

**UNIVERSITY  
OF INFINITE  
AMBITIONS.**



**MASTER  
OF SCIENCE  
SPATIAL  
ENGINEERING**

**UNIVERSITY  
OF TWENTE.**

# MASTER'S PROGRAMME SPATIAL ENGINEERING

Major multi-level spatial problems (so called wicked problems) require multidisciplinary solutions and broad thinking. The Master's programme Spatial Engineering prepares you to address them with a combination of technical and socio-economic knowledge, with a strong basis of spatial data analysis and modelling.

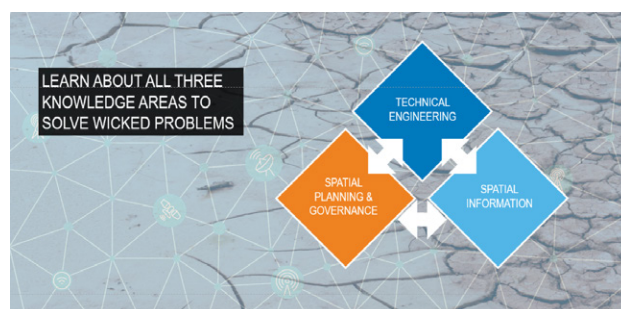
## WICKED PROBLEMS

A wicked problem is in fact a system of interrelated problems where there are many players and the problem adapts – it changes and anything you do will change the problem.

As an example, flooding is only a problem when we intended the flooded area for other purposes. We can put up a warning sign which does not really solve the problem but prevents more problems from occurring (hopefully) or we can build dykes which moves the problem into another area. As you see most spatial problems are wicked problems.

So what can you do to find a solution? Well, learn about the problem, study and watch the system, appreciate other points of view, become skilled in how to use the system and educate stakeholders.

The Master's programme Spatial Engineering prepares you to address these problems by combining technical and socio-economic knowledge with a strong basis of spatial data analysis and modelling.



## QUICK FACTS

Language	<b>English</b>
Starting date	<b>September</b>
Duration	<b>2 years, 120 credits</b>
Degree	<b>Master of Science</b>
Diploma	<b>Diploma in Spatial Engineering</b>
Tuition fee (year)	<b>2,060 Euro's (EU/EAA nationals) 14,250 Euro's (non-EU/EEA nationals)</b>
Website	<b><a href="http://utwente.nl/go/se">utwente.nl/go/se</a></b>

## EXPECTED TO START IN 2018

This new Master's programme is planned to start in 2018 (subject to the NVAO's accreditation). If you would like to be kept informed of when more information is available and registration to this programme is open we invite you to send an e-mail to [education-itc@utwente.nl](mailto:education-itc@utwente.nl) or visit the webpage [utwente.nl/go/se](http://utwente.nl/go/se) regularly.



# MASTER'S PROGRAMME SPATIAL ENGINEERING

## WHAT WILL YOU LEARN?

To learn about the system you need three core knowledge areas:

1. **Technical engineering** to be able to model and understand the physical processes
2. **Spatial information** to know where, when and what is happening, and
3. **Spatial planning and governance** to be able to use for interventions as well as predict socio economic drivers.

The solutions for multi-level, spatial problems takes more than technical expertise. Think, for example, of the distribution of limited natural resources, water, energy or food security, catastrophic consequences of natural and man-made disasters, or the unplanned development of mega cities.

In the Master's programme Spatial Engineering you will learn to:

- design and analyze scenarios;
- anticipate wider spatial implications in terms of environmental impact, economy and society;
- work with a range of software platforms that combine data from various sources, from crowd sourcing to satellite imagery;
- develop integrated approaches and solutions that help stakeholders to meet their goals.

With a degree in Spatial Engineering, you will be an engineering professional with a helicopter view and an expert in spatial information science. Key words in this Master's programme are GIS and remote sensing.

## PROGRAMME STRUCTURE

We offer a challenging programme with three case studies in the first year, and an internship and a fieldtrip in the second year.

In the **first year** of the Master's in Spatial Engineering, you will concentrate on three existing, real-life consultancy case studies in the field of:

- 1) climate resilient cities (Kampala, Uganda)
- 2) food and water security (Masai Mara, Kenya)
- 3) man-induced earthquakes (Groningen, the Netherlands and beyond).

You will benefit from specialist, in-depth teaching by an international staff and with support from professionals. The case studies increase in complexity and go through the stages of problem definition, designing a methodology, analysis and communication, to develop both your personal knowledge and professional skills. Our aim at the University of Twente is to help you acquire maximum understanding and inspiration, while at the same time offering you plenty of possibilities for personal specialization.

In the **second year** you will deepen your knowledge by carrying out a substantial research project in a field in which you wish to specialize. You will also gain (international) work experience.

## THE SOCIETAL CONTEXT

This programme will equip you to be an expert who is aware of local and societal contexts, and able to cooperate and communicate with experts representing other disciplines. As a spatial engineer, you will also be able to analyze stakeholder groups in the project context, and how they relate to each other. You will learn to integrate technical solutions in spatial planning and governance, and how best to communicate them back to the stakeholder.



## CAREER OPPORTUNITIES

With a degree in Spatial Engineering you will have plenty of job opportunities as a spatial engineer or project manager in consultancy, or with the government, NGOs or international organizations. You could get involved in water management – for instance, designing flood risk strategies in rapidly growing cities – developing renewable energy, environmental remote sensing and many other exciting fields.

## RIGHT FOR ME?

Do you have a strong affinity with technology and systems and are you inspired by large-scale, complex challenges? Are you a creative thinker willing and able to look beyond the obvious solutions? Are you eager to engage with what is happening in the world and to use your skills to make our planet more sustainable? If so, the Master's programme in Spatial Engineering at the University of Twente may be just up your street.

Six good reasons for considering this programme

1. Graduate from ITC, a global leader in teaching, research and capacity development in the field of geo-information science and earth observation
2. Get uniquely up-to-the-minute knowledge and skills for solving today's wicked problems
3. Gain valuable international experience
4. Prepare for outstanding international career perspectives
5. Bring out the best in yourself through the UT's inspiring, hands-on, project-led education
6. Study in a multicultural environment with people from over 30 countries.

## WHY STUDY SPATIAL ENGINEERING AT THE UNIVERSITY OF TWENTE?

The Master's programme Spatial Engineering will be coordinated by our Faculty of Geo-Information Science and Earth Observation (ITC) with input from other faculties. With its excellence in spatial information science and solid understanding of emerging world issues around the globe, ITC is a perfect match with the overall expertise we have at the University of Twente in fields like civil and geo-engineering, computer science, geo-information science, and public administration.

Thanks to ITC's international network and the international setting of the University of Twente, we can offer both national and foreign students an attractive studying environment that is unique in the Netherlands.

***“Spatial Engineering is special in various ways. Throughout the programme you will notice a strong student centeredness; the road towards achieving the Master's degree will be designed by you, the student.”***

Victor Jetten, professor in Natural Hazards and Disaster Risk Management at ITC





## GENERAL ADMISSION REQUIREMENTS

These are the general requirements for admission to our Master of Science programme:

1. **A relevant Bachelor's degree** (or equivalent qualification) from a university or other accredited academic institution in a discipline related to our programme, preferably combined with working experience in a relevant field;
2. **Sufficient command of English.**  
International students: English-language test results.
  - a) Academic IELTS, overall band score of at least 6.5;
  - b) TOEFL, internet based (TOEFL-iBT) of at least 90;
  - c) Cambridge CAE-C (CPE)

## SCHOLARSHIPS

After being admitted you need to make sure you can finance your studies. Well, good news! The Master's Spatial Engineering is eligible for scholarships from the ITC Foundation and ITC Excellence Scholarship programme. You can find more information about these scholarship programmes on our website ([utwente.nl/go/se](http://utwente.nl/go/se)).

