

A person with dark skin, wearing a blue and white plaid shirt, is seen from behind, looking at a large, colorful topographic map. Their right hand is resting on the map. The map features various colors representing elevation and terrain, with a prominent blue river winding through it. The background is white.

ITC FACULTY OF
GEO-INFORMATION SCIENCE
AND EARTH OBSERVATION

MASTER
OF SCIENCE
**GEO-INFORMATION
SCIENCE AND EARTH
OBSERVATION**

UNIVERSITY
OF TWENTE.





MASTER'S IN GEO-INFORMATION SCIENCE AND EARTH OBSERVATION

Be at the forefront of a rapidly growing industry

Imagine deploying drones to assess disaster damage and gather data that can be instantly used to take action. Helping farmers in drought prone areas to predict crop yield. Or taking augmented reality to a level where it could actually help solve problems in the real world. These are just a few of many applications made possible by geo-information science and earth observation.

IS OUR MASTER'S RIGHT FOR YOU?

The exciting challenges awaiting you as a Master's graduate in Geo-Information Science and Earth Observation are many. If the prospect of utilizing geographic information systems and remote sensing to help our planet and its people gets you excited, the ITC programme could be just right for you.

Being a master's student at ITC implies being internationally oriented and taking an interest in solving problems that affect society. Be prepared for a stimulating programme that is primarily characterized by application-oriented research.

Whether you're a Bachelor of Science looking to increase your market potential by getting a highly acclaimed master's degree, or an experienced professional interested in acquiring more profound knowledge of your field of work – our programme will deliver.

CAREER OPPORTUNITIES

Your master's degree will unlock a wealth of career opportunities. Depending on the profile you develop – and your personal interests, obviously – you'll have many options to choose from. To illustrate, in this leaflet you will find some examples of what ITC alumni ended up doing professionally.

A HEALTHY JOB MARKET

From traditional map-making to creating modern data-driven solutions to real-world problems, this field offers an incredible variety of possible applications. That certainly helps to explain why a US Department of Labor report identified this industry as one of the three fastest growing of the 21st century. Research institute MarketsandMarkets predicts it will grow from \$ 31 Billion in 2016 to \$ 74 Billion by 2021. Logically the job market, in the private and (semi-)public sector as well as academia, is expected to grow accordingly.

QUICK FACTS

Language	English
Starting date	September
Duration	2 years (120 credits)
Degree	Master of Science
Diploma	Diploma in Geo-information Science and Earth Observation
Credits	120 EC
Website	itc.nl/m-geo

WHY THIS PROGRAMME?

- A truly international and multicultural experience
- A personal touch
- A practice based approach
- Relevance for development
- Access to a wealth of integrated knowledge
- A high degree of flexibility
- Highly ranked



WHAT WILL YOU LEARN?

Geo-information science and earth observation is all about collecting, processing, analysing, visualising and organising data representing the location, size and shape of objects on our planet. This data is generally referred to as spatial information. Geo-information science allows for this generally complex data and imagery to be presented and organised in highly accessible forms (such as apps for mobile devices, spatial data infrastructures, maps), making the underlying story that much easier to tell and sell.

PUTTING SPATIAL INFORMATION TO GOOD USE

In today's world spatial information is everywhere. Providing ever more detailed impressions of reality, it is put to good use by developers of popular mapping applications and car navigation systems. Moreover, spatial information is the key to solving complex issues that may involve, e.g.:

- improving agricultural practices to advance the livelihoods of smallholder farmers in poor countries
- making land rights mapping faster, cheaper, easier, and more fit for purpose
- helping the world by improving water safety and security
- establishing an effective urban search-and-rescue operations framework
- promoting development, exploration and utilisation of geothermal energy sources
- providing a basic safety net to protect smallholder farmers from weather related perils
- promoting efficiency and equity in agro-good trade
- helping to achieve sustainable social housing and inclusive urban communities

The ITC Master's in Geo-information Science and Earth Observation will provide you with the knowledge and tools required for working with spatial information in any of the fields outlined above – and more.

REMOTE SENSING AND GEOGRAPHIC INFORMATION SYSTEMS

Our curriculum integrates two fields vital to geo-information science and earth observation: remote sensing (RS) and geographic information systems (GIS). Remote sensing involves the collection and analysis of scientific data at, above or below the earth's surface without coming into physical contact with them. Geographic information systems are then used to analyse, visualise and organise the data collected by remote sensing.

INTERNATIONAL EXPOSURE

The Master's Geo-information Science and Earth Observation is an international programme. We cater for a highly international mix of students from all over the world. Our education in geo-information science and earth observation is world-renowned. To offer you this education, we draw on experience from our international staff and students. The programme content is driven by the spatial problems that occur around the globe, and you are encouraged to go abroad for research or internships.

The international flavour of our Master's in Geo-information Science and Earth Observation is highly appreciated by students and external officials alike. Our programme is awarded the ECA Certificate for Quality in Programme Internationalisation by the independent Accreditation Organisation of the Netherlands and Flanders (NVAO), with internationalisation being labelled a "distinctive quality feature".

TACKLE CLIMATE CHANGE EFFECTS

Name: **Alejandra Torres Rodriguez (Mexico)**
Position: **PhD candidate as part of the BIOSPACE team**

“The idea is that these remote sensing applications can support decision-makers to tackle climate change effects. Therefore, the importance of social pressure on applying science-based policies and on an individual level, we have to adapt our lifestyle.”





PROGRAMME OVERVIEW

Geo-information Science and Earth Observation at ITC (University of Twente) is a two-year master's, with both years divided into four quartiles of ten weeks each. The study load per quarter is 15 credits (ECTS), equalling 420 hours of study; the total study load for the programme adds up to 120 credits.

YEAR 1			
Quartile 1	Q2	Q3	Q4
Geo-information science and earth observation: a system-based approach (14 EC)	Specialisation (7 EC)	Specialisation (7 EC)	Specialisation (7 EC)
	Specialisation (7 EC)	Global challenges, local action (7 EC)	Elective (7 EC)
Academic skills (4 EC)			

YEAR 2			
Quartile 1	Q2	Q3	Q4
MSc research proposal and MSc research (45 EC)			

COMMON COURSE
 SPECIALISATION COURSE
 MSC RESEARCH
 ELECTIVE COURSE

GET TO THE CENTER OF ANY PROBLEM

Name: **Stella Chelangat (Kenya)**
 Position: **Geospatial and remote sensing consultant with the International Fund for Agricultural Development (IFAD)**

“What I learned from ITC, being an academic research center, is to get to the center of any problem. I would encourage young people from Africa to join the Dutch, because of the nice intercultural environment and the high level of the educational institutions.”



THE FIRST YEAR

You will spend most of the first year taking courses and working on projects.

QUARTILE 1

The first quartile is dedicated to achieving a common understanding. These 'core' courses balance between focusing on geo-information science and Earth observation as a field of study and using GIS and remote sensing as tools, supporting us in dealing with geographical challenges.

The courses teach the main concepts in GIS and Earth observation from a geospatial problem solving point of view, addressing data acquisition and management, geospatial analysis and interpretation, and workflow design for geospatial solutions.

QUARTILE 2 - 4

Subsequent quartiles in the first year are dedicated to courses in your chosen field of specialisation (28 credits), a common course on how geo-information science and earth observation address global challenges (7 credits), and a course of your own choosing (also known as an "elective"; 7 credits). In addition, you will be acquiring important academic skills throughout the first year (total 4 credits).

SUMMER BREAK

Between the first and second year, there will be a summer break of about 8 weeks, allowing you to travel home, discover Europe, take additional summer courses and/or start preparing for your master's research.

THE SECOND YEAR

The second year of the programme leaves you lots of freedom to make your own choices. Upon successful submission of your MSc proposal you will spend most of your time doing research in the frame of on-going research projects and working on your thesis under the guidance of experienced research staff. The joint study load for your MSc proposal and thesis will be 45 credits, whereas your individual programme will amount to 15 credits.

PERSONALISE YOUR PROGRAMME

To support your research or broaden your horizon, you will assemble an individual study programme of elective courses, which could consist of an internship or even courses at other faculties or universities. Your research activities could include doing fieldwork abroad – e.g. in order to collect data to support your thesis. You will have ample opportunity to personalise your programme.

LIFELONG FRIENDSHIPS

Name: **Marco Rusmini (Italy)**

Position: **Consultant at Environmental Resources Management**

For Rusmini, having ITC named on his CV resulted in receiving several invitations for job interviews. "One of the interviewers told me that as I had studied at ITC, he didn't need to ask me anything technical, as my expertise would surpass his anyway. He just simply relied on my knowledge because I had studied at ITC."



CHOOSE YOUR SPECIALISATION

As a Master's student of Geo-information Science and Earth Observation at ITC you will focus on a specific field of interest, with multiple specialisations to choose from, including a free specialisation. Each specialisation contains a number of courses that reflect its central concerns. You will also have the opportunity to participate in a wider selection of (elective) courses.

APPLIED REMOTE SENSING FOR EARTH SCIENCES

Learn to explore for earth resources to help secure future demands for energy and minerals.

GEOINFORMATICS

Learn to develop technologies required for analysing, distributing and visualising geo-spatial data.

GEO-INFORMATION MANAGEMENT FOR LAND ADMINISTRATION

Learn to use cadastral intelligence for designing and applying responsible land administration solutions.

NATURAL HAZARDS AND DISASTER RISK REDUCTION

Learn to predict and monitor multi-hazard risk and help reduce our vulnerability to disasters.

NATURAL RESOURCES MANAGEMENT

Learn to utilize geo-spatial data for sustainable agriculture, environment and forests.

URBAN PLANNING AND MANAGEMENT

Learn to understand dynamic urban processes and create interventions to help make cities competitive, compact, sustainable, inclusive and resilient.

WATER RESOURCES AND ENVIRONMENTAL MANAGEMENT

Learn to use earth observation and geo-information techniques to create safe and sustainable water management solutions.

FREE SPECIALISATION

In addition to the above and depending on your prior education and experience, you also have the option of designing your very own specialisation from a combination of available specialisation courses together with the programme's academic advisor.

PROGRAMMES

Besides our master's, ITC offers more programmes and courses, both online and offline, in the field of geo-information science and earth observation on offer.

For a complete overview of our programmes visit itc.nl/studyfinder.

DEVELOP SOLUTIONS FOR THE MINING INDUSTRY

Name: **Eufrasia Bianca (Inka) A. Diatmiko (Indonesia)**
Position: **Solution Strategist Engineer at ESRI Indonesia**

Inka works with the Natural Resources team, to develop solutions for ESRI's customers, especially for the mining industry. The solutions do not only cover GIS technology but also some of the extensive capabilities that ESRI products have. For example, real-time technology, augmented reality, geo-artificial intelligence, big data and some other technologies.



GENERAL ADMISSION REQUIREMENTS

ACADEMIC LEVEL AND BACKGROUND

A Bachelor's degree or equivalent from a recognised university in a discipline related to the course, preferably combined with working experience in a relevant field.

The following average scores apply for the Master's:

- A 3.0 or higher Cumulative Grade Point Average (CGPA) on a 4.0 scale, or
- Upper Second Class standing or higher

NOTE: a Lower Second Class standing may be accepted based on evidence of relevant professional experience and/or other further academic development.

ENGLISH LANGUAGE REQUIREMENTS

- British Council / IELTS 6.0 (with a minimum sub-score of 6.0 for speaking and writing)
- TOEFL: Internet-based 80 (with a minimum sub-score of 20 for speaking)
- Cambridge C2 Proficiency / C1 Advanced

If you are a national of one of the countries listed at the following webpage, you will be exempted from an English language test.

itc.nl/admission-requirements-MSc-degree

SCHOLARSHIPS

Receiving a scholarship to study abroad can be a life-changing experience. Some of the world's best and brightest have had the opportunity to discover endless possibilities through scholarships.

The Faculty ITC of the University of Twente aims to attract students to its international classrooms who are eager to engage with what is happening in the world and use their skills to make our planet more sustainable. For that reason, it has established several (partial) scholarship programmes specifically designed to offer talented and motivated international students from developing countries the opportunity to pursue an MSc degree in Geo-information Science and Earth Observation at ITC in the Netherlands.

For an overview of ITC scholarships, government grants, funding by organisations or private persons can be found in our Scholarship finder.

itc.nl/scholarships

START EARLY!

Most scholarship providers require you to submit a provisional admission letter from ITC. You may receive this admission letter when you apply via our online application system and are found eligible.

Applying for a scholarship can be a quite an endeavor so start early.

We hope this information will be supportive in realising your ambition to study at ITC. We wish you good luck with your application and we are here if you need help during the application process!

itc.nl/scholarships

USING DATA TO RESCUE KIDS FROM HIV/AIDS

Name: **Mosa Moseme (Lesotho)**

Position: **Strategic Information and Evaluation Advisor at Elizabeth Glaser Paediatric AIDS Foundation**

Mosa Moseme's decision to follow her dream of further education changed her life – and many other people's lives, too. She uses her knowledge and skills to battle HIV/AIDS and to help others reach higher. "Because of my studies at ITC, I feel I have become very helpful to my peers and our community at large".



WHY STUDY AT ITC?

Taking the Master's in Geo-information Science and Earth Observation at ITC is attractive in more ways than one. As a student you will enjoy benefits including:

A TRULY INTERNATIONAL AND MULTICULTURAL EXPERIENCE

As a master's student at ITC you will be living and studying in the Netherlands. You will be meeting and mingling with students from all over the world (incredibly, ITC has alumni from about 170 countries!), of all ages and from different cultural and professional backgrounds. You can participate in projects around the globe, in all kinds of scenarios and environments, and in the process build a vast and lasting international network of kindred spirits. Our alumni network alone numbers over 20,000.

A PERSONAL TOUCH

At ITC you will be receiving high-class education with lots of personal attention from experienced and knowledgeable staff. Having worked with international students in this context for many years, we know how to address your needs.

A PRACTICE-BASED APPROACH

ITC represents high quality education and application-oriented research. We take a decidedly practical approach to the curriculum, with much attention being paid to developing academic and entrepreneurial skills as well. Your thesis writing phase in particular will give you the opportunity to work with experienced academic researchers in real-world application fields.

RELEVANCE FOR DEVELOPMENT

Our Master's is designed to support countries as well as organisations in their efforts towards (further) development. As a graduate you will have the knowledge

and skills to make a difference for your present or future employer in the (semi-)public or private sector. You will also be given the opportunity to get equipped for starting your own business.

ACCESS TO A WEALTH OF INTEGRATED KNOWLEDGE

Our Master's comprises multiple specialisations that are very different in content as well as scope. As a student you will be given access to a myriad of knowledge and networks. However different the specialisations, interaction and exchanges between them are many. Prepare to be inspired!

A HIGH DEGREE OF FLEXIBILITY

When compared to similar master's worldwide this Master's at ITC offers a high degree of flexibility. The second year in particular will allow you to take charge and shape your future.

HIGHLY RANKED

ITC is a global leader with a strong brand name in the scientific domain of geo-information science and earth observation and a solid, global reputation in capacity development.

In the **Shanghai subject ranking** (engineering - remote sensing), ITC | University of Twente ranks

- 9th in the world,
- 4th in Europe and
- 1st in the Netherlands.

Our education is top-rated in the Netherlands' '**Keuzegids Universiteiten**'. It is our aim to maintain this top-rated position in education and research.

itc.nl/rankings

MORE INFORMATION

For more information you can visit our website itc.nl/m-geo

If you have any questions please contact us. We will get back to you as soon as possible.

E: education-itc@utwente.nl

