

M.Sc. in Geo-informatics

Course Information

The Faculty of Geomatics at K.N.Toosi University of Technology (KNTU), Iran and the Faculty of Geo-information Science and Earth Observation (ITC) of the University of Twente (UT), The Netherlands are proudly offering a Master of Science (M.Sc.) in Geo-Information Science and Earth Observation (Specialization/domain: Geoinformatics).

This Joint KNTU and ITC Program (JKIP) will be held in 18 months. Upon successful completion of this program candidates are entitled to the degree of Master of Science. Candidates will receive an (Academic Education) Diploma in Geo-Information Science and Earth Observation from the University of Twente. Also, M.Sc. degree of Geographic Information System engineering will be awarded by the K.N.Toosi University of Technology.

This program includes 24 modules. Candidates will spend some parts of the course at K.N.Toosi University of Technology (13 ½ months) comprising about 18 modules. The remaining 6 modules are conducted at ITC, The Netherlands (4 ½ months). The details of the modules are given in Table-1.

Table 1. Details of M.Sc. course in Geoinformatics.

Block	Module	Duration	Description
1	1	3 Weeks	Introductory
	2	3 Weeks	Geographic Information Science
	3	3 Weeks	Earth Observation
	4	3 Weeks	System Earth
2	5	3 Weeks	Databases, Mathematics and Programming
	6	3 Weeks	Principles of Spatial Data Quality
	7	3 Weeks	Spatial Data Modeling and Processing
	8	3 Weeks	Base Data Acquisition
	9	3 Weeks	Image Processing
	10	3 Weeks	Web Technology for GIS & Mapping and Programming
3	11	3 Weeks	Visualization and Dissemination of Geospatial Data
	12*	3 Weeks	Research Skills
	13*	3 Weeks	Advanced Topics
	14*	3 Weeks	
	15*	3 Weeks	Group Research Assignment; Finalization and Defense of Research Proposal
16*	3 Weeks		
4	17-24	6 Months	M.Sc. Research, Thesis Writing, and Defense (Module 17 conducted at ITC, Module 18-24 conducted at KNTU)

*Will take place at ITC, the Netherlands

Course aims and Learning outcomes

Aims

The aims of JKIP are given below:

- To expand a critical understanding of suitable tools.
- To present the new methods and techniques in the field of Geoinformatics.
- To achieve the necessary skills in developing tools for the acquisition, processing, transformation, analysis, modeling, recording and display of spatial data.
- To apply the Geoinformation techniques for identifying the development problems.
- To develop the research skills for the design and implementation of various research and expansion projects in different fields of Geoinformatics.

Learning outcomes

Upon the completion of the course, the participants are capable of:

- Obtaining a comprehensive knowledge in different fields of Geoinformatics e.g. GIS and Remote sensing
- Analysing a given problem in the field of Geoinformatics and providing the appropriate solutions for studying and solving that problem.
- Developing the proper methods for collecting the spatial data and their processing
- Applying the programming languages for the implementation of the necessary methods
- Using geo-information knowledge and earth observation technology in the framework of the generation, integration, analysis and visualization of the spatial data
- Employing the principles of databases and data models by using the database query languages.
- Performing and formulating the research in the general field of Geoinformatics, encouraging multi-disciplinary research.

Course Framework

The course consists of 24 modules which are organized in four blocks and each module takes three weeks. Table 2 shows an overall of the course structure.

Table 2: Overall structure of M.Sc. course in Geoinformatics

	modules	Event place	Credits*	Total Credits
Block 1	Core Modules (Modules 1-4)	KNTU	18	118
Block 2	Domain Modules (Modules 5-11)	KNTU	35	
Block 3	Research Profile (Modules 12-16)	ITC	25	
Block 4	Individual M.Sc. Research(Modules 17-24)	Module 17 at ITC; Module 18-24 at KNTU	40	

**European Credit Transfer System (ECTS)*

(One credit represents 29 hours of study, and 60 credits represent one year of full-time study)

Block 1: Includes 4 core modules that cover the basic principles of 1) Introductory, 2) Geographic Information (GI) Science, 3) Earth Observation and 4) System Earth, Use and Users, Spatial Data Infrastructure, Geoportals and Data Integration.

Block 2: Consists of 7 domain modules to deepen the perception of Remote Sensing and their applications such as Spatial data, Data quality modeling, Geospatial (visual) analytics.

Block 3: Consists of 5 modules which makes prepare the students for M.Sc. research by offering learning opportunities on Research Skills (module 11); Advance Topics on specific research methods and tools (modules 12 and 13) picked out by the students based on envisaged M.Sc. research; Research Themes (modules 14 and 15) in which the students perform a Group research Assignment and work on their final M.Sc. research proposal in the selected research theme. Modules 11-15 are covered at faculty of ITC, the Netherlands.

Block 4: Consists of 8 modules in which students perform the M.Sc. research based on the approved research proposal, write a thesis and defend it at the end. The thesis is supervised and assessed by scientific staff from both faculties.

Important information:

- Courses are offered in English.
- The course requires an English Language Certificate. The following internationally recognized test results are accepted.

TOEFL Paper-based Test (PBT)	550
TOEFL Internet-based Test	79-80
British Council / IELTS	6.0
Cambridge	CPE/CAE

- The eligible candidates have to provide one of the above certificates before the end of the first semester.