

# Program Guide 2020 – 2021

Master of Arts

**Science and Technology Studies**

M.A. STS



[www.mcts.tum.de/sts](http://www.mcts.tum.de/sts)

This program guide is intended to provide students and prospective students with a general overview of the STS Master's program. It does not replace any official university regulations and can always be subject to change.

December 2020

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# Introduction

## Welcome Message from the Co-Directors of the MCTS

**Dear students and prospective students,**

Thank you for your interest in the “Science and Technology Studies” (STS) Master’s program offered by the Munich Center for Technology in Society (MCTS). The complex and pressing challenges highly technologized societies are currently facing call for new inter- and transdisciplinary approaches. Emerging technologies such as autonomous driving, robotics and novel biotechnologies, as well as new questions concerning privacy and data-security in the age of the Internet are just a few examples that illustrate a growing need to address social questions that go beyond classical disciplinary boundaries and methods.



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This program teaches you how to communicate between disciplinary and institutional boundaries and address the relations between science, technology, society and politics. Its innovative curriculum and renowned faculty will provide you with the knowledge and methodological tools necessary to analyze the conditions, forms and impact of established and emerging technologies. The program gives you a comprehensive social science perspective on science and technology and prepares you for a broad range of careers both within and beyond academia.

The STS program’s innovative and interdisciplinary course structure reflects the mission and approach of the MCTS. Students from the humanities, social and life sciences, economics, law and STEM fields come together in an international and diverse academic environment. In line with the center’s guiding principles—empirical, interdisciplinary, reflexive and dialogic—you engage closely both with cutting-edge theoretical research and relevant technological practice.

This guide contains a detailed overview of the STS Master’s program. It provides various resources you can benefit from as an STS student and gives you tips to help you get the most out of your time studying at TU Munich. We would like your studies here at the MCTS to be an inspirational and all-round valuable experience, and we are always open to new ideas and suggestions.

We look forward to welcoming you to the program.

Sincerely,

Prof. Dr. Sebastian Pfotenhauer and Prof. Dr. Ruth Müller  
Co-Directors of the MCTS



# Why Study STS?

## Science and Technology Studies

Science and Technology Studies (STS) is a multidisciplinary research field that explores the interactions between science, technology, and society. STS utilizes methods and insights from fields such as the social sciences, history, philosophy and policy studies to address urgent questions such as:

- How can we understand scientific and technological change?
- Which inter- and transdisciplinary forms of knowledge production and management are necessary in order to successfully cope with current socio-technological developments?
- How are epistemic, normative and historical dimensions of science and technology connected?
- How do science and technology differ across regulatory, cultural and policy contexts?

The Science and Technology Studies (STS) Master's Program at the Technical University of Munich is the first of its kind in Germany. It offers a research-oriented graduate education for students interested in both the technical and social aspects of today's highly technologized societies.



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# Student Perspectives

## **Devika Prakash**

*Bachelor of Architecture*

*»The program is very diverse—it offers an international as well as an interdisciplinary perspective. At the same time, having a good number of German classmates is a great way to get to know more about the country. Everyone is very friendly and curious. Academically, I am very satisfied with the quality of the courses and lecturers. I especially like the focus on social science methodology.«*



## **Fauziah Nur Wahdhani**

*Bachelor of Psychology*

*» STS is a hybrid program, if I can say, and it was challenging for me with a psychology background. The good environment at MCTS helped me a lot to adapt to this study program. The teachers and staff are really nice, always open to questions. Students come from different bachelor studies, from sociology to engineering. This diversity also gives advantages to broaden my perspective in studying STS.«*

## **Manuel Jung**

*Bachelor of Science in Energy Technology*

*» STS allows me to reflect on my bachelor in engineering from a philosophical perspective.«*



**Faysal Mahamed**

Bachelor of Science in Rural Development  
and Agriculture Extension

*» What I appreciate about the STS program is that beyond the social sciences it covers a broad range of cultural sciences. It conveys a lot of ways of engaging, questioning and understanding the status-quo and the countless ways that techno-scientific developments shape the intersection between science, technology and society.«*

**Florian Tichy**

Bachelor of Arts in Philosophy

*» It is fascinating to me to discuss these topics of technosocieties with people from a diversity of cultural and disciplinary backgrounds. It feels like a colorful concert, the current state of the world at a table. «*



## Program Director, M.A. STS

**Prof. Dr. Ruth Müller**

Professor of Science & Technology Policy

*» The MA program in STS at the MCTS trains students to explore how research and innovation affect society, politics and culture and how in turn social, political and cultural values and structures affect scientific knowledge and technology development. These skills are essential for better understanding and shaping our contemporary knowledge-based and innovation-oriented societies. We train our students to become sensible analysts and creative problem-solvers that will contribute to developing socially just and politically reflexive forms of life and governance in contemporary society. «*





# Goals of the Program

STS offers a research-oriented graduate education for students interested in a comprehensive social science perspective on today's highly technologized societies. Students from the social sciences, humanities, economics, life sciences, medicine, computer science and STEM fields come together in a highly international and interdisciplinary environment.



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The Master's program in Science and Technology Studies conveys empirical research methods and analytical skills that enable students to critically address the social conditions and consequences of contemporary science and technology. The curriculum affords students a broad knowledge of international STS research with a distinctive focus on the topics of knowledge production and the development of reliable technology in highly technologized societies. In addition, the STS program has an option for students to specialize in the Philosophy of Science and Technology or the History of Science and Technology.



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Some of the STS program's special features are:

- In-depth exposure to **interdisciplinary approaches**: students learn how to address various social, historical and policy aspects of contemporary developments in science and technology using methods from social sciences, philosophy or the humanities. The STS program addresses technoscientific problems in a critical and diagnostic way with a focus on problem-solving, and conveys reflexive, collaboration and communication skills.
- **Research orientation and specialization**: Students of the STS Master's program can specialize in STS research topics early in their studies and lay foundations for further research in the field. Alternatively, students can specialize in the Philosophy of Science and Technology or the History of Science and Technology.
- **Empirical research methods and analytical skills**: Rigorous training in social science research methods provides STS students with an empirical basis to address the conditions and consequences of contemporary science and technology.

## Academic Profile and Career Perspectives

STS students learn how to analyze the conditions, forms and impact of sociotechnical developments, allowing them to contribute critically to current research on social problems and decisions relating to science and technology. Students learn to identify and evaluate situations, problems, possibilities and challenges in the field of sociotechnical innovation in order to provide solutions on both a concrete and general level. Graduates of the program can evaluate the process of scientific-technological knowledge production and its practical and political conditions and effects.

The program is intended to prepare graduates for further careers in academia and STS research, and to make them internationally competitive applicants for PhD programs in STS and related fields.

Students are actively encouraged to gain professional experience in voluntary internships during their studies. Outside of academia, STS graduates are qualified for careers in numerous areas such as science and technology management, consulting and policy advice, science communication and journalism, science funding and policy, exhibition curation, scientific management and many more.



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The mandatory courses in the **first semester** are intended to convey a common knowledge base in the field of STS. This allows all students to develop a fundamental understanding and common vocabulary. The modules are structured in such a way as to allow all students to bring background knowledge from their bachelor's studies into the discussions, and simultaneously benefit from the previous knowledge of their classmates.

In the **second semester**, students elect courses from a list of core topics and can begin focusing on a particular field of STS research. Furthermore, methodological training is deepened. The module "STS-MINT"<sup>1</sup> in the second semester helps students to develop original reflexive perspectives on STEM fields. In this module, students visit courses from STEM fields and reflect on the social, ethical and political aspects of their acquired knowledge. Further explanation and specialization is provided in accompanying tutorials given by research assistants. Students with a background in the humanities or social sciences may visit introductory courses in STEM fields, whereas students who already have a STEM background can select advanced courses.

In the **third semester**, students choose courses from a list of advanced topics and can continue focusing on a particular field of research. The module "Practicing Research" helps students learn how to develop research projects and prepares them for their Master's thesis.

The **fourth semester** is devoted to the preparation of a Master's thesis accompanied by a colloquium.



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<sup>1</sup> MINT is the German abbreviation for STEM (science, technology, engineering, mathematics)



# Modules

## 1st Semester

### **STS 1-3 (1x 10 ECTS, 2 x 5 ECTS)**

These modules provide one-semester graduate-level introductions to the field of Science and Technology Studies (STS). Students are exposed to central concepts, questions, and methods of STS as well as the history and philosophy of science and technology.

#### **STS 1 “Practices and Politics of Science and Technology” (10 ECTS)**

In this module, students explore how science and technology shape—and are shaped by—social and political processes. The module is devoted to reading, analyzing, and critically engaging with foundational works in STS and related fields. The course draws on case studies that have become canonical in the STS literature, and incorporates current debates about societal transformations. Topics addressed include the construction of science and technology as a contingent social practice, scientific and technical controversies, the politics and publics of science and technology (as e.g. concerning the governance of research and its communication), the nature of scientific authority, and the relation of science and technology to democracy and the state.

#### **STS 2 “Philosophy of Science and Technology” (5 ECTS)**

This module is an introduction to fundamental topics in the philosophy of science and technology. It covers conceptual, methodological and ethical perspectives with a focus on 20<sup>th</sup>-century schools and strands such as logical positivism or hypothetico-deductivism. Some of the issues the course covers are paradigms of the scientific method, the structure of scientific theories, theory change and scientific revolutions, the nature of technical artifacts, and fundamentals of ethics of science and technology. Upon completion of this module, students are familiar with a wide range of philosophical issues related to science and technology. They are able to follow contemporary philosophical debates concerning the nature of science and technology as well as human responsibility in techno-scientific contexts.

#### **STS 3 “History of Science and Technology” (5 ECTS)**

This module analyzes the historical evolvment of academic research and technology both as a material and cultural process. The focus is on the production of knowledge, on theoretical structures and technical systems as well as on artifacts that transform the physical and symbolic nature of our lifeworld. Therefore, basic expertise in the history of science and technology not only highlights the cultural impregnation and differentiation of various knowledge forms but also reveals their reification in technologized environments and evaluates the social discourses surrounding their legitimization. Key issues addressed are, among others, the secularization of scientific knowledge in the transition to modernity, the scientification of technology and the mechanization of science, the organizations and institutions of science and technology and the patterns of techno-scientific competition on a global scale.

### **Methods 1 (5 ECTS)**

This module gives students an insight into social-scientific methods relevant to STS, for example qualitative videography, discourse analysis, mapping of controversies and interviews. Students also learn about philosophy as well as critical methods from a techno-historical perspective.

### **Lecture Series & Academic Skills (5 ECTS)**

This module consists of a lecture series as well as academic skills classes. The lecture series gives students an overview of the spectrum of issues and empirical cases in STS and provides them with an insight into current research in STS. Accompanying classes focus on academic skills such as literature search, academic writing and giving presentations. In individual and group work, students learn to compare and discuss different approaches in STS, and to use these approaches for their own research.

## **2nd and 3rd Semester**

### **STS MINT (7 ECTS)**

In this module, students elect courses in science, technology, engineering or mathematics (STEM) as well as STS tutorials. In these tutorials, students reflect on the attended STEM lectures in light of their STS knowledge and write a lab report. Students with a social science or arts background visit introductory STEM courses, while students with a STEM background choose advanced courses. The aim is a theoretically informed and methodologically controlled analysis of specific disciplinary practices.

### **STS Core Topics (3 x 5 ECTS)**

In these courses, students receive broad basic knowledge of STS subjects. Students elect three key subjects from the following list of fields, which are taught in collaboration with the Master's program Responsibility in Science, Engineering and Technology.

- Biomedicine & Health
- Epistemology & Ontology
- Risk & Security
- Ethics & Responsibility
- Gender & Diversity
- Industries & Innovation
- Knowledge Cultures & Institutions
- Infrastructures & Design
- Media & Digital Cultures
- Nature Cultures & Sustainability
- Politics & Governance
- Publics & Participation
- Co-construction of Technology & Users
- Law, Science and Technology

## **Methods 2 (8 ECTS)**

This module deals with specific problems and challenges of empirical research in STS. It conveys different approaches to cooperative and collaborative knowledge production in multi-, inter- and transdisciplinary contexts. The course also deals with approaches to use such formats for empirical research, e.g. in ethnographic projects, in focus group settings or in interviews.

## **STS Advanced Topics (4 x 5 ECTS)**

In the 3rd semester, students elect four advanced courses from the above-mentioned list of key subjects. This allows students to broaden or deepen their knowledge and to form a research focus and lay foundations for an academic career in STS.

## **Practicing Research in STS (10 ECTS)**

This seminar trains students to design and implement a research project leading to a written research report. The project can be pursued individually or in a group, and is closely mentored by teaching staff and continually discussed in the seminar. The aim is to enable students to hypothesize about research questions, apply analytical methods to empirical cases from an STS perspective, to test assumptions by creating an appropriate research design and to finally present the results.

# 4th Semester

## **Master's Thesis (30 ECTS)**

In the fourth semester, students write a Master's thesis. The module includes a Master's colloquium, which allows students to give three presentations of the current state of their thesis and obtain constructive feedback from peers and researchers.

# Going Abroad

There are several opportunities for stays abroad, which students can pursue on their own initiative. The MCTS' Academic Programs Office and TU Munich's International Center ([www.international.tum.de/en](http://www.international.tum.de/en)) offer support and advice. The strong international network of the Munich Center for Technology in Society is a particular advantage for STS students seeking international experience.

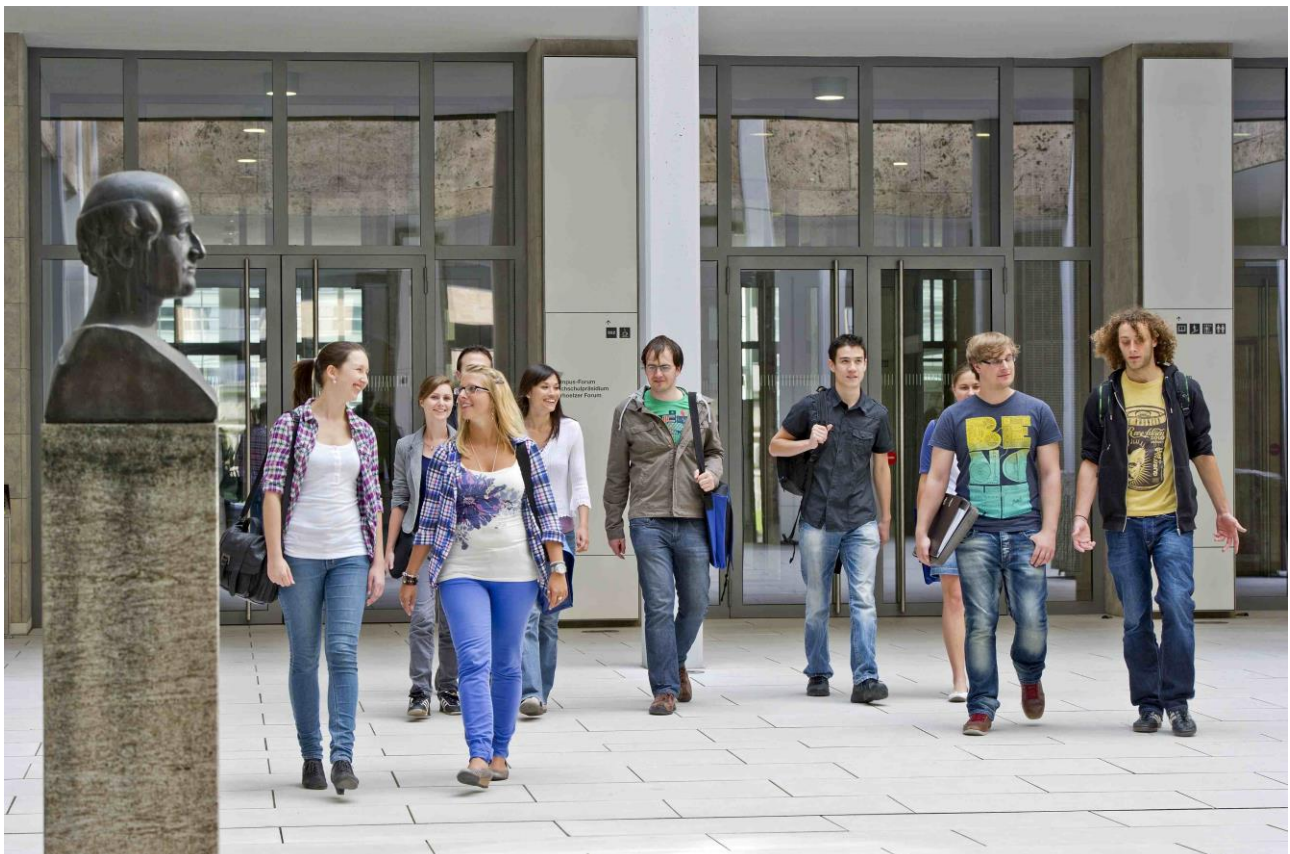
# Admissions

## Application Requirements

To be eligible for admission to the Master's Program "Science and Technology Studies", applicants must hold a Bachelor's or equivalent degree in one of the following fields: social sciences, psychology, the humanities, economics, STEM (science, technology, engineering or mathematics), life sciences, medicine or law.

Furthermore, applicants must demonstrate proficiency in English and have completed at least 8 ECTS credits worth of courses on theories and methods of social science. If the latter prerequisite is unfulfilled, it can be completed within the first year of the Master's program.

International students are required to provide proof of basic knowledge of the German language within the first year of their studies.



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# How to Apply

The application process has two main steps.

See [www.mcts.tum.de/programs/master-sts/how-to-apply/](http://www.mcts.tum.de/programs/master-sts/how-to-apply/) for detailed information.

## Aptitude Assessment

### Step 1



50-59 Points: **Admission**  
30-49 Points: **Invitation for Interview**  
0-29 Points: **Rejection**

### Step 2



30-59 Points: **Admission**  
0-29 Points: **Rejection**

1) Create an application account on the TUMonline platform and apply for admission to the program. Submit all relevant application documents for the STS program, including a transcript of records, a written statement of motivation, and an essay response to one of two questions announced on the STS application website in mid-December. Applications open January 1 and close May 31.

2) Applicants with less than 50 and more than 29 points are invited for an interview (in English) as part of a final aptitude assessment stage.

# About the MCTS

The Munich Center for Technology in Society is an Integrative Research Center at the Technical University of Munich (TUM). As one of the most prominent centers for Science and Technology Studies (STS) in Germany, the MCTS is dedicated to understanding and reflexively shaping the multiple interactions between science, technology and society. By engaging in interdisciplinary research, teaching and dialogue, the MCTS initiates conversations and collaborations between the social sciences, humanities, natural sciences and engineering.



# TU Munich

The Technical University of Munich (TUM) consistently ranks among Europe's top universities. TUM was one of the first German universities to be named a University of Excellence and is committed to fostering innovation and interdisciplinary research in the fields of science that promise a sustainable improvement of life in society. The university welcomes talent from across the globe and seeks to promote an open, enlightened and culturally diverse mindset among its more than 40,000 students. The university is home to 15 departments, 6 integrative research centers, 7 corporate research centers, and more than 500 professors and 10,000 staff members. The university is proud of its vast alumni network, which includes several Nobel Prize laureates. More than 800 start-up companies have come from TUM. As "The Entrepreneurial University", TUM transfers results from fundamental research into market-oriented innovation processes and encourages an entrepreneurial spirit in all aspects of university life.



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# Student Life

At the Munich Center for Technology in Society, students actively partake in a variety of academic events, invited talks and guest lectures, workshops, teambuilding excursions, student initiatives, discussion rounds and social functions.

[www.tum.de/en/university-life](http://www.tum.de/en/university-life)

Students also have various opportunities to become engaged in campus life at TU Munich, for example:

**AStA:** The student body represents student interests at the university and regularly organizes festivals, parties and film screenings.

[www.asta.tum.de/en](http://www.asta.tum.de/en)

**Music:** TU Munich is home to several orchestras, choirs, chamber ensembles and other music groups that perform publicly at concerts and events throughout the year.

**Sports:** Students can take advantage of the facilities and extensive course program of the University Sports Center ZHS, the largest sports community in Germany.

[www.zhs-muenchen.de/en](http://www.zhs-muenchen.de/en)



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*TUM students enjoying a sunny day at the Vorhoelzer Café.*



# Studying and Living in Munich

Munich has a reputation for being one of the cities with the highest quality of living in the world. Bavaria's state capital, with its population of about 1.5 million, boasts a rich cultural life, numerous recreational facilities and parks as well as countless restaurants, beer gardens, bars and clubs. Munich is also home to many museums. The German Museum in Munich is the world's largest museum for natural science. There are several art galleries within walking distance of TUM's main campus, for example the Pinakotheken, the Lenbachhaus and the Glyptothek and State Antiques Collection. And of course, you should not miss the Oktoberfest!

[www.sprachenzentrum.tum.de/en](http://www.sprachenzentrum.tum.de/en)

TUM's Language Center offers free courses in German as a foreign language for students of all levels. Furthermore, TUM's Writing Center provides one-to-one consulting and guidance for students seeking to improve their academic writing in English.

[www.tum.de/en/university-life/accommodations](http://www.tum.de/en/university-life/accommodations)

Finding affordable housing in Munich can be challenging. TUM's Student Service Center offers advice for finding an apartment in Munich as well as a listing of current rental offers both online and at its service desk. Additionally, international students can consult the university's International Office for help in finding accommodation.

[www.studentenwerk-muenchen.de/en/student-accommodation](http://www.studentenwerk-muenchen.de/en/student-accommodation)

There are several student residence halls in Munich run by the Munich Student Union, as well as other social and private organizations. A further option is to search for a private room, apartment or shared flat. There are often long waiting lists, so in any event it is advantageous to plan your move well in advance and be quick responding to offers.

[www.tum.de/en/studies/semester-ticket](http://www.tum.de/en/studies/semester-ticket)

While the average rent that students in Munich pay is quite high, one financial advantage of studying at TUM is that you do not have to pay tuition fees. Students only have to pay small Student Union and basic semester ticket fees. An additional semester ticket can be purchased that grants students unrestricted use of Munich's complete public transportation network during the semester.



Photo: Nagy / Presseamt München

### *Marienplatz and the New Town Hall*

There is ample financial aid available for TUM students. You can apply for a broad range of scholarships or student loans to help finance your studies, or work part-time. TUM's career portal advertises openings for student jobs and internships on its online bulletin board and provides information about national labor laws and work permits for international students.

[www.tum.de/en/studies/  
fees-and-financial-aid](http://www.tum.de/en/studies/fees-and-financial-aid)

[www.together.tum.de/en/career](http://www.together.tum.de/en/career)

**Visitor's Address**

Augustenstraße 46, 80333 München (rear building, entrance 3)

**General Questions**

Student Service Center

Student Advising & Prospective Students Programs

Telephone: +49 89 289 22737

E-Mail: [studium@tum.de](mailto:studium@tum.de)

**Program-specific Questions**

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