DAAD

Deutscher Akademischer Austauschdienst
German Academic Exchange Service

INTERNATIONAL PROGRAMMES

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Master's degree

Quantitative Data Science Methods (QDS)

University of Tübingen • Tübingen

Overview

Degree	Master of Science
In cooperation with	Cluster of Excellence "Machine Learning in Science"
Teaching language	• English
Languages	The programme is taught 100% in English. German courses are available at the university's House of Languages, including "early bird" and evening classes for beginners, which are specially designed for international Master's and PhD students. The full German course programme is available at: www.uni-tuebingen.de/en/1056.
Mode of study	Less than 50% online
Programme duration	4 semesters
Beginning	Winter semester
Application deadline	31 May
Tuition fees per semester in EUR	1,500 EUR
Additional information on tuition fees	• No tuition fees for students from EU countries • 650 EUR per semester for students who already have a Master's degree from EU countries • Approx. 1,500 EUR per semester for students from non-EU countries Additional information concerning tuition fees: https://www.uni-tuebingen.de/en/31479
Combined Master's degree / PhD programme	No
Joint degree / double degree programme	No
Description/content	The QDS Master's programme promotes a focus on research and methods development. It expands and deepens methodological and technical knowledge, enables graduates to work scientifically, provides the basis for advancing the field, and prepares graduates for subsequent PhD studies. The programme specifically empowers graduates to take up responsible leading roles and emphasises a scientific, research-oriented mindset based on independent thought, judgement, and decision-making. The QDS Master's programme is a broad-based methodological programme. Graduates are

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not only able to apply methods but also able to evaluate and develop methods in the three areas of interest. Through the respective specialisations further expertise in relevant areas is gained. There is a strong cooperation between research institutes within and outside the university. The programme offers first-class teaching, and state-of-the-art applications are taught.

Foundations
This area covers general statistical and technical modules. Depending on the individual's prerequisites from the qualification degree, this area can serve to compensate for heterogeneity. For this purpose, personalised module combinations can be offered, focusing for example on statistics and probability theory or techniques such as programming. It is recommended to cover this area within the first two semesters of the programme.

Psychometrics
In psychometrics and mathematical psychology, students learn about typical methods used in these fields, such as (semiparametric) latent variable modelling, item modelling, dynamic longitudinal modelling, Bayesian statistics, knowledge space theory, models for decision-making, etc. Students learn to reflect critically on any problematic assumptions of the methods and to know their limitations.

Econometrics
In this area, quantitative methods used in econometrics are introduced. The programme within this area is flexible and methods such as time series analysis and machine learning are taught to be applied to topics like microeconometrics or financial markets.

Machine Learning
The area of machine learning introduces key concepts of the field such as data literacy, deep learning, and statistical and probabilistic machine learning.

Data Ethics
The increasing use of data and data driven applications affects our daily lives, for example, in decision-making processes. Thus, ethical discussion on the responsible usage of data is of growing importance. Through appropriate supplementary events and a varied programme of seminars, graduates will be able to reflect the ethical and moral handling of current topics of data science.

Project Seminar
The project seminar will involve each student undertaking his or her own research project. This project serves to deepen theoretical and practical knowledge in a specific field and can be carried out in any of the core disciplines. The topic of the research project can be included in optional areas of specialisation. The project seminar can be completed as a group. The topic can be researched in conjunction with the research groups at the university.

Course Details

Course organisation	The four-semester Master's programme QDS is split into four areas. These are interdisciplinary Foundations (QDS-FO) and the three core areas of Psychometrics and Mathematical Psychology (QDS-PS), Econometrics (QDS-EC), and Machine Learning (QDS-ML).

To ensure the interdisciplinary character of the programme, a minimum of ECTS points has to be earned in each of the three core areas (QDS-PS, QDS-EC, QDS-ML), distributed across three semesters.

The programme suggests that students specialise in one of the three core areas. This specialisation can be achieved in three stages.

- **Modules:** The area of specialisation can cover a total of 30 ECTS points.
- **Project Seminar:** The topic of the research project can build on the area of specialisation.
- **Master's thesis:** The Master's thesis allows for further specialisation in one area.

A specialisation is not mandatory. The Master's programme offers a broader path with, e.g. 21 ECTS points in each area and interdisciplinary topics in the research project and the thesis as well.

Further information can be found on the website of the Methods Center:https://uni-

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A Diploma supplement will be issued	Yes
International elements	• Integrated/optional study abroad unit(s)
Integrated/optional study abroad unit(s)	International elements are not mandatory, but students are encouraged to spend a semester abroad. The network of the Methods Center will enable students to participate in exchanges with universities renowned for their excellent teaching and research in quantitative methods.
Integrated internships	Internships are not mandatory, but yet again, the network of the institute will help students to find adequate internship opportunities.
Course-specific, integrated German language courses	No
Course-specific, integrated English language courses	No

Costs / Funding

Tuition fees per semester in EUR	1,500 EUR
Additional information on tuition fees	• No tuition fees for students from EU countries • 650 EUR per semester for students who already have a Master's degree from EU countries • Approx. 1,500 EUR per semester for students from non-EU countries Additional information concerning tuition fees: https://www.uni-tuebingen.de/en/31479
Semester contribution	Approx. 160 EUR per semester includes the use of local public transport free of charge from Monday to Friday in the evenings, on weekends, and on public holidays. It entitles students to purchase a semester ticket for unlimited use of public transport in the city of Tübingen and the surrounding area (approx. 100 EUR). For additional Information concerning semester fees, see: https://uni-tuebingen.de/en/study/organizing-your-studies/fees/semester-and-administration-fees/.
Costs of living	Estimated basic student expenses are about 950 EUR per month according to the Tübingen Student Services organisation ("Studierendenwerk"). This amount includes rent for student accommodation. Rent for private accommodation will be more expensive.
Funding opportunities within the university	No

Requirements / Registration

Academic admission requirements	- Bachelor's grade of at least 2.5 in one of the following or related fields: - mathematics - computer science - physics - economics - quantitative psychology - a secondary subject in social and behavioural sciences is desirable. - Knowledge in mathematics / methods / programming (approx. 40 credit points [CP]), including at least: - one-dimensional calculus and multi-dimensional calculus - linear algebra - statistics / probability theory - basic knowledge of algorithms and data structure (e.g. R or Python) - Knowledge of social and behavioural sciences (approx. 20 CP), including at least: - understanding how to work empirically in social and behavioural sciences - concept of latent variables - Please provide the corresponding descriptions of the courses you have taken in your application (and only the corresponding pages, not the full module book!) - English proficiency (see below) Candidates will be judged based on their level of interest and personal compatibility with the programme. As part of the reviewing process, we will require a CV and highly recommend handing in a letter of motivation. **The final decision will be based on the overall impression (e.g. grades, prior knowledge, letter of motivation, and interview) of the student's fit to the programme.**
Language requirements	English proficiency can be proved by any of the following: - German "Abitur" with English as the first or second foreign language, attended until the last year of school (graded at least "gut") - TOEFL iBT test (at least 79 points) - IELTS (at least 6.5) - Cambridge Certificate in Advanced English (CAE) (B2 or higher) - Accredited university degree of at least three years, entirely taught in English - University entrance qualification obtained in the UK, Ireland, USA, Canada, Australia, or New Zealand
Application deadline	31 May
Submit application to	Online application: https://uni-tuebingen.de/en/international/study-in-tuebingen/degree-seeking-students/application-for-international-students/ For questions regarding the application process, please contact the International Students Admissions Office: study@uni-tuebingen.de.

Services

Accommodation	Accommodation is available through the student services organisation ("Studierendenwerk") or on the private market. Rooms in student accommodation cost approx. 200 to 400 EUR per month. As Tübingen is a very attractive place to live, private accommodation is more expensive and can take some effort to find. To make sure you find a suitable place to live, you should start looking as early as possible. We recommend you apply for student accommodation through the "Studierendenwerk" at the same time that you apply for admission to the Master's programme (https://www.my-stuwe.de/en/housing/halls-of-residence-tuebingen/ and https://www.my-

stuwe.de/en/housing/faqs/) and send in a copy of your notification of admission as soon as you receive it. (Your application won't be processed until the "Studierendenwerk" has received proof of your admission.) For further information, check out the "Studierendenwerk" website on housing in Tübingen (https://www.my-stuwe.de/en/housing/housing-infos/).

Career advisory service	- The extensive network of the Methods Center in both science and industry will provide you with opportunities for exchange and benefit your professional progress. - Career advisory service at the university level: https://uni-tuebingen.de/en/einrichtungen/verwaltung/iii-studium-und-lehre/ueberfachliche-bildung-und-berufliche-orientierung/career-service/
Support for international students and doctoral candidates	- Welcome event
General services and support for international students and doctoral candidates	**Arrival Support** The university offers a number of "on-boarding" services for newly arriving international students, including: - a help desk - a buddy programme - an advisory programme called "How to Study at the University of Tübingen" - a wide range of social activities offered by student groups For more information, see: https://uni-tuebingen.de/en/182071 **Services and support for international students** The Office for Advising and Admission of International Students offers advice on all academic matters (http://www.uni-tuebingen.de/en/90787). The student initiative "StudiT" offers a buddy programme and a wide range of social activities (www.studit-tuebingen.de/en/).

Study Quantitative Data Science in Tübingen

Brand new city, brand new life: Sithara believes that real growth starts once you get out of your comfort zone. Doing her Master's in Quantitative Data Science Methods at the University of Tübingen, she delves into a world that was unknown to her before. Watch the video to find out what attracted her to data science in the first place and why this degree will future-proof your career.

» more: https://www.instagram.com/reel/Cq784Dpluuy/?utm_source=ig_web_copy_link

University of Tübingen

Innovative, interdisciplinary, international: These three words summarise what makes the University of Tübingen special. Excellent research and teaching are Tübingen's answer to the challenges of the future in a globalised world. We maintain exchanges with partners around the globe. Networks and cooperation across faculty and subject boundaries are the pillars of our successful strategy. This is reflected in our good position in international rankings. In addition, we are one of the eleven German universities distinguished with the title of "excellent."

The University of Tübingen has been a place of top-level research and excellent teaching for more than 500 years. Some 28,160 students from Germany and around the world are enrolled here in our more than 200 study programmes, including numerous international programmes taught entirely in English.

The University of Tübingen is a member of the European University Alliance "CIVIS – A European Civic University" (https://civis.eu/en), which offers a wide range of special exchange opportunities for students.

The **Methods Center** is a newly-founded institute that is part of the Faculty of Economics and Social Sciences and core research facility at the University of Tübingen. Its main mission is to develop interdisciplinary statistical methods. It is engaged in interdisciplinary cooperation and exchange in this field. The Methods Center provides methodological expertise, e.g. advice during the planning and evaluation of empirical studies. As a core facility, the Methods Center is set to play a central role in the university's strategy of excellence.

📍 University location

In Tübingen, the city is the university campus. University facilities can be found all over the city and with a student inhabitant ratio of one to three, Tübingen has one of the youngest populations in Germany. The fact that the lecture halls are scattered over the town is not a problem at all, as any destination can be reached by foot in just a few minutes and public transport is excellent. Its cosmopolitan and welcoming atmosphere is completed by its traditional and picturesque medieval silhouette. Thanks to the number of taverns, sidewalk cafés and restaurants as well as cultural activities such as film festivals or seasonal markets, it will not be difficult for you to find ways to spend your leisure time. For those with a need for nature, the Black Forest and the Swabian Alb are paradises for hiking, cycling and skiing right at your doorstep.

Contact

University of Tübingen
Methods Center
Faculty of Economics and Social Sciences

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🌐 Course website: https://uni-tuebingen.de/en/160267

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International Programmes in Germany - Database

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