Course Syllabus

Areas		Credit Points				
		Semester				Sums
		1	2	3	4	
Foundations (Elective Modules)						min 12
core areas	Psychometrics and Mathematical Psychology (Elective Modules)					18 - 27
	Econometrics (Elective Modules)					18 - 27
	Machine Learning (Elective Modules)					18 - 27
Project Seminar (Research Project in one of the above areas)						9
Master Thesis						30
Sum Credit Points		**30**	**30**	**30**	**30**	**120**

QDS offers specializations in one of the core areas:
- Psychometrics and Mathematical Psychology
- Econometrics
- Machine Learning

Specialization can be achieved in three stages:
- Modules: The area of specialization can cover a total of 27 ECTS points.
- Project Seminar: The topic of the Research Project can build on the area of specialization.
- Master Thesis: The Master Thesis allows for further specialization in one area.

Specialization is not mandatory. The master's program offers a wider path with e.g. 21 ECTS points in each area and interdisciplinary topics in the Research Project and Thesis.

Why QDS @ Tübingen?

- offers a modern, interdisciplinary curriculum in quantitative methods
- sits at the intersection of Psychometrics, Econometrics and Machine Learning.
- is organized by the Methods Center which is a new core facility for methods development funded by the German Universities Excellence Initiative
- has highly motivated teaching staff
- offers research and studies on an international level with many contacts to universities abroad (with opportunities for student exchange)
- and last but not least: Tübingen is a pretty historic town with a lively student culture.

The University of Tübingen
Innovative. Interdisciplinary. International. Since 1477. These have been the University of Tübingen's guiding principles in research and teaching ever since it was founded. With this long tradition, the University of Tübingen is one of the most respected universities in Germany. Recently, its institutional strategy was successfully selected for funding in the Excellence Initiative sponsored by the German federal and state governments, making Tübingen one of Germany's eleven universities distinguished with that title of excellence. Tübingen has also proven its status as a leading research university in many national and international competitions – in key rankings Tübingen is listed among the best universities for the Humanities and Social Sciences as well as for Science and Medicine.

Additional Information
www.uni-tuebingen.de/en/160267

EBERHARD KARLS
UNIVERSITÄT
TÜBINGEN

{@DS}

Quantitative Data Science Methods

Psychometrics | Econometrics | Machine Learning

Faculty of Economics and Social Sciences
Methods Center

QDS Profile

Statistical techniques used in the Social and Behavioral Sciences, Economics and Data Science are strongly connected and share an interdisciplinary basis. The collaboration between these disciplines is therefore very important in the context of methods development and application. We train people who can develop and apply methods at this interdisciplinary intersection.

The international MSc Program "Quantitative Data Science Methods: Psychometrics, Econometrics, and Machine Learning" (QDS) is a unique research-oriented two-year study program designed for students interested in cutting-edge quantitative methods used in these three disciplines and in the flexible transfer of methodologies between them.
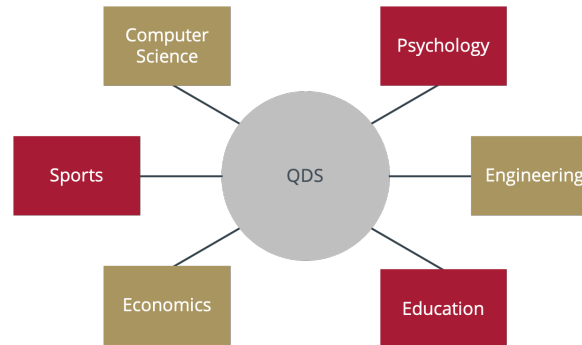
The core modules introduce quantitative methods in the fields of psychometrics, econometrics and machine learning, as well as providing students with interdisciplinary knowledge in statistics, study design and programming.
Elective modules (such as research-oriented project modules and an ethics module) allow for an individual research focus in an elected area.

Special features of the program are:

- Individual research projects with possible integration in ongoing research at an early stage (3rd semester).
- Opportunity to start the Master Thesis early (3rd semester).
- Studies abroad (3rd semester).
- All modules are taught in English.

Opportunities

Cooperation
Tübingen has a strong research profile in all three core areas. Top-level researchers from all major methodological branches of Quantitative Data Science (QDS) will actively contribute to teaching on the program. This includes members of the Methods Center, the School of Business and Economics, the working group on Research Methods and Mathematical Psychology (Department of Psychology) and Machine Learning experts from the Department of Computer Science.

Career Perspectives
QDS graduates will be able to start a career in every area of statistical application or research. The interdisciplinary character of the program opens a broad field of opportunities. Key positions for QDS graduates include:

- Statistical consultancies
- Data Analyst / Scientist (financial sector, industry, ...)
- Insurance companies
- Industrial and academic research

The QDS program is also an excellent foundation for doctoral studies, both at university and in industry.

Requirements

Degree Requirements
- Bachelor's degree or equivalent in a field that includes a mathematical or statistical focus (mathematics, data/computer science, physics, economics, quantitative psychology and related fields) with an overall grade better than 2.5 (This refers to the German system where 1.0 is the highest. For queries concerning the equivalence of non-German qualifications please contact the program advisor.)
- Applications must include evidence of proficiency in the following fields: one- and multi-dimensional calculus, linear algebra, and either statistics or probability theory.
- Strong background in mathematics, statistics and probability theory
- Basic/First knowledge in programming, algorithms, and data structure is required.
- English language requirements

Application / Admission Timeline
- The QDS course starts in the winter semester only.
- April 1st, 2020: Start of Application Period
- July 15th, 2020: Application deadline
- October 12th, 2020: Orientation week and preparatory math course

Service
- Support during the application period
- Support in finding student accommodation
- Pick-up-service on arrival
- Inauguration week with registration at the university
- Introduction to student life in Tübingen
- Academic guidance