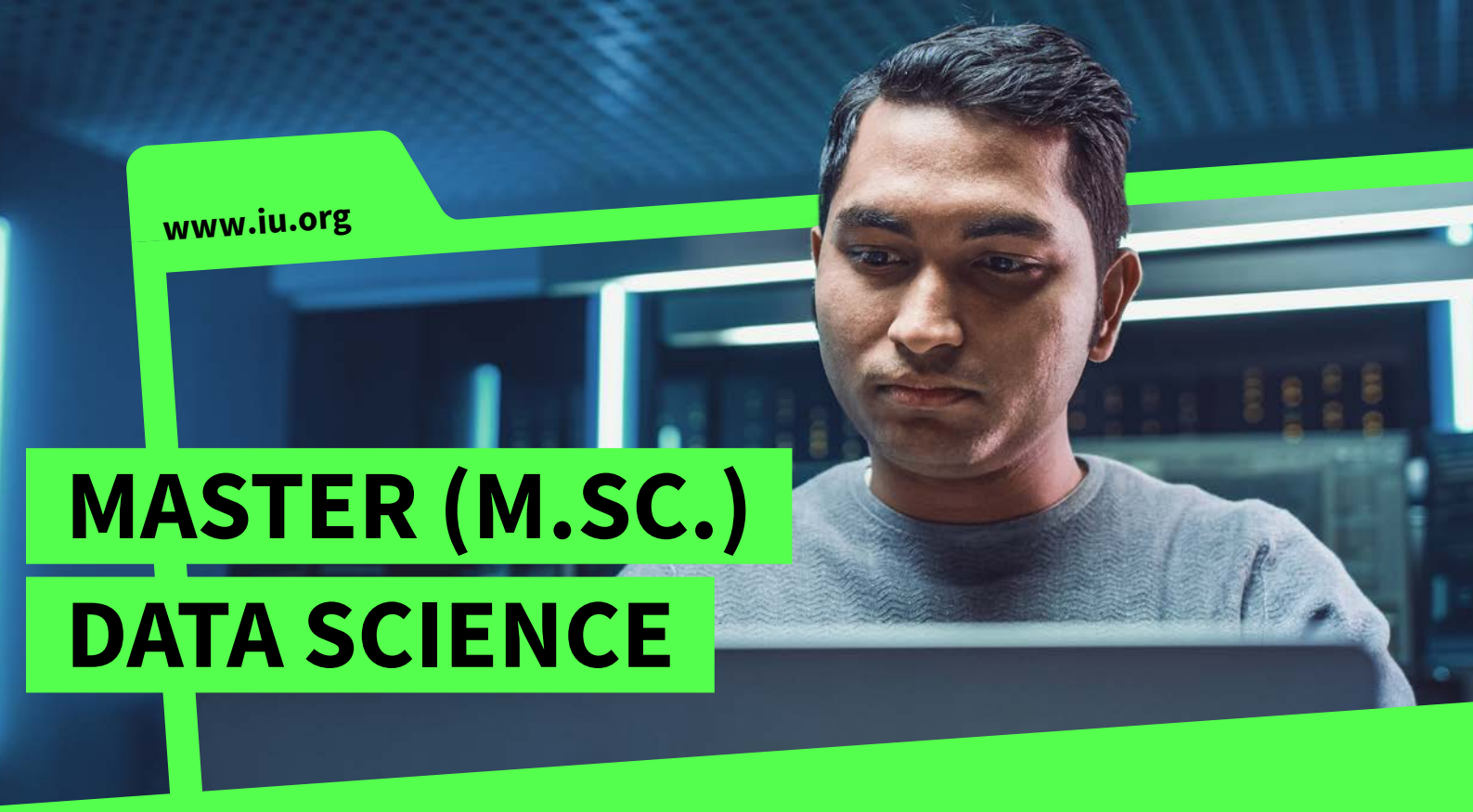

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MASTER (M.SC.) DATA SCIENCE

In this age of digitalisation, data science plays an increasingly important role in the media landscape and our social discourse. Exciting use cases, technological innovations, or controversial discussions: it's not always easy to keep track.

As a result of the field's vitality, data scientists are in great demand. In many organisations, data literacy, and therefore, the number of "Citizen Data Scientists" – people who create models based on advanced diagnostic analytics, although their actual jobs are outside this area of competence – is increasing. Against this background, data science experts are indispensable when it comes to developing and testing hypotheses, as they are the ones who help companies make sense of the data they collect.

Our online Master in Data Science focuses primarily on current developments in software and infrastructure engineering, as well as on Big Data technology. You'll learn to fully develop your problem-solving skills, and how to take a methodical, focused, and logical approach to data science problems.

Degree
Master of Science (M.Sc.)

Study start
Start (online studies): Anytime
Start (on campus): 2 times a year; Oct or Apr

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

Duration
Online: 12, 18, or 24 months (60 ECTS);
24, 36 or 48 months (120 ECTS)
On Campus: 12 months (60 ECTS);
24 months (120 ECTS)

Credits
60 or 120 ECTS

iu INTERNATIONAL UNIVERSITY OF APPLIED SCIENCES

Study Content (60 or 120 ECTS)

1. PRESENCE TIMEFRAME	2. PRESENCE TIMEFRAME	MODULE TITLE 60-ECTS-MODEL	SEMESTER	CREDITS (ECTS)	TEST TYPE
Oct/Nov/Dec	Apr/May	Use Case and Evaluation	1	5 ECTS	OA
Oct/Nov/Dec	Apr/May	Advanced Statistics		5 ECTS	AWB
Jan/Feb/Mar	Jul/Aug	Machine Learning		5 ECTS	E
Jan/Feb/Mar	Jul/Aug	Deep Learning		5 ECTS	OA
Apr/May	Oct/Nov/Dec	Seminar: Current Topics in Data Science	2	10 ECTS	WARE
Apr/May	Oct/Nov/Dec	Case Study: Model Engineering		5 ECTS	WACS
Apr/May	Oct/Nov/Dec	Elective A		10 ECTS	
Online		Master Thesis		20 ECTS	WAMT & PC

1. PRESENCE TIMEFRAME	2. PRESENCE TIMEFRAME	MODULE TITLE 120-ECTS-MODEL	SEMESTER	CREDITS (ECTS)	TEST TYPE
Oct/Nov/Dec	Apr/May	Data Science	1	5 ECTS	E
Oct/Nov/Dec	Apr/May	Use Case and Evaluation		5 ECTS	OA
Oct/Nov/Dec	Apr/May	Programming with Python		5 ECTS	WAWA
Jan/Feb/Mar	Jul/Aug	Advanced Mathematics		5 ECTS	E
Jan/Feb/Mar	Jul/Aug	Project: Data Science Use Case		5 ECTS	PO
Jan/Feb/Mar	Jul/Aug	Software Engineering for Data Intensive Sciences		5 ECTS	OA
Apr/May	Oct/Nov/Dec	Advanced Statistics	2	5 ECTS	AWB
Apr/May	Oct/Nov/Dec	Big Data Technologies		5 ECTS	OA
Apr/May	Oct/Nov/Dec	Cyber Security and Data Protection		5 ECTS	OA
Jul/Aug	Jan/Feb/Mar	Seminar: Data Science and Society		5 ECTS	WARE
Jul/Aug	Jan/Feb/Mar	Machine Learning		5 ECTS	E
Jul/Aug	Jan/Feb/Mar	Deep Learning		5 ECTS	OA
Oct/Nov/Dec	Apr/May	Case Study: Model Engineering	3	5 ECTS	WACS
Oct/Nov/Dec	Apr/May	Seminar: Current Topics in Data Science		5 ECTS	WARE
Jan/Feb/Mar	Jul/Aug	Elective A		10 ECTS	
Apr/May	Oct/Nov/Dec	Elective B	4	10 ECTS	
Online		Master Thesis		30 ECTS	WAMT & PC

AWB = Advanced Workbook, E = Exam, OA = Oral assignment, PC = Presentation: Colloquium, PO = Portfolio, 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, OPR = Oral project report

CHOOSE YOUR ELECTIVES

Choose one from the following electives.

Choose one elective from "Electives" list (60 ECTS):
- Applied Autonomous Driving
- Big Data und Software Engineering
- Smart Manufacturing Methods and

Choose one elective from "Electives A" list (120 ECTS):
- Business Analyst
- Data Engineer
- Data Science Specialist
- Technical Project Lead

Choose one elective from "Electives B" list (120 ECTS):
- Applied Autonomous Driving
- Cognitive Computing
- Consumer Behaviour and Research
- Corporate Finance
- Industrial Automation and Internet of Things
- Innovate and Change
- Internship*
- Management
- Sales, Pricing and Brand Management
- Self Learning Systems

*Only available for on campus study programmes.

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

ELECTIVES

BUSINESS ANALYST
Master the basics of business analysis, acquaint yourself with various use cases, and understand the characteristics of relevant types of data. Become accustomed to different techniques for modelling and circulating data. You will work on current topics debated in the business analysis field, and develop real-world solutions based on relevant academic literature. The business analyst specialisation is designed to prepare you for writing your Master's thesis

DATA ENGINEER
Explore the infrastructure of data science: from data storage to provision. Start out by covering the basics of data engineering, and advance to modern architectures such as microservices, along with a variety of other relevant topics. Take your first steps into the ever-important world of cloud computing, data protection and management, and DataOps.

TECHNICAL PROJECT LEAD
If you're considering a career that combines technical knowledge with managerial skills, then this specialisation is the right choice for you. Here, you'll develop the skill set required for owning and managing IT projects across different industries.

You'll start by learning the basic principles of project management, and how they apply to IT projects. You'll then be acquainted with common challenges faced by IT managers, how to identify them and what solutions to offer. You'll round out your expertise by exploring IT project organisation and planning, cost management and staffing and team leadership topics.

CAREER OUTLOOK

Our international Master programme in Data Science is the ideal foundation to gain a head start into a successful career analysing, optimising, or innovating businesses anywhere in the world. Graduates from our courses go to become technical gurus, team-leaders of successful data-science teams or value-driven masterminds who turn data into action.

SENIOR DATA SCIENTIST
As a Senior Data Scientist, you are typically responsible for all aspects of transforming data into value, from designing the technical infrastructure to building advanced machine and deep learning models, as well as improving data quality and evaluating the performance of the predictions. Senior Data Scientists often act as mentors to more junior team members.

DATA SCIENCE DEVELOPER
As a Data Science Developer, you are typically responsible for designing, building and maintaining the data science infrastructure and cloud services. You develop and deploy machine and deep learning models and make sure that all relevant data are accessible. In many cases, you are also responsible to assess and improve the quality of the data used in the project.

DATA SCIENCE CONSULTANT
As a data science consultant, you help companies and teams to achieve their goals in becoming a predictive enterprise. You are typically responsible to identify potential use-cases, perform the initial project planning and define the relevant measures and metrics to define success.

ADMISSION

GENERAL ADMISSION REQUIREMENTS
- Completed undergraduate degree from a public or officially recognised university/higher education institution.
- For 60-ECTS programmes, you will need to have already acquired 240 ECTS credits.
- For 120-ECTS programmes, you will need to have 180 ECTS credits.
- You must have achieved a final grade of at least "satisfactory" or Grade C equivalent in your previous undergraduate degree
- Proof of at least one year's professional work experience completed prior to the start of study programme. Work experience must have been gained after completion of your undergraduate studies

FURTHER ADMISSION OPPORTUNITIES
Depending on your previous education, the following entry options are applicable for the 60-ECTS Master's degree:
- undergraduate degree with 210 ECTS: you can bridge the gap of 30 ECTS points with the proof of one year qualified work experience
- undergraduate degree with 180 ECTS: you can bridge the gap of 60 ECTS points with the proof of two years qualified work experience

Recognition of knowledge and abilities acquired outside of higher education is possible in principle.

WORK EXPERIENCE
- Proof of at least one year's qualified work experience completed prior to the start of the study programme (the work experience must be gained after the completion of your undergraduate studies).

– Don't have a year's worth of qualified work experience? Don't worry! With the Scholarship Programme, you can start your studies right away, and gain your professional experience alongside your studies. You'll need to achieve the one year's worth of experience before you complete your Scholarship Programme.
– You can provide us a translation of your employment contract and your pay slip or you can ask your company to fill out this form in English, sign it, apply the company stamp and send it to us.

ADDITIONAL SPECIALIST KNOWLEDGE

To study the 120 ECTS version of this degree, you will need to have taken courses **"Statistics—Probability and Descriptive Statistics"** and **"Introduction to Computer Science"** or demonstrate equivalent knowledge such as through work experience. You can take these courses online with us for free.

To study the 60 ECTS version of this degree, you will need to have taken courses **"Programming with Python", "Advanced Mathematics", "Statistics—Probability and Descriptive Statistics"** and **"Introduction to Computer Science"** or demonstrate equivalent knowledge such as through work experience. You can take these courses online with us for free.

SCHOLARSHIP PROGRAMME: HELP GETTING STARTED

Start your online degree with our Scholarship Programme and receive a scholarship up to 67%! This helps you get started as a participant with immediate access to 50% of your courses even when you don't meet the full ECTS requirements yet. If you are lacking ECTS credits from your previous studies, you can demonstrate professional work experience instead.

– To start a 120-ECTS degree, you will need a minimum of 180 ECTS credits from your previous studies.
– To start a 60-ECTS degree, you will need a minimum of 240 ECTS credits from your previous studies but can "bridge" up to 60 ECTS with 2 years of professional experience.

Once all admissions documents are provided and any relevant admissions courses are complete, you can move forward and finish your degree.

Questions? Speak to one of our study advisors, they will guide you through every step of the process.

ENGLISH SKILLS

At IU, we teach in English to prepare you for the international market. We therefore ask for proof of your English language skills*. If English is your native language or you graduated from an English-speaking school/university, you don't need to prove your English skills.

Accepted certifications:
– English Courses (complimentary when signing up with IU)**
– TOEFL (min. 80 points) or
– IELTS (min. Level 6.0 out of 9 points) or
– Duolingo English test (min. 95 points) or
– Cambridge Certificate (min. B grade overall) or
– Equivalent proof

*Proof must be provided before the start of the study and must not be older than five years.
**Please note that English Courses aren't accepted as a language certificate for on campus study programmes.

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**