor Thesis			Bachelor Thesis				Bachelor Thesis				Bachelor Thesis			
Aug															
Sep	Semester Break														
Oct				Project: Modeling and Simulation of Robots*1	Project: Introduction to Robot Control*1	Elective A Course a	Elective A Course b	Project: Modeling and Simulation of Robots*1	Project: Introduction to Robot Control*1	Elective A Course a	Elective A Course b	Project: Modeling and Simulation of Robots*1	Project: Introduction to Robot Control*1	Elective A Course a	Elective A Course b
Nov															
Dec															
Jan								Seminar: Human-Robot Interaction	Elective B Course c		Elective B Course d	Seminar: Human-Robot Interaction	Elective B Course c		Elective B Course d
Feb															
Mar															
Apr												Safety of Industrial Plants and Machines	Elective C Course e		Elective C Course f
May															

INTERNATIONAL UNIVERSITY OF APPLIED SCIENCES

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Here you see the order in which you study your courses in presence depending on your personal study start in October, January, April or July. Each semester consists of two blocks. In each block, you attend classes on campus for usually three courses to deepen the content in direct exchange with your fellow students and lecturers. You have semester breaks in June and September. Attending the courses on campus is mandatory and will be verified due to Visa regulations (not valid for DACH students).

Each block concludes with a two-week exam preparation phase. You can defer those exams to a later date that you do not want to take during this period. This way, your exam phases are always spread evenly over the year. Exceptions to this are courses that count as admission requirements for other courses.

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Attention: Attendance times may vary slightly depending on public holidays and the federal state holidays the campus is located in.

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If you are studying Model 2, 3 or 4 you will have to start your Bachelor Thesis before completing your final courses.

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[1] These courses take place one after another within the same quarter.

Elective A~

Industrial Robotics and Automation
- a) Handling Technology
- b) Automation Technology

Service Robotics
- a) Mobile Robotics
- b) Soft Robotics

Cognitive Robotics
- a) Digital Signal Processing
- b) Introduction to Computer Vision

Elective B~

Industrial Robotics and Automation
- c) Handling Technology
- d) Automation Technology

Service Robotics
- c) Mobile Robotics
- d) Soft Robotics

Cognitive Robotics
- c) Digital Signal Processing
- d) Introduction to Computer Vision

AI Specialist
- c) Artificial Intelligence
- d) Project: Artificial Intelligence

Autonomous Driving
- c) Self-Driving Vehicles
- d) Seminar: Current Topics and Trends in Self-Driving Technolog

Data Science and Deep Learning
- c) Data Analytics and Big Data
- d) Deep Learning

Python for Software Engineering
- c) Object Oriented and Functional Programming with Python
- d) Data Science Software Engineering*

IT Security
- c) Introduction to Data Protection and Cyber Security
- d) Cryptography

Mobile Software Engineering
- c) Mobile Software Engineering I
- d) Mobile Software Engineering II

Foreign Language Italian
- c) Certificate Course Italian
- d) Foreign Language Italian

Foreign Language French
- c) Certificate Course French
- d) Foreign Language French

Foreign Language Spanish
- c) Certificate Course Spanish
- d) Foreign Language Spanish

Foreign Language German
- c) Certificate Course German
- d) Foreign Language German

Elective C~

Industrial Robotics and Automation
- e) Handling Technology
- f) Automation Technology

Service Robotic
- e) Mobile Robotics
- f) Soft Robotics

Cognitive Robotics
- e) Digital Signal Processing
- f) Introduction to Computer Vision

AI Specialist
- e) Artificial Intelligence
- f) Project: Artificial Intelligence

Autonomous Driving
- e) Self-Driving Vehicles
- f) Seminar: Curr. Topics & Trends in Self-Driving Technolo

Data Science and Deep Learning
- e) Data Analytics and Big Data
- f) Deep Learning

Python for Software Engineering
- e) Object Oriented and Functional Programming with Pyt
- f) Data Science Software Engineering*

IT Security
- e) Introduction to Data Protection and Cyber Security
- f) Cryptography

Mobile Software Engineering
- e) Mobile Software Engineering I
- f) Mobile Software Engineering II

Foreign Language Italian
- e) Certificate Course Italian
- f) Foreign Language Italian

Foreign Language French
- e) Certificate Course French
- f) Foreign Language French

Foreign Language Spanish
- e) Certificate Course Spanish
- f) Foreign Language Spanish

Foreign Language German
- e) Certificate Course German
- f) Foreign Language German

Studium Generale

Internship

Course Information

Module	Course Code	Course	ECTS	Type of Exam
Introduction to Robotics	DLBROIR01_E	Introduction to Robotics	5	Exam/Written Assignment
Mathematics II	DLBCSMI201	Mathematics II	5	Exam
Fundamentals of Physics	DLBWINGP01_E	Fundamentals of Physics	5	Exam
Introduction to Academic Work	DLBCSIAW01	Introduction to Academic Work	5	Basic Workbook
Technical Drawing	DLBROTD01_E	Technical Drawing	5	Exam
Mathematics: Analysis	DLBDSMFC01	Mathematics: Analysis	5	Exam
Mathematics: Linear Algebra	DLBDSMFLA01	Mathematics: Linear Algebra	5	Exam
Mechanics - Statics	DLBROMS01_E	Mechanics - Statics	5	Exam
Signals and Systems	DLBROSS01_E	Signals and Systems	5	Exam
Production Engineering	DLBDSEAR01	Production Engineering	5	Exam
Introduction to Programming with Python	DLBDSIPWP01	Introduction to Programming with Python	5	Exam
Mechanics - Kinematics	DLBROMK01_E	Mechanics - Kinematics	5	Exam
Project: Design with CAD*	DLBROPDCAD01_E	Project: Design with CAD*	5	Oral Project Report
Mechanics - Dynamics*	DLBROMD01_E	Mechanics - Dynamics*	5	Exam
Programming with C/C++	DLBROEPRS01_E	Programming with C/C++	5	Portfolio
Electrical Engineering	DLBINGET01-01_E	Electrical Engineering	5	Exam
Sensor Technology	DLBROST01_E	Sensor Technology	5	Exam
Collaborative Work	DLBCSCW01	Collaborative Work	5	Oral Assignment
Mechatronic Systems	DLBROMSY01_E	Mechatronic Systems	5	Exam
Control Systems Engineering*	DLBROCSE01_E	Control Systems Engineering*	5	Exam
Project: Robotics	DLBROPR01_E	Project: Robotics	5	Oral Project Report
Embedded Systems	DLBROES01_E	Embedded Systems	5	Exam
Project: Applied Robotics with Robotic Platforms	DLBROPARRP01_E	Project: Applied Robotics with Robotic Platforms	5	Oral Project Report
Seminar: Robots and Society	DLBROSRS01_E	Seminar: Robots and Society	5	Research Essay
Project: Modeling and Simulation of Robots*	DLBROPMSR01_E	Project: Modeling and Simulation of Robots*	5	Project Report
Project: Introduction to Robot Control*	DLBROPIRC01_E	Project: Introduction to Robot Control*	5	Project Report
Seminar: Human-Robot Interaction	DLBROSHRI01_E	Seminar: Human-Robot Interaction	5	Research Essay
Safety of Industrial Plants and Machines	DLBROSIPM01_E	Safety of Industrial Plants and Machines	5	Exam
ELECTIVE A~		e.g. Industrial Robotics and Automation	10	
ELECTIVE B~		e.g. Autonomous Driving	10	
ELECTIVE C~		e.g. IT Security	10	
Bachelor Thesis		Bachelor Thesis	9	Bachelor Thesis
		Thesis Defense	1	Presentation: Colloquium

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* This course comes with admissions requirements. Please consult the module handbook for more information.

~ Electives: Choose one module with two courses from the Elective A, one module from the Elective B and one module from the Elective C. Every elective module can only be chosen once.

Note: Elective modules where the minimum number of participants is not reached will only be offered online (distance learning). However, IU ensures that there are always electives on campus.