MASTER (M.SC.) MACHINE LEARNING

Unlock the power of data with our masters in Machine Learning online programme at IU International University of Applied Sciences. Experience unparalleled flexibility and master cutting-edge technologies from the comfort of your own home.

Discover the limitless potential of data science with our online MSc Machine Learning programme at IU International University of Applied Sciences. This degree offers the perfect combination of flexibility and high-quality education, allowing you to pursue your career goals without sacrificing your personal or professional life. Study the latest advancements in machine learning and artificial intelligence, including techniques such as advanced programming with Python, deep learning, and big data technologies.

You'll build key soft skills like analytical thinking, problem-solving, and adaptability, as well as ethical awareness, along with hard skills such as data modelling, machine learning algorithms, and statistical analysis. The curriculum is designed to keep you ahead of the curve in the fast-evolving tech landscape, ensuring you are well-prepared for the dynamic demands of the industry. Graduates are equipped to thrive in roles such as Machine Learning Engineer, MLOps Engineer, and Product Owner, unlocking numerous career opportunities in the global job market!

Degree
Master of Science (M.Sc.)

Electives
In the Machine Learning online programme, you can choose electives worth 20 ECTS credits and focus on interesting practical areas.

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

Study start and duration
Official start date: 16.09.2024*.
Afterwards: Anytime
Duration: 24, 36, 48 months

Credits
120 ECTS

Apply Now

iu INTERNATIONAL UNIVERSITY OF APPLIED SCIENCES

Study Content (120 ECTS credits)

MODULE TITLE	SEMESTER	CREDITS (ECTS)	TEST TYPE
	1		
Programming with Python		5	WAWA
Advanced Mathematics		5	E
Machine Learning		5	E
Advanced Statistics		5	AWB
Deep Learning		5	OA
Project: Machine Learning Libraries		5	PO
	2		
Advanced Research Methods		5	WAWA
Big Data Technologies		5	OA
Data Modeling and Reporting		5	E
Seminar: Sustainability, Ethics, and Law in Machine Learning		5	WARE
Electives A		10	
	3		
Electives B		10	
Electives C		20	
	4		
Master Thesis		30	WAMT & PC

E = Exam, OA = Oral assignment, PC = Presentation: Colloquium, WB = Workbook, BWB = Basic Workbook, AWB = Advanced Workbook, WABT = Written assessment: Bachelor thesis, WACS = Written assessment: Case study, WAMT = Written assessment: Master thesis, WAPR = Written assessment: Project report, WARE = Written assessment: Research essay, WAWA = Written assessment: Written assignment, OP = Online Presentation, OPR = Oral project report, P = Portfolio, POP = Proof of Participation

CHOOSE YOUR ELECTIVES

Choose two electives from „Electives A" list*:
– NLP and LLM
– Natural Language Processing
– Reinforcement Learning
– Image Processing and Low Level Vision
– Corporate Governance of IT, Compliance, and Law
– International IT Law
– Data Query Languages
– Business Intelligence I
– Case Study: Model Engineering
– Explainable and Interpretable Machine Learning Models

Choose two electives from „Electives B" list*:
– Voice Assistants
– Project: Prompt Engineering
– Mid-Level Vision and Video
– Computer Vision for Autonomous Systems
– Seminar: Legal Framework for IT-Security
– Cyber Security and Data Protection
– Extract, Transform and Load Technologies
– Project: Extract, Transform and Load Technologies
– DevOps
– Project: Machine Learning Model Building
– Artificial Intelligence
– Project: AI Excellence with Creative Prompting Techniques

Elective C**:
– Internship: Master AI, Machine Learning and Data Science
  or
– Business Communication and Storytelling
– Design, Lean and Game: Social and creative methods
– Start Up Lab

*Each elective module can only be chosen once.
**Decide between an internship at a company or the modules of elective C. You complete the internship with a practical reflection. If you decide on the modules from elective C, all modules from this area must be completed. Mixed forms between internship and elective C are not possible.

ELECTIVES TRACKS

	ELECTIVE TRACK A	ELECTIVE TRACK B
NLP/LLM	– NLP and LLM – Natural Language Processing	– Voice Assistants – Project: Prompt Engineering
COMPUTER VISION	– Reinforcement Learning – Image Processing and Low Level Vision	– Mid-Level Vision and Video – Computer Vision for Autonomous Systems
ML MANAGEMENT	– Corporate Governance of IT, Compliance, and Law – International IT Law	– Seminar: Legal Framework for IT-Security – Cyber Security and Data Protection
DATA METHODOLOGIES	– Data Query Languages – Business Intelligence I	– Extract, Transform and Load Technologies – Project: Extract, Transform and Load Technologies
MODELLING BASICS AND TRENDS	– Case Study: Model Engineering – Explainable and Interpretable Machine Learning Models	– DevOps – Project: Machine Learning Model Building

CAREER OUTLOOK

Our MSc in Machine Learning online degree can lead to diverse and exciting career opportunities! Get ready to excel in sectors like technology, finance, healthcare, and beyond. With your specialised skills, you could become a Machine Learning Engineer, an MLOps Engineer, or a Product Owner – Machine Learning, playing a pivotal role in developing and implementing AI solutions that drive innovation and efficiency in various industries.

MACHINE LEARNING ENGINEER
As a Machine Learning Engineer, you will focus on developing and deploying complex machine learning models. Your role involves collecting and analysing large datasets, creating algorithms that allow machines to learn from data, and optimising these models for performance. You'll tackle challenges in predictive modelling, computer vision, natural language processing, and more, significantly contributing to the advancement of AI technologies.

MLOPS ENGINEER
As an MLOps Engineer, you'll bridge the gap between data science and IT operations, ensuring seamless integration of machine learning models into production environments. You will streamline the lifecycle of ML models, from development and testing to deployment and monitoring. Your work will enhance model reliability and scalability, improving the efficiency of AI applications and enabling businesses to harness the full potential of machine learning.

PRODUCT OWNER – MACHINE LEARNING
As a Product Owner for Machine Learning, you will lead the strategic development of AI-driven products and solutions. This role involves defining product vision, setting development priorities, and coordinating with cross-functional teams to deliver machine learning features that meet customer and business needs. You will ensure that ML components add significant value, driving innovation and maintaining a competitive edge in the market.

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.

GENERAL ADMISSION REQUIREMENTS
– Completed bachelor's degree in a STEM field (or equivalent)
– Your degree must be from a state or state-recognised higher education institution/university
– You must have achieved a final grade of at least "satisfactory" or Grade C equivalent in your previous undergraduate degree

ALTERNATIVES TO THE MINIMUM GRADE (120 ECTS CREDITS)
If you have completed your bachelor's degree with a grade of "sufficient" or grade D equivalent to the German grade "ausreichend" (up to 4.0), you can still be admitted to a master's or MBA program. For this, you need:
– A bachelor's degree (grade 3.5–4.0) from a state or state-approved higher education institution/university AND
– Relevant study achievements from a master's/MBA programme at a state or state-approved higher education institution/university relevant to the desired master's/MBA programme, with a **minimum of 40 ECTS credits** OR

– A relevant completed master's/MBA degree from a state or state-approved higher education institution/university OR
– Relevant qualifications outside of academia which can be credited to you such as further education/training at GQF7 level or – for foreign qualifications such as postgraduate diplomas – equivalent to GQF7 level relevant to the desired master's/MBA programme, with a **minimum of 40 ECTS credits**

Tip: If you apply for recognition, we can review your relevant achievements and, where possible, credit them towards your study programme in a relevant field.

Exception: To be admitted to the master's programme in Architecture (120 ECTS credits), you must have completed your undergraduate degree with a final grade of at least "good" or grade B equivalent to the German grade "good" (up to 2.5).

FURTHER ADMISSION OPPORTUNITIES
Is your undergraduate degree not in the required subject field for this programme's **120 ECTS points variation admission** requirements? You can still apply! You'll have to take 2 specific courses at the start of your studies, and pass them successfully in order to continue with your studies. That way, you don't have to take an entrance examination, and can prove your skills while earning ECTS points as part of your studies.

ENGLISH LANGUAGE SKILLS

Depending on your personal circumstances, you might be required to provide proof of your English language proficiency. Your skills would need to match the B2 level of the Common European Framework (CEF). We accept the following English language skills certificates*:

– TOEFL (minimum 80 points) or
– IELTS (minimum 6,0 points) or
– Duolingo English Test (minimum 95 points) or
– Cambridge Certificate (minimum Grade B)

Note: Proof must be provided before the start of the study and must not be older than five years. Is English your native language, or have you graduated from an English-speaking school or university? Then you do not need to prove your English language proficiency.

Get in touch with our study advisors for more details.

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 Master thesis and colloquium

8 Complete your studies with certificate

*It is at the discretion of IU International University to accept other language certificates English B2 (CEFR).