MASTER SPATIAL ENGINEERING

DIPLOMA
MASTER OF SCIENCE DEGREE

JOBS
- GEOSPATIAL ANALIST
- ENVIRONMENTAL PLANNER
- AGRONOMIST

PROGRAMME AWARD
FOR QUALITY IN INTERNATIONALISATION

UNIVERSITY OF TWENTE. | ITC



SPATIAL ENGINEERING

Natural disasters, poverty, food shortage, epidemics, climate change; the greatest challenges society is facing today are characterised by enormous complexity. These so-called wicked problems are impossible to solve in a way that is simple or final. The world needs socially committed engineers who won't shy away from these complex challenges but feel the urge to contribute to solutions that will make societies around the world more sustainable and resilient.

How can you make cities resilient to climate change? And how can you ensure food and water security in East Africa? In this Master's, you will learn to break down a problem into manageable pieces and develop creative and multidisciplinary solutions. To be able to do this, you will need specialist knowledge in the field of spatial engineering, but general competencies and skills are just as important.

FOCUS AND DOMAINS

In this Master's, you will gain knowledge in three core domains. These fields are highly intertwined. You will need knowledge in all three domains, but you can choose your focus.

SPATIAL INFORMATION SCIENCE

You will become familiar with techniques for e.g. spatial data visualisation, remote sensing, image classification, spatial statistics, vegetation mapping and monitoring, 3D/temporal visualisations and crowdsourcing.

TECHNICAL ENGINEERING

Within this knowledge domain, you will learn about flood modelling, systems analysis, dynamic modelling, processing UAV (Unmanned Aerial Vehicles) images, and more.

SPATIAL PLANNING & GOVERNANCE

This knowledge domain covers topics such as social vulnerability, markets and value chain analysis, evidence-based policy analysis, spatial knowledge management and legal frameworks.

In your future career, you cannot just rely on expert knowledge in the field of spatial engineering. You need general competencies as well. For example, you need to be able to work in multicultural and multidisciplinary teams, manage large-scale projects and you need a scientific approach in solving problems. Throughout the whole programme you will gain competencies within these various fields.

ut.onl/mse-content

CASE STUDIES

During your Master's, you will work on various case studies. You and your team will try to tackle actual challenges currently faced by society. The case studies will increase in level of wickedness. The degree of wickedness is defined by the knowledge that is available on the processes and the level of consensus that can be created among stakeholders. **Examples of case studies:**

CLIMATE RESILIENT CITIES

An inadequate drainage system, poorly constructed houses, waste clogging the sewage: how can you make an urban slum in Kampala, Uganda more resilient to flooding?

HUMAN-INDUCED EARTH MOVEMENT

Gas exploitation in the northeast of the Netherlands brings economic benefits, but it also induces earthquakes, causing considerable damage. How to handle such a complex issue with so many different stakeholders?

FOOD AND WATER SECURITY

How can you ensure that the people of Bomet, Kenya, have equal access to clean drinking water, knowing that more than half of the inhabitants currently do not have this access within one kilometer?

ut.onl/case-studies

QUICKFACTS

Starts in	September	**Language**	English taught
Duration	2 years	**Tuition fee**	€ 2,601 EU nationalities
Location	Enschede, The Netherlands	**Tuition fee**	€ 18,900 non-EU nationalities
Web	ut.onl/SE		



ADMISSION REQUIREMENTS

Applicants should have a bachelor's degree or equivalent qualification from a recognised university or accredited academic institution in a discipline related to the Master's. If you hold a bachelor's degree in one of the following fields you can be directly admissible:

- Civil engineering,
- Geo-engineering
- Geographical sciences
- Earth sciences
- Water and agriculture sciences
- Geographical information systems

REQUIRED KNOWLEDGE

To allow students to meet the final qualifications of the Spatial Engineering programme, incoming students must have knowledge at bachelor's level of a research university in at least three of the following topics:

- Water, weather and climate (hydrology, meteorology)
- Earth sciences (geo-engineering, geology, earth surface processes)
- Civil engineering (infrastructure, building, hydraulics, hard interventions)
- Spatial planning and governance (urban and or rural environments)
- Spatial information and visualization (GIS, Remote Sensing)
- Software engineering

ut.onl/academic-level-se

DO THE ONLINE ELIGIBILITY CHECK

Find out if you are admissible to this Master's within five minutes with our eligibility check! This e-check is created for upcoming master's students with an international bachelor's degree to verify that they meet the specific admission requirements for this Master's. For students with an international degree, it is **mandatory to complete the e-check**. Start the check, it takes about five minutes to complete it.

ut.onl/check

ENGLISH LANGUAGE PROFICIENCY

Success in your studies requires a high level of English proficiency. Therefore, you will have to demonstrate sufficient English language proficiency. You must upload a sufficient English language test unless you qualify for one of the exemptions specified on our website.

ut.onl/english-language-se

DUTCH UNIVERSITY OF APPLIED SCIENCES

Depending on your previous education and your grades, you may need to complete a pre-master's first. The starting date of the pre-master's is in September. After finishing your pre-master's successfully, you can directly enter the Master's. It is also possible to complete the pre-master's as a minor during your Bachelor's degree. Minor students can enter the Master's September after finishing the pre-master's. For more specific admission requirements, please visit our website:

ut.onl/pre-master-se

START YOUR APPLICATION!

Your application will be evaluated based on your personal educational background/portfolio and a motivation letter.

ut.onl/se-admission-application

SHAPE YOUR PROFESSIONAL PROFILE
YOUR FUTURE CAREER

During your studies, there is plenty of opportunity to prepare for your future career.

INTERNSHIP

An internship is one of the best ways to shape your professional profile. You can apply the knowledge and skills acquired during programme and gain experience in the future work field during an internship in the second year of the programme.

ut.onl/se-year-two

INTERNATIONAL MODULE

In the international module, you will have the opportunity to visit a variety of organisations across Europe to see how they tackle complex challenges. You will explore everything from governmental bodies and private companies to research institutions. This module not only prepares you for your professional career but also helps you build valuable connections for securing internships and future job opportunities.

Check out the Instagram story from the International Module 2023, created by Spatial Engineering students!

CAREER SERVICES

The University's Career Services is here to support you in planning your future, helping you kick-start a successful career right after graduation. They offer a range of resources and services to help you prepare for life after university, including career counseling, study choice tests, workshops, and access to the career platform Jobteaser.

ut.onl/career-services

CAREER PERSPECTIVES

With a Master's degree in Spatial Engineering, your job opportunities are nearly endless. With the increasing availability of spatial data and innovations in technologies for spatial data collection and analysis, the demand for spatial engineers continues to grow extensively.

Your expert knowledge and skills as well as creativity and ability to think outside the box make you exceedingly versatile and adaptive. In your future career, you could get involved in water management, infrastructure, and planning, the development of renewable energy, environmental remote sensing, agriculture and nature conservation, socio-spatial inequality, meteorology, architecture and many other exciting fields.

Spatial Engineering graduates work in various positions and organisations. For example:

- Assistant Project Lead at Geoconsult
- Forest Information System Officer at UNIQUE Forestry and Land Use
- Process Consultant at the Dutch Ministry of Infrastructure and Water Management (Rijkswaterstaat in Dutch)
- Research Assistant at the Aerospace Information Research Institute of the Chinese Academy of Sciences

You could, of course, also obtain a PhD after completing your Master's. Or you might even start up your own company!

ut.onl/career-se

GET IN TOUCH!

Questions about this study programme? Whatever your question is, we will be happy to help you.

Contact us ut.onl/contact-msc
Visit website ut.onl/SE

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