Boost your career with a degree in geo-information and remote sensing!
Geo-information is a rapidly growing industry worldwide. Geographical information systems and remote sensing tools can be used for solving real-world problems and complex issues concerning health care, food security, climate, water, urban planning, security and land scarcity.

Tom Veldkamp, Dean
WHY STUDY AT ITC?
THE FACULTY OF GEO-INFORMATION SCIENCE
AND EARTH OBSERVATION OF THE UNIVERSITY OF TWENTE

ITC is recognized worldwide for achievements in teaching, research and capacity development in the field of geo-information science and earth observation. We educate our students to be professionals, capable of acquiring knowledge in geo-information science and earth observation and translating this into practical applications for solving real-world problems. More than 20,000 students from over 175 countries have followed ITC courses since 1950. After completing a study at ITC, students (now alumni) leave with a degree or diploma, but also with something more – a thriving network of international contacts.

There are dozens of reasons to choose ITC as your home of study

- You will study in a multicultural environment with staff and students from over 30 countries
- You will gain international experience
- You will leave with a thriving network of international contacts
- You will study in the cultural heartlands of Europe
- Our achievements in teaching GIS and RS are recognized worldwide
- We offer modern comfortable accommodation
- You can conduct part of your study with our project partners abroad
OUR MSC PROGRAM

This 18-month program (118 credits) leading to a Master of Science (MSc) degree in Geo-information Science and Earth Observation is designed for young and mid-career professionals who perform, or aspire to perform, tasks predominantly in applied research, or who require academic knowledge and skills to enhance the execution of their work.

Successful completion of the MSc degree program provides you with a qualification that enables you to continue to PhD level, either in the Netherlands or abroad.

<table>
<thead>
<tr>
<th>MSC PROGRAM</th>
<th>ACADEMIC YEAR</th>
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<tbody>
<tr>
<td>START</td>
<td>SEPTEMBER</td>
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<tr>
<td>END</td>
<td>MARCH</td>
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<tr>
<td>DURATION</td>
<td>18 MONTHS</td>
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<td>APPLICATION DEADLINE</td>
<td>1 JULY</td>
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<td>EUROPEAN CREDITS</td>
<td>118</td>
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<tr>
<td>CERTIFICATION</td>
<td>MASTER OF SCIENCE (MSC) DEGREE</td>
</tr>
<tr>
<td>ACCREDITATION</td>
<td>NVAO</td>
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</tbody>
</table>

At ITC you will receive full support from our academic staff and access to the best modern resources and information, all within a truly international environment where you will be able to meet colleagues from all over the world.

NINO KHELADZE (GEORGIA)
Governance and Spatial Information Management (2011)

I would encourage any student who is thinking of learning more about the field of geo-information science and earth observation to stop, look no further, and apply to ITC. It is a strong educational faculty that will give you great skills – skills that will assist you in overcoming the professional challenges in your future career.
FIELDWORK OFFERS YOU FIRST-HAND INSIGHT

Fieldwork is an option in most MSc programs. It is carried out in areas that reflect problems clearly related to your field of interest. Besides the direct input into your MSc thesis, fieldwork offers you first-hand insight into current practices in developing countries.

An example of such a current practice is the SEMA research project. SEMA is an integrated research programme of the University of Dar es Salaam, Tanzania and the University of Twente funded by the Netherlands Organization for Scientific Research (NWO/WOTRO).

ORDINARY CITIZENS EMPOWERED BY SMART NETWORK IN TANZANIA

BETTER SERVICE THROUGH PUBLICLY VISIBLE COMPLAINTS

“Sema” means “report” in Kiswahili. Yola Georgiadou, Juma Hemed Lungo and their teams in Tanzania and the Netherlands have given this name to the Human Sensor Web they are putting in place: a combination of social media, mobile networks and geo applications that will give ordinary citizens the opportunity to report any public services that are not working. SEMA is short for Sensors, Empowerment and Accountability.

So there you are for the third day in a row, standing at the village pump with your jerry cans. But there is no water to be had … or only polluted water or dirty water that is much too expensive. In the old days you would have complained to the village elder, and you would have had to wait and see whether, via the traditional lines of official bureaucracy, the suppliers would ever be called to account. In 2004 the World Bank decided that this had to change. A report published by the bank argued for “short lines”, enabling ordinary citizens to demand immediate social accountability from their suppliers. Now that 79 percent of the population in developing countries has access to a mobile phone, these short lines are technically within reach.

A Human Sensor Web is a communication network of geo and other web applications, including Google Maps, new and traditional media, and ordinary citizens with their mobile phones (the human sensors). The applications provide access to public service locations, such as water boards and health care. If the level of service is below standard, ordinary citizens can issue a complaint using their mobile phone. The caller goes through a digital menu, after which the application displays the complaint as an icon at the place on the map where the public service is located. It is now visible to everyone when a supplier is in default. The icon remains visible until the problem has been solved. (Source NWO/WOTRO)

The African continent struggles with desertification, flooding and super-fast urbanization. To help cope with these problems ITC, as an institute for education and research, provides specific expertise.
COURSES IN THE MSC PROGRAM

APPLIED EARTH SCIENCES
WITH SPECIALIZATION IN NATURAL HAZARDS AND DISASTER RISK MANAGEMENT AND ENGINEERING

Spatial information for assessing natural hazards and disaster risk

The number of people threatened by earthquakes, floods, landslides, volcanic eruptions, erosion, and other natural hazards has dramatically increased over the last decades. Climate change and variability, urbanization, and environmental degradation further increase our exposure and vulnerability to natural hazards. We firmly believe that spatial information plays an important role in many phases of the disaster management cycle.

Typical themes in the natural hazards and disaster risk management course domain at ITC include natural hazard assessment and monitoring, hazard process modeling, geotechnical engineering, elements-at-risk mapping, vulnerability and risk assessment, risk reduction planning, disaster preparedness, damage assessment, and post-disaster rehabilitation.

www.itc.nl/disaster-management

APPLIED EARTH SCIENCES
WITH SPECIALIZATION IN GEOLOGICAL REMOTE SENSING

Exploration of minerals and geothermal energy to secure our future supplies

Sustainable use of land and earth resources is a key factor in economic development. We are continually confronted with instances in daily life that have direct links with earth resources and related processes – from the buildings in which we live and the food that we eat to the cars that we drive.

The search for mineral resources relies on the availability of up-to-date geological knowledge bases, conceptual mineral deposit models, and modern exploration technologies. The program exposes you to geological surveys and the exploration of Earth resources.

It prepares you to supply future demands for energy and minerals, and to help the sustainable development of our society.

www.itc.nl/geological-remote-sensing
COURSES IN THE MSC PROGRAM

LAND ADMINISTRATION
A critical success factor in economic growth, food security, nature conservation and poverty reduction

Land is at the basis of all societies. Land policy regulates the access to land and the management of land. A sound land policy is a critical success factor in economic growth, food security, nature conservation, and the protection of vulnerable groups, poverty reduction and housing. Land policy and land policy instruments determine how a government can provide access to land, offer tenure security, regulate the land market, implement land reform, protect the environment, and levy land taxes. Such tasks become even more challenging in post-conflict or post-disaster areas, and where government systems are in transition. Applying relevant principles of business administration and information technology, the course provides theoretical and practical knowledge and expertise in building a viable land administration organization.

www.itc.nl/land-administration

GEOINFORMATICS
Technologies supporting the collection, analysis, distribution and use of spatial data

Geographical and earth sciences are relying increasingly on digital spatial data acquired from remotely sensed images, analyzed by geographical information systems (GIS), distributed through complex infrastructures, and visualized on the computer screen or on paper by an ever-increasing variety of users. The technologies supporting these processes form the core of geoinformatics. Technological skills alone, however, are not sufficient for organizations involved in the production and management of such geo-information. Owing to the rapid changes and developments in geo-information acquisition, analysis and dissemination, these organizations require scientific staff that can keep pace with and validate the relevancy of such developments, design new systems and infrastructures, and explore new-edge technology for efficient and effective implementation.

www.itc.nl/geoinformatics

NATURAL RESOURCES AND ENVIRONMENTAL MANAGEMENT
Sustainable management of the Earth’s resources is of concern to us all

Developments in remote sensing technology have enabled us to observe the Earth’s surface in great detail and almost continuously. Never before has it been so easy to monitor and map our natural environment. Yet to understand the complexity of factors involved in such processes as deforestation, land use change and environmental degradation, environmental managers must not only collect relevant data but also interpret and analyze them to obtain useful information to support decisions that can lead to more sustainable use of natural resources. In carrying out these tasks, environmental managers collaborate with professionals from a wide range of disciplines. Geo-information technology – in particular modeling and decision support systems – plays an important role in this rewarding multidisciplinary work.

www.itc.nl/natural-resources
URBAN PLANNING AND MANAGEMENT

Understanding urban processes and contributing to sustainable urban development

The magnitude and dynamics of urbanization place an enormous burden on organizations responsible for the planning and management of urban regions. The core objectives of urban planning and management are seen as understanding dynamic urban processes and developing effective interventions that contribute to the sustainability of urban development. Geo-information and geo-information technology play a vital role in supporting these objectives. The MSc program in urban planning and management integrate knowledge of and skills in geo-information technology with current themes in the field, including urban poverty, urban transport, infrastructure and public services, disaster preparedness and mitigation, urban environmental planning, land use and land tenure, participatory GIS, and spatial planning and decision support systems.

www.itc.nl/urban-planning

WATER RESOURCES AND ENVIRONMENT MANAGEMENT

Improving water management through spatial information on water resource

Security and sustainable development of our water resources is a key problem of the 21st century. Improved water management can make a significant contribution to achieving the Millennium Development Goals. Current international initiatives such as the Global Earth Observation System of Systems 10-Year Implementation Plan have identified earth observation as the key to helping to solve the world’s water problems. The availability of spatial information on water resources will enable closure of the water budget at river basin scales to the point where effective water management as requested by the EU Water Framework Directive is possible. Floods, droughts, water quality, water-ecosystem and soil-water-climate interactions, and the sustainability of water resources are important issues in water resources management and hydrology.

www.itc.nl/water-resources
DEVELOPING A COMMON SUSTAINABLE INTEGRATED VISION FOR THE BASIN

Lake Naivasha in Kenya’s Rift Valley drives the economy. The horticultural industry around the lake is promoted as an example of a successful economic growth path to be copied by other African countries. Export of flowers sustains an economy that previously suffered from low employment and low income. However, the environmental cost of fast economic growth is substantial: rapidly growing populations, large water abstractions for irrigation, changing land use and inflow of agrochemicals lead to water shortage and pollution, putting pressure on the ecosystem and society.

The problem is likely to worsen in the near future as current policies do not address this issue of water resource shortage and degradation in an integrated way. Consequently the management of water is the key issue in the Naivasha basin.

We focus on how earth observation and derivative geo-information may help to overcome societal clashes in a collaborative stakeholder setting within Kenyan society. The innovation we apply is to couple earth observation with integrated assessment. Earth observation provides such detailed data that, when these are combined with standard secondary data, we are able to perform the physical and social analyses necessary to allow stakeholders to deliberate about their common future. Lake Naivasha is used by several of our MSc courses as a fieldwork site. ITC maintains an earth observation site at this location which is part of a global network: the Global Earth Observation System of Systems (GEOSS).

LAKE NAIVASHA BEING POLLUTED BY FLOWER FARMERS AND THE POOR

FIELDWORK OFFERS YOU FIRST-HAND INSIGHT

Fieldwork is an option in most MSc programs. It is carried out in areas that reflect problems clearly related to your field of interest. Besides the direct input into your MSc thesis, fieldwork offers you first-hand insight into current practices in developing countries. An example of such a current practice is the Naivasha research project. A project of the WWF Kenya Country Office and the University of Twente.
Your fellow students are young and mid-career professionals with an interest in development-related issues. They are studying to further their career and are aiming for social impact and/or to make the world more sustainable.

WEI SUN (CHINA)
Geoinformatics (2012-2014)

I have even started to think about pursuing a PhD degree here – something I’ve never thought about before

ITC alumni belong to a worldwide community of over 20,000 individuals, who together form an extensive network of international contacts.
CITY LIFE

The city of Enschede is buzzing with student life and home to about 20,000 students. Its immediate surroundings offer some remarkable spots of natural beauty and tranquility.

The city is modern and lively and has a rich industrial heritage, which is evident in the many well-preserved historic buildings. Large-scale urban renewal has also given Enschede a new skyline, featuring eye-catching contemporary architecture. Besides the familiar large department stores, a number of specialist shops can be found downtown. Every Tuesday and Saturday is market day. On Saturday, the busiest day, there are no less than 160 market stalls selling quality goods: not only fresh fruit, vegetables, meat and fish, but also leatherware, clothes, music and Mediterranean delicacies.

UNIVERSITY LIFE

Students have access to an exceptional range of facilities, services and leisure activities, including a restaurant. Academic facilities include a library and a geoscience laboratory. Everyone has access to advanced computer resources, and specialized offices address almost every need – from medical attention to residence permits.

ITC provides accommodation in well-furnished rooms at the ITC International Hotel (IIH) as an integral component of a study at ITC.

ITC INTERNATIONAL HOTEL

- Located in downtown Enschede
- Close to the ITC main building, the railway station, the main shopping centers and the open-air market
- 24-hour reception
- Self-service laundry
- A bar operated by the student union, and other recreation areas
- Rooms with internet connection
- An internet café
STUDY IN THE CULTURAL HEARTLANDS OF EUROPE

LONDON
- 7 HOURS 30 MINUTES £95
- 8 HOURS 30 MINUTES £60
- (AMSTERDAM) 1 HOURS 10 MINUTES £35 (EASYJET)

ENSCHEDE

AMSTERDAM
- 2 HOURS £25
- 2 HOURS £21

PARIS
- 6 HOURS £90
- 5 HOURS 40 MINUTES £80
- (AMSTERDAM) 1 HOURS 15 MINUTES £100 (KLM)
THE NETHERLANDS
SMALL COUNTRY, BIG OPPORTUNITIES

The Netherlands is situated in Western Europe and is often referred to as the “gateway to Europe.” Many European capitals are within easy reach and just a few hours away.

- A relatively small area of just over 41,000 square kilometers
- Home to over 16.7 million people
- A safe country by international standards
- Well-organized, with a dense, safe public transport network
- The country’s number one mode of transport: the bicycle
- 87% of the population speaks English
- Hosts great events and festivals throughout the year
- A rich history and a tolerant, multicultural society
DO I QUALIFY?
Entry to the MSc degree program requires a bachelor degree or equivalent in an appropriate subject area from a recognized university.

HOW TO APPLY
The online application forms are found on the relevant web pages for each course in the course finder at www.itc.nl/CourseFinder. Look for Register, located at the top right of the page.

UPLOAD INFORMATION
Don’t forget to attach the following documents to your online application!
- A copy of your degree/diploma
- A copy of your course record
- English test results (if applicable)
- Relevant educational records
- A copy of your passport
- Relevant employment records (if applicable)

RESIDENCE PERMIT
You need a residence permit (VVR), and we will apply for this after you have arrived in the Netherlands.

We look forward to welcoming you as a student at ITC!

FINANCING YOUR STUDIES

TUITION FEES
Tuition fees are competitive with those at U.S. universities, and include all expenses necessary to offer a comprehensive educational experience of selected MSc degree. This includes registration fees, course materials, course excursions and access to research data and equipment. Fieldwork is paid out of general means and varies per degree and research theme and is on basis of appointment by MSc thesis supervisor.

The degree period is comparable to a 2-year MSc in the U.S. (four long semesters). The tuition cost per semester is approximately € 4,960 and includes all fees except for insurance and living expenses.

<table>
<thead>
<tr>
<th>TUITION</th>
<th>ADDITIONAL COSTS</th>
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<tbody>
<tr>
<td>MSC (18 MONTHS)</td>
<td>€ 19,840</td>
</tr>
<tr>
<td>RESIDENCE PERMIT</td>
<td>€ 304</td>
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<tr>
<td>INSURANCE</td>
<td>€ 730</td>
</tr>
<tr>
<td>LIVING EXPENSES (18 MONTHS)</td>
<td>€ 15,300</td>
</tr>
</tbody>
</table>

Average cost and subject to change

SCHOLARSHIPS
Courses offered by ITC are eligible for different scholarships. For your convenience, we have listed the most important scholarship programs for ITC course participants on our website. www.itc.nl/scholarships-usa

In addition the online search engine Grantfinder gives you a complete overview of all scholarships available for studying in the Netherlands. www.studyinholland.nl/scholarships/grantfinder

In most cases procedures are lengthy, so make sure your application is sent in early!

RICCARDO SALVINI (ITALY)
Professional Master course Geoinformatics (1997-1998)

"Studying and living abroad was an excellent experience, providing the opportunity to get to know other cultures and make good relations that will last for the rest of my life."
Remote sensing is the collection and analysis of scientific data about phenomena at, above or below the Earth’s surface without coming into physical contact with them. There are a variety of ways of collecting such data, for example by using conventional aerial photography, radar, and airborne electronic scanning devices. And naturally satellites have been playing an increasingly significant role over the last few decades.

Such remote sensing techniques and the images they produce can be used, for example, to monitor environmental changes and meteorological disturbances, determine the existence of certain mineral deposits, and detect the build-up of pressure along faults in the Earth’s crust. The uses are many and various and to some extent have already unobtrusively entered our daily lives.

With such huge quantities of data involved, some help is needed at ground level. And this is where the geographical information systems (GIS) come in. Central to every GIS is the database that stores the data on which the eventual output depends.

The application of these data to real-world problems is a function of the specific software designed to manipulate the data. The software enables the database to be accessed, transformed and manipulated for such purposes as studying trend patterns, examining environmental issues, and simulating the outcomes of project proposals or planning procedures.

Skilled personnel with the appropriate expertise are needed to effectively manage the information and opportunities provided by these new technologies. Exciting prospects for those willing to take up the challenge!
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I: www.itc.nl/usa

INFORMATION ON STUDYING AT ITC
Faculty ITC - Student Registration
Office hours: 9:00 am - 17:00 pm (Central European Time) Monday to Friday
T: +31 (0)53 487 44 44
F: +31 (0)53 487 44 00
E: info-itc@utwente.nl

More detailed information about studying at ITC can be found on our web pages at:

www.itc.nl/usa