GIMA
Geographical Information Management and Applications

Course Catalogue
2023-2024

Course Catalogue

Master of Science

Geographical Information Management and Applications

Delft University of Technology (TUD)
University of Twente (UT) - ITC
Utrecht University (UU)
Wageningen University & Research (WUR)

Year 2023-2024

August 2023

Preface

This Course Catalogue describes the Master of Science programme 'Geographical Information Management and Applications' (GIMA), which is the joint Master' degree programme 'Geographical Sciences' between Delft University of Technology, University of Twente - ITC, Utrecht University, and Wageningen University & Research for the academic year 2023-2024.

The catalogue starts with an insight into the GIMA organisation and some practical information. The programme has a modular structure, and uses a blended learning concept. Blended learning means a mixture of periods of face-to-face contact and distance education. The face-to-face periods are required periods of attendance, so please keep an eye on the overview with required periods of attendance for the current year.

The first section of the catalogue (Part I: GIMA Course Guide) gives an overview of the course. It includes the details of all course modules like name, code, time-slot, credits, coordinator and involved lecturers, learning objectives and content, type of education, assessment procedure, entry requirements and literature. The module information may be subject to some change. Therefore, during the programme, each module coordinator will provide you with a study guide to update (if necessary) the module information. The GIMA Blackboard site (*https://uu.blackboard.com*) will always offer the most up-to-date information. Change in a module described in a study guide overrules the module information in the course catalogue. Part I further presents GIMA staff, the venues – including route descriptions – and some frequently asked questions and answers.

The formal rights and obligations related to the programme follow in Part II: GIMA Regulations. The first two sections contain regulations that are applicable to all Master degree programmes of the Faculty of Geosciences, Utrecht University: the Education and Examination Regulations, followed by a GIMA specific part and the Model Regulations of the Board of Examiners. The last section contains the *additional* Education and Examination Regulations of the GIMA programme, which show the consequences of implementing all of these regulations in GIMA. Please note that specific GIMA Internship Regulations and Master Thesis Regulations have been added to the respective module descriptions.

Hopefully this GIMA Course Catalogue provides you with answers to the most important questions you have as a student with respect to your GIMA studies. For additional questions and remarks, please do not hesitate to contact the GIMA Secretary (*gima.geo@uu.nl*) or the GIMA Programme Director directly.

Good luck and enjoy the GIMA studies!

Lukasz Grus
GIMA Programme Director
gima_pd@uu.nl

Address:

- Postal address: Utrecht University, Faculty of Geosciences P.O. Box 80.115, 3508 TC Utrecht
- Visiting address: Utrecht University, Faculty of Geosciences, Vening Meinesz Building A, Princetonlaan 8a, 3584 CB Utrecht

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Part I: GIMA Course Guide

General information

This chapter gives an overview of the organisation and administrative structure of the GIMA studies and student facilities.

GIMA Management

The management of GIMA consists of a Programme Board, a Programme Director, a Programme Committee, an Admission Committee and a Board of Examiners. The GIMA Secretary supports their functions. The contact details for the members mentioned hereafter can be found in the staff information section.

Programme Board
Prof. Dr. Ir. Peter van Oosterom (TUD, Chair)
Prof. Dr. Dick Ettema (UU)
Prof. Dr. Menno-Jan Kraak (UT-ITC)
Prof. Dr. Alexander Klippel (WUR)

Programme Director
Dr. Ir. Lukasz Grus (WUR)

Programme Committee
The Programme Committee consists minimally of four staff members and four student members.

Members (until October 1, 2023):
Dr. Judith Verstegen (staff, UU, Chair)
Dr. Ir. Erika Speelman (staff, WUR)
Dr. Frank Ostermann (staff, UT)
Frederika Welle Donker (staff, TUD)
Koen van Houten (student, 2021)
Carlota Buznego Puerto (student, 2021)
Greetje Havermans (student, 2022)
Algan Yasar (student, 2022)

You can contact the programme committee at: programmecommittee.gima@gmail.com

Admission Committee
Dr. Ir. Lukasz Grus (WUR)
Prof. Dr. Alexander Klippel (WUR)

GIMA Secretary
Carlijn Ligterink
Any questions regarding this Course Catalogue or other facets of GIMA may be directed to the GIMA Secretary via e-mail. The e-mail address is gima.geo@uu.nl.

Board of Examiners
The Board of Examiners can be contacted to request certain approvals e.g. for exemptions, substitutions, your study programme, or to take additional courses outside the Faculty of Geosciences. Send an email from your UU-email address (include your name, study programme and student number) to *boardofexaminers.geo@uu.nl*

Student facilities

As a GIMA student you are registered at Utrecht University (UU), this means that the facilities of the Faculty of Geosciences of UU are accessible for GIMA students. Most questions regarding UU facilities can be addressed at: *qdesk.uu.nl* (both English and Dutch). For access to facilities at other universities, application forms are available at that specific institute.

Library

As a GIMA student you are entitled to the use of the library of the Utrecht University or of the University of Twente. You can find more information about the library in Utrecht at: *www.library.uu.nl.* The website of the University of Twente is: *http://www.utwente.nl/ub/*

Study Advisor

Since GIMA is based in Utrecht the Study Advisor is based here as well. The Study Advisor can advise you on study-related matters. Please also check https://students.uu.nl/en/geo/gima/contact/study-advisor how to make an appointment.

- Email address: *studieadviseur.sgpl@uu.nl*
- Phone number: +31 (0)30 253 3739

Student Psychologist

If you are a Dutch student you can *schedule an appointment yourself* (information in Dutch). If you are an international student, please contact *Student Services* either by phone or in person – not by e-mail – and schedule an introductory meeting. During the introductory meeting, the Student Psychologist will investigate your problem. This will involve focusing on your personal background. Sometimes that initial meeting will be sufficient to assist you with your problem, sometimes more will be required.

- It may be suggested to start a series of individual meetings, with the aim of further clarifying your problem and identifying the best approaches to address it.
  The student psychologists work according to a short-term support model. In general, a series will involve no more than five meetings. The meetings are strictly confidential and free of charge.
- You may also receive a referral to a person or institution within or outside the university.

More information can be found in this *link.*

Misconduct – Confidential Counsellor

The university's Code of Conduct (see *Regulations*) is designed to prevent misconduct. Misconduct may include sexual intimidation, aggression, violence and discrimination. More information can be found in this *link.* It discusses actions to be taken and the contact details of the confidential counsellor.

Housing

Students who plan on staying in the Netherlands for the entire duration of the programme can request to arrange housing via the international office of UU (*international@geo.uu.nl*). But arranging housing yourself somewhere else in the Netherlands is also possible. For hotels to stay specifically during the contact days students may ask the GIMA Secretary about the cheapest locations in the neighbourhood of the participating institutions.

Social life

NODE

NODE is the student association of GIMA. NODE was founded in 2015 by a group of GIMA students. NODE wants to create and become part of a network between (GIMA) students, alumni and external parties. In order to do this, it has created several objectives. It strives to improve communication, integration and interaction between students in different GIMA years. Besides, it wants to create a foundation for informal social interaction between GIMA students by organizing social activities during the GIMA contact weeks. On top of that it wants to establish a network between GI master students in the Netherlands and beyond. NODE can be contacted via email address *gima-node@uu.nl*.

Erasmus Student Network

International students staying in the Netherlands during the entire GIMA programme receive information about the Erasmus Student Network (ESN) together with their acceptance letter. This will help students to overcome any cultural differences and to establish a social network in the Netherlands. Also Utrecht has a very active entity of the European Geography Association for students and young geographers (EGEA), which organizes a lot of extra-curricular activities.

Computers & computer facilities

Due to the blended-learning nature of the GIMA Master programme, all students are required to have a laptop, starting their first day at GIMA in September, which meets the requirements stated below in order to properly execute the software used during the master. Software that is required for all GIMA participants will be provided. Microsoft Office is also required. Once you have been registered at the Utrecht University, you can download it for free at via this URL. It is also important to mention that service and computer help at the universities, as well as most of the software needed during the master course, is based around Windows operating systems. Although you are free to make your choice of laptops, you need to be aware that services and software often might not work for, for instance, a Mac.

Hardware and operating system requirements

	Minimum	Recommended
Operating system	Windows 10 64 bit English (Home premium, Ultimate, Pro, Enterprise)	(Minimum)
Memory	8 GB	16 GB
Disk storage	80 GB free disk space	(Minimum)
Screen	15 inch, 1366 x 768	(Minimum)
Processor	Intel® Core™ i3 Processor or equivalent (e.g. AMD)	(Minimum)
Network	Wireless (Wi-Fi) and Ethernet LAN	(Minimum)
Mouse	Separate mouse with left/right click and centre wheel	(Minimum)
Software	Microsoft Office 2010	(Minimum)

Computers available at the universities

It is also possible to get access to computers in labs of the different universities. At Utrecht University, computers with GIS software can be accessed. The GIS-lab in Utrecht is located in the Vening Meinesz Building A (Princetonlaan 8a). Login for the GIS-lab can be obtained via Maarten Zeylmans Van Emmichoven (*m.j.zeylmansvanemmichoven@uu.nl*).

Registration of marks: Osiris (accessible via *www.osiris.universiteitutrecht.nl*)

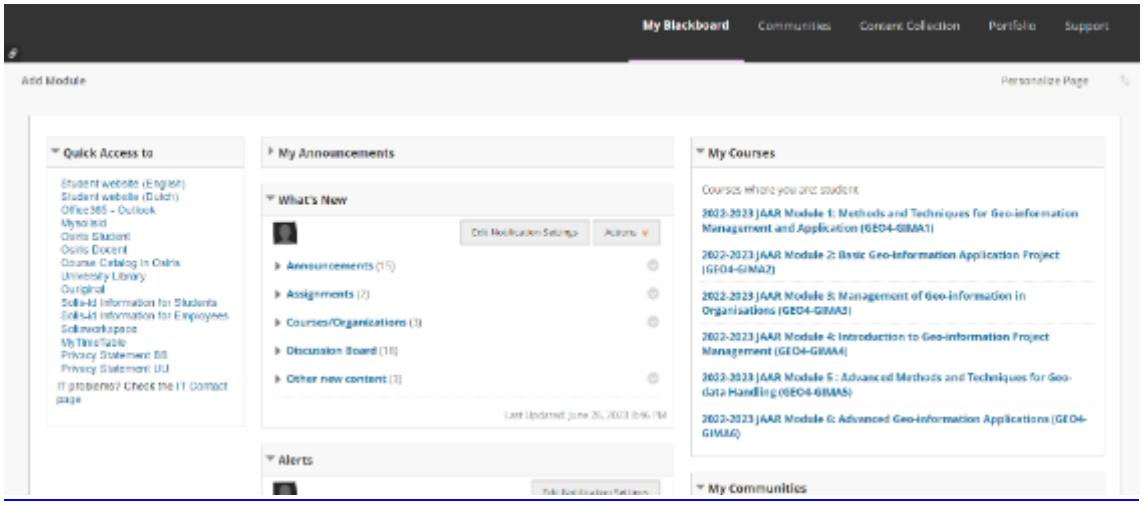
Osiris is the education registration system of Utrecht University. Via the Internet you can log in and see your **official marks**. For login you have to use your UU student number and password.

Blackboard (accessible via *www.uu.nl/blackboard*)

Blackboard is the education platform we use and runs via Utrecht University. It will be used extensively in GIMA. Via the Internet you can log in with the username (student number) and password you have received from UU. This system will be used for all GIMA modules; here you can find information on the modules, lectures, a discussion board, the most current regulations, etc. It is also used for communication between staff and students, either via email or announcements in the GIMA General Information community on Blackboard. This contains information that is not specific for a particular GIMA module. Amongst others, the timetables of the contact days are published here. The Course Catalogue is also accessible via the GIMA General Information community.

Each module of GIMA has its own Blackboard space. The naming convention is as follows: [Course year] [module number] / [module name] / [exam code]. This means that each year a new Blackboard module will be created for every module. The only exceptions to this rule are module 7 (Thesis) and 8 (Internship). These remain the same every year, but are continuously updated. They appear as communities. All registered GIMA course participants have access to Blackboard modules 7 and 8 (right from the start of the GIMA programme) where you can find, for instance, all GIMA theses which have been produced over the past 15 years, newly suggested thesis research topics plus an overview of the current GIMA thesis researchers and their topics, and internship options.

If you don't have access to a certain module, you may contact the GIMA Secretary at *gima.geo@uu.nl.*



Student mail
As a GIMA student you receive two email accounts, one from Utrecht University and one from the University of Twente. As the UU account is linked to Blackboard, **this UU email account will always be used for communication between students and GIMA staff**. To prevent missing any important information, it is advised to automatically forward emails from both accounts to your personal email address.

Student Service Centre
GIMA students can turn to Student Affairs of the Faculty of Geosciences of Utrecht University for information, advice and services on studying. Student Affairs is located at Budapestlaan 4a-b, Utrecht. Also you can submit questions regarding admission requirements and registration via *studentaffairs.geo@uu.nl*.

Surfspot
You are entitled to buy software at a discount at Surfspot (*http://www.surfspot.nl/*) or directly at the Faculty of Geosciences (*http://geo-ict.geo.uu.nl/software/surfspot.htm*) (the last one has a limited selection of software). For login, use your UU student account.

Educational Software
As a GIMA student you will acquire a student license of ArcGIS. This advanced license includes the extensions Spatial Analyst, Geostatistical Analyst 3D Analyst and more. Help with installation of this software will be provided during the first contact week. Furthermore, during some modules additional software packages will be provided, depending on the chosen subject.

Other practical information

More comprehensive information is to be found in the manual on administrative procedures (also called the manual for registration and access to the services on the various institutes) on Blackboard, or on our website www.msc-gima.nl.

Registration
Since four universities are involved in the GIMA programme, the registration procedure might be confusing for prospective students. The following needs to be done: a student will first apply for the MSc GIMA via Studielink (*www.studielink.nl*). The student will receive (if accepted) a letter of acceptance or conditional acceptance. A confirmation letter is attached as well.

With the letter of (conditional) acceptance, the student can register him/herself at Utrecht University. Payment of the tuition fees is part of the registration.

IMPORTANT – RE-REGISTRATION AT UTRECHT UNIVERSITY IS REQUIRED EACH YEAR!

Re-registration by Studielink at Utrecht University has to be done **every year**, before August 31st. Failing to do so can have serious consequences for your participation in the programme (e.g. module results will not be filed because they become invalid, educational support and course facilities will not be available).
Questions regarding re-registration can be asked via *www.qdesk.uu.nl*

!!! Please note that you cannot register through the GIMA administration (Programme Director or GIMA Secretary). A student has to register him/herself with Utrecht University !!!

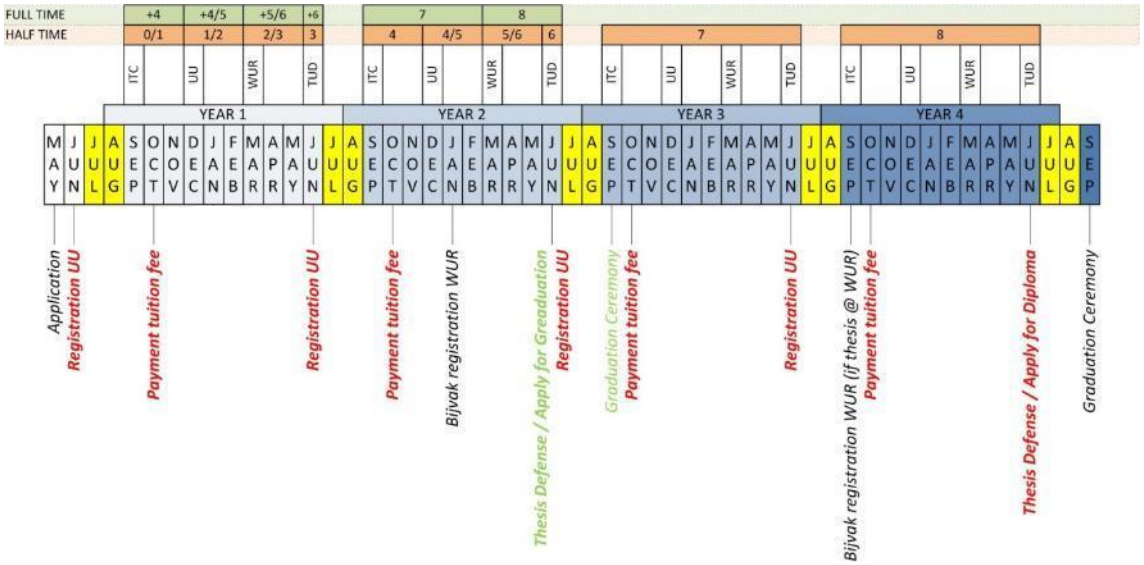
Completion of MSc GIMA programme
Upon completion of the GIMA programme, you can apply for graduation by filling *in the exam registration form, which you will receive from the UU exam administration office*[1]. You can use the form to indicate how you would like to receive your diploma: in a graduation ceremony, or sent by mail carrier. Wait with de-registering until you have received a confirmation! All information about graduation can be found here: *http://students.uu.nl/en/geo/gima/practical-information/graduation*
From this moment, Utrecht University takes over the administration completely. GIMA only wants to know whether you would like to receive your diploma in a graduation ceremony.

Termination of the MSc GIMA Programme
If, for some reason, you choose to stop with GIMA while you have not finished the entire programme, you should inform the Programme Director. In such cases, it is possible to request a certificate of the completed modules. Request this through the GIMA Programme Director (*gima_pd@uu.nl*).

Tuition fee refund
It is possible to get a refund of part of your tuition fee if you finish the MSc programme before the end of the academic year. You are advised to have a look at the *www.qdesk.uu.nl* website; the steps required to stop with GIMA and possibly have a refund of tuition fees are all described there.

[1] A broken link was removed here on December 19, 2023.

To summarize all registration moments, see the Figure below.



Required periods of attendance: academic year 2023 – 2024

GIMA schedule 2023 – 2024			
Week	**Date**	**Activity**	**Where**
36	**5 September 2023**	**GIMA introduction**	**ITC/UT Enschede**
	6 September 2023		
	7 September 2023		
	8 September 2023	**Module 1 start**	
37	**11 September 2023**		
	12 September 2023		
	13 September 2023	**Module 4 start**	
	° 14 September 2023		
	*** 15 September 2023**		
38-48	Distance Learning		
49	**4 December 2023**	**Module 1 end**	**Utrecht University**
	5 December 2023		
	6 December 2023	**Module 4 end**	
	° 7 December 2023		
	*** 8 December 2023**	**Module 2 start**	
50	**11 December 2023**		
	12 December 2023		
	13 December 2023	**Module 5 start**	
	14 December 2023		
	15 December 2023		
51	Distance Learning		
52-1	*No Teaching*		
2-11	Distance Learning		
12	**18 March 2024**	**Module 2 end**	**Wageningen University**
	19 March 2024		
	20 March 2024	**Module 5 end**	
	° 21 March 2024		
	*** 22 March 2024**	**Module 3 start**	
13	**25 March 2024**		
	26 March 2024		
	27 March 2024	**Module 6 start**	
	28 March 2024		
	29 March 2024	**Good Friday: no classes**	
14-24	Distance Learning		
25	**17 June 2024**	**Module 3 end**	**TU Delft**
	18 June 2024		
	*** 19 June 2024**	**Module 6 end**	
	20 June 2024		
	° 21 June 2024	**Module 7 and 8: introduction**	
26	**24 June 2024**	**Preparing for Module 7 and 8**	**Self-study**
	25 June 2024		
	26 June 2024		
	27 June 2024		
	28 June 2024		

*** Midterm presentations, thesis defences and graduation ceremony**
° Reserve day for midterm presentations and thesis defences

The Programme

Content

There are a number of special features that give the GIMA programme a unique character: a large part of the programme is offered as distance learning. Only the first and the last week of each module are classroom learning. The remaining time you will work from your home or office, whether in the Netherlands or somewhere else. The interactivity will be guaranteed by the use of electronic communication (Blackboard e-learning environment and other means) by which you regularly interact with your teachers and fellow students. The use of various ICT means and didactic tools add to the attractiveness of the programme.

The programme has a high degree of flexibility and "knowledge on demand". The programme is developed in co-operation between four renowned universities, each with its own tradition:

- Utrecht University (UU), with a focus on geography and planning;
- Delft University of Technology (TUD), with a focus on the legal, organisational and technical aspects of geo-information handling with an emphasis on large scale applications;
- University of Twente (Faculty of Geo-Information Science and Earth Observation) (UT-ITC), with a focus on technical and application oriented courses, all dealing with GIS and Remote Sensing, mainly for developing countries;
- Wageningen University (WUR), with a focus on geo-information items related to land use, agricultural and rural applications.

The different approaches of the four universities will provide you with an optimal mix of GI knowledge and skills.

The programme is offered in a full-time mode of 2 years (study load approx. 40 hrs per week) and a part-time mode of 4 years (study load approx. 20 hrs per week).

If you want to join the GIMA programme you have to meet these requirements (see admission requirements):

- Bachelor degree in relevant field of science;
- Academic skills on par with those expected at the level of a *university* Bachelors' degree;
- Basic knowledge of and practical experience in geo-information;
- English language proficiency (the MSc programme is an international programme; therefore, education will be offered in English).

Aim and learning outcomes

The aim of this inter-university MSc-GIMA programme is to educate suitable candidates to become highly skilled and all-round geo-information managers and/or application specialists. Therefore, the candidates will be introduced into the theoretical, methodological, technological, and organisational principles of working with geographical information (GI), together with the use of GI-technology in spatial applications. The learning outcomes are described below.

The graduate is able to:

DOMAIN SPECIFIC

1. Identify and understand geo-information concepts, methods and techniques.
2. Use appropriate concepts, methods and techniques for the management and application of geo-information.
3. Analyse the quality and usability of geo-information processes.
4. Evaluate solutions for societal problems by applying knowledge of geo-information.
5. Design and implement proof-of-concept geo-information-based solutions for societal problems.

SCIENTIFIC

6. Independently formulate and execute research in accordance with academic standards within the field.
7. Communicate clearly (both orally and in writing) with specialists and non-specialists to present and discuss the outcomes of research and design projects.
8. Show awareness of the need to keep in touch with relevant developments within the discipline and show the ability to recognize, understand and apply new concepts and approaches as they emerge.
9. Demonstrate understanding of the moral and ethical dimensions of scientific research and its applications, and the importance of intellectual integrity.

GENERAL LEARNING OUTCOMES

10. Effectively organize, structure and plan phases in multidisciplinary teamwork.
11. Critically reflect on own performance and results, as well as on those of colleagues.

12. Design and plan a path to study in Geo-Information Science in a manner that is largely self-directed or autonomous.

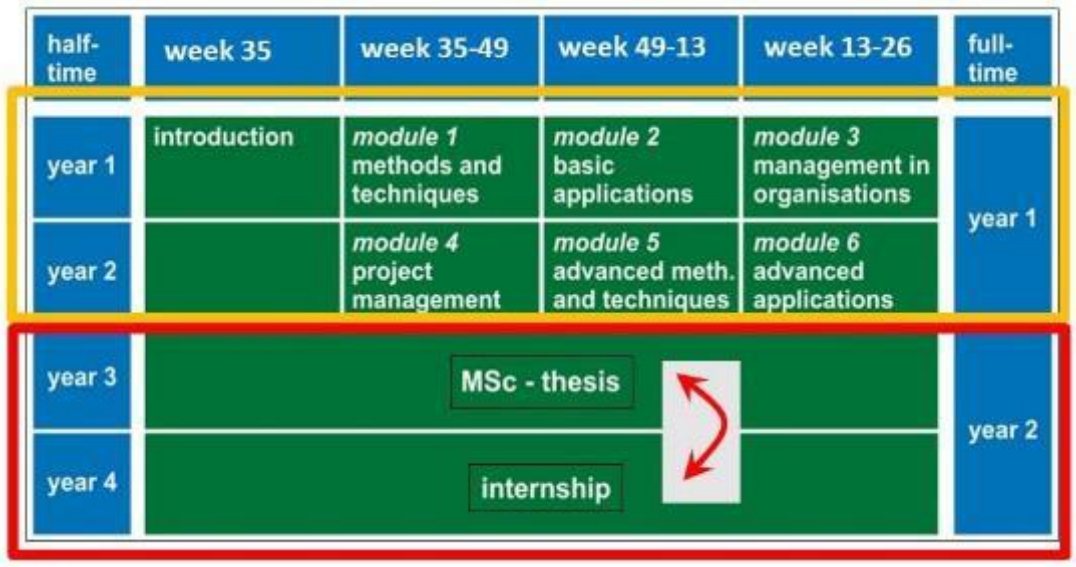
Labour market perspectives

The MSc-GIMA programme aims at educating students to become all-round managers of geo-information or all-round geo-information application specialists. They will work in the private sector (utilities, oil companies, geo-marketing, consulting), the public sector (research institutes, municipalities, central and regional government services) and all combinations of these two. In recent years the demand for managers and application specialists in geo-information on the professional GIS market increased enormously.
With the MSc programme Geographical Information Management and Applications (GIMA) you can qualify for these professions, as you will acquire:

- Knowledge and skills of management; 'how to manage geo-information (projects/organisations)',
- Knowledge of geo-information application fields; 'where to apply geo-information',
- Technological and methodological geo-information skills; 'how to use geo-information technology'

Programme Structure

The programme can be followed full time or halftime.
The programme consists of six modules: 1) basic GI-methods and techniques; 2) basic GI-applications; 3) management in organisations; 4) management of GI-projects; 5) advanced GI-methods and techniques; 6) advanced GI-applications. Thereafter the MSc-GIMA programme consists of an MSc-thesis and an internship.



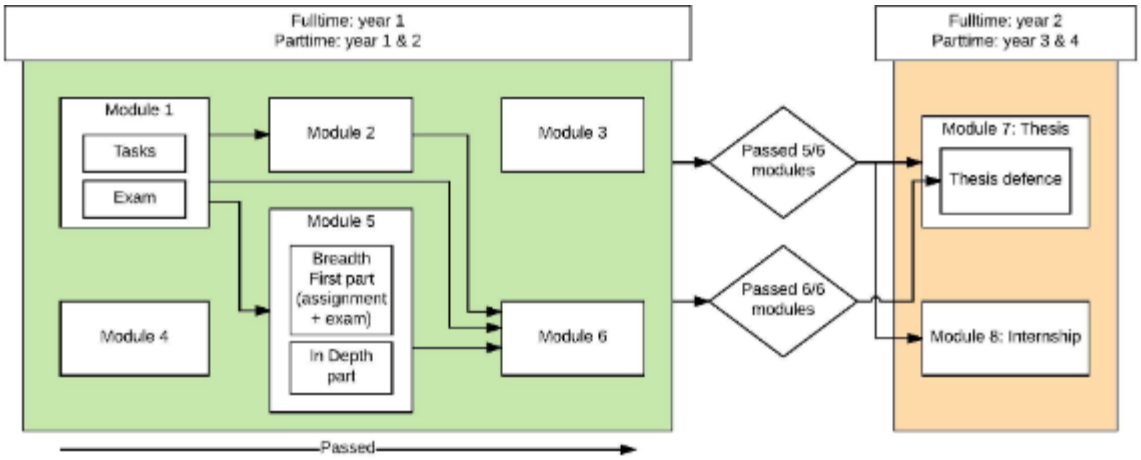
In the Osiris course list (Utrecht University course system) you will find the following codes and names:

Course code	Title	ECTS-credits
GEO4-GIMA1	Basic methods and techniques	10.0
GEO4-GIMA2	Basic applications	10.0
GEO4-GIMA3	Management in organisations	10.0
GEO4-GIMA4	Project management	10.0
GEO4-GIMA5	Advanced methods and techniques	10.0
GEO4-GIMA6	Advanced applications	10.0
GEO4-GIMA8	Master thesis GIMA	30.0
GEO4-GIMA7 or GEO4-GIMA9	Internship GIMA/ Internship GIMA + additional courses	30.0 or 20.0 + 10.0

Additional information on the courses is available on Blackboard (www.uu.nl/blackboard) and on the web (www.msc-gima.nl). Your UU student number is your login name for Blackboard.

Entry Requirements

Besides the letter of acceptance for the GIMA programme, some entry requirements have to be met for certain modules.



These entry requirements are explained in more detail in the course descriptions.

Relationship between learning outcomes and module objectives

The table on the following two pages illustrates how the objectives of each of the modules (which are described in the next section) relate to the GIMA learning outcomes.

			Course (module) objectives	GIMA programme learning outcomes												
				Identify and understand geo-information concepts, methods and techniques	Use appropriate concepts, methods and techniques for the management and application of geo-information	Analyse the quality and usability of geo-information processes	Evaluate solutions for societal problems by applying knowledge of geo-information	Design and implement proof-of-concept geo-information-based solutions for societal problems	Independently formulate and execute research in accordance with academic standards within the field	Communicate clearly (both orally and in writing) with specialists and non-specialists to present and discuss the outcomes of research and design projects	Show awareness of the need to keep in touch with relevant developments within the discipline and is able to recognise, understand and apply new concepts and approaches as they emerge	Demonstrate understanding of the moral and ethical dimensions of scientific research and its applications, and the importance of intellectual integrity	Effectively organize, structure and plan phases in multidisciplinary team work	Critically reflect on own performance and results, as well as on those of colleagues	Design and plan a path to study in Geo-Information Science in a manner that is largely self-directed or autonomous
				1	2	3	4	5	6	7	8	9	10	11	12
No.	Code	Course	The graduate will / will be able to:	Domain-specific learning outcomes					Scientific learning outcomes				General learning outcomes		
1	GEO4-GIMA0	Introduction	Gain understanding of the nature of the GIMA course.												
2	M0		Understand that different approaches toward geo-informatics are possible.	X											
3	M0		Understand why geo-information is needed to solve problems.			X	X								
4	M0		Obtain practical knowledge on how to use learning and communication tools the GIMA distance-learning mode.												X
5	M0		Improve GIS skills.		X										
1	GEO4-GIMA1	Basic Methods and Techniques	Describe and understand the basics of the geo-information process, including the role of data modelling.	X	X					X				X	
2	M1		Understand the principles of data acquisition (including an introduction in Remote Sensing), data storage, data analysis, and visualization technologies	X	X					X				X	
3	M1		Understand the basics of quality issues of geo-information.	X	X					X				X	
4	M1		Apply basic methods in handling geo-information using the ArcGIS software.	X	X										
5	M1		Apply basic skills in searching and validating scientific literature.						X					X	
6	M1		Analyse basic problems, decide on solutions and summarize findings in a in technical report.		X	X				X				X	
7	M1		Create a research proposal.						X					X	
1	GEO4-GIMA2	Basic Applications	Demonstrate practical experience in basic methods and techniques for geo-data handling.	X	X										
2	M2		Show critical awareness of the influence of data quality aspects on the outcomes of the GI application project.	X		X			X		X			X	
3	M2		Show practical experiences with integrated software handling.	X	X										
4	M2		Demonstrate the practical integration and application of knowledge of module 1 (basic methods and techniques) into a GI application project.	X	X		X	X		X			X		
5	M2		Integrate existing scientific knowledge into a case-study oriented GI-project.	X			X	X	X		X				
6	M2		Demonstrate a scientific, critical-methodological and ethical attitude concerning geo-data handling in practical situations.	X	X	X	X	X	X		X	X		X	
1	GEO4-GIMA3	Management in organisations	Remember key GI-organisations, their differences, their roles and their scale level of application.	X											
2	M3		Remember and understand the principles of management science and management information sciences and apply the organisational resources (Software, Hardware, 'Humanware', 'Dataware' and 'Orgware') to GI-organisations.	X	X	X									
3	M3		Understand the concepts, processes and main components of spatial data infrastructures and their requirements to support data sharing between GI-organisations.	X		X									
4	M3		Apply the main methods and tools for organisation (infrastructure) planning, development and management through the application of a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), and a cost-benefit analysis.	X	X	X	X								
5	M3		Evaluate the existing management of GI of an organisation.			X	X								
6	M3		Create and present a business plan for the management of a GI-organisation.	X	X	X		X		X	X		X	X	X
1	GEO-GIMA4	GeoInfo project management	Describe and position projects and project management within an organizational and a scientific setting.		X					X					
2	M4		Acquire and apply key project management knowledge and skills necessary to initiate, plan, control and direct a GI related project.		X					X					
3	M4		Identify, specify, organize and evaluate key project management aspects and elements contributing to a valid GI related project proposal based on prior given requirements and constraints.		X					X			X	X	
4	M4		Demonstrate his/her ability to write an academic paper within the project management domain according to prescribed writing guidelines.		X				X	X		X			
1	GEO4-GIMA5	Advanced Methods and techniques	Have an overview of simple and advanced spatial data models and understand which model serves which purpose.	X	X	X					X				
2	M5		Be proficient in elementary (query) spatial data operators, in both raster and vector domain.	X*	X*	X*					X*				
3	M5		Understand and be able to set up and carry out spatial computations.	X*	X*	X*					X*				
4	M5		Understand the principles of spatiotemporal modelling in GIS.	X*	X*	X*					X*				
5	M5		Understand, and to some extend apply, the principles of spatial planning support.	X*	X*	X*					X*				
6	M5		Understand how geodata can be made public using visualization technology developed for the internet.	X*	X*	X*					X*				
7	M5		Have specialized themselves in one of the offered in-depth study topics.					X*	X*	(4,6)	X*			X*	
1	GEO4-GIMA6	Advanced applications	Integrate knowledge and skills of the previous modules (1, 2, 4, 5).			X	X		X						X
2	M6		Apply project management and progress monitoring skills to prepare, plan, execute, manage and monitor a GIS project.		X								X		
			Independently use appropriate GI techniques and methods in the context of specific applications.		X	X									
3	M6		Independently use appropriate GI techniques and methods in the context of specific applications.		X	X									
4	M6		Present the methodology and results in an appropriate manner for a specific context.		X	X				X					
5	M6		Develop a critical attitude towards data and data processing methods.				X							X	
6	M6		Evaluate organisational restraints and consequences.				X							X	
1	GEO4-GIMA8	Thesis	Demonstrate his/her ability to use and integrate knowledge and competences acquired in the six modules and possibly the internship for an advanced, master level research, development and/or design project that adheres to international scientific standards and shows originality and scholarship.		X	X	X	X	X		X				X
2	M7		Demonstrate his/her ability to present the process and the results of the project in both written and oral format and to defend and discuss one's work in conformity with international scientific conventions.							X				X	
1	GEO4-GIMA7	Internship	Applied in practice and tested the theoretical and practical knowledge accumulated in modules 1 – 6. The modules contributed to mastering the student's syllabus and improving the student's basis for graduation.		X	X		X		X				X	
2	M8		Acquired or increased technical experience, insight into business, and social and other skills.	X	X						X				
3	M8		Been given the opportunity to become familiar with a geo-information workplace.	X	X	X				X					X

X Course objective contributes to a GIMA programme learning outcome

X* Contribution of the course objective to a GIMA programme learning outcome depends on selected topic

GIMA programme learning outcomes (columns 1 to 12):

DOMAIN SPECIFIC

1. Identify and understand geo-information concepts, methods and techniques.
2. Use appropriate concepts, methods and techniques for the management and application of geo-information.
3. Analyse the quality and usability of geo-information processes.
4. Evaluate solutions for societal problems by applying knowledge of geo-information.
5. Design and implement proof-of-concept geo-information-based solutions for societal problems.

SCIENTIFIC

6. Independently formulate and execute research in accordance with academic standards within the field.
7. Communicate clearly (both orally and in writing) with specialists and non-specialists to present and discuss the outcomes of research and design projects.
8. Show awareness of the need to keep in touch with relevant developments within the discipline and is able to recognise, understand and apply new concepts and approaches as they emerge.
9. Demonstrate understanding of the moral and ethical dimensions of scientific research and its applications, and the importance of intellectual integrity.

GENERAL LEARNING OUTCOMES

10. Effectively organize structure and plan phases in multidisciplinary team work.
11. Critically reflect on own performance and results, as well as on those of colleagues.
12. Design and plan a path to study in Geo-Information Science in a manner that is largely self-directed or autonomous.

Evaluations

All GIMA Modules include an evaluation at the end of the module in order to improve the education programme. A specific protocol is being followed. It consists of an online evaluation survey via Caracal, oral student evaluation and online teacher evaluation, for Module 1-6. Since Module 7 and 8 divert in nature they will follow their own evaluation procedures. Evaluations are to be discussed in the Programme Committee and published on Blackboard in the General Information community.

Module 0: Introduction

Course name	**Introduction**
Course code	**GEO4-GIMA0**
ECTS credits	0.0
Level	Master
Course language	English
Period / time-slot	Week 36
Coordinators	Main: [t] +31 (0) 53 487 4463 Menno-Jan Kraak (UT-ITC) [e] m.j.kraak@utwente.nl Assistant: [t] +31 (0) 30 253 4527 Dick Ettema (UU) [e] d.f.ettema@uu.nl
Lecturers	Menno-Jan Kraak (UT-ITC) [e] m.j.kraak@utwente.nl Alexander Klippel (WUR) [e] alexander.klippel@wur.nl Dick Ettema (UU) [e] d.f.ettema@uu.nl Peter van Oosterom (TUD) [e] p.j.m.vanoosterom@tudelft.nl Lukasz Grus (WUR) [e] gima_pd@uu.nl
Entry requirements	Letter of acceptance of the master programme Geographical Information Management and Applications
Activities / Education	- Lectures - Exercises - Study Tour
Themes	- Perspectives on geo-information and geo-informatics - Need for geo-information - Study programme introduction and facilities
Profile	The course is meant as introduction to the six content modules.
Contents	- During several lectures, the basics of geo-information and geo-informatics as seen from the perspectives of the four participating universities are conveyed. - Hands-on experience with Blackboard and GIS. - Excursion
Course objectives	*The participant will:* - Gain understanding of the nature of the GIMA course. - Understand that different approaches towards geo-informatics are possible. - Understand why geo-information is needed to solve problems. - Obtain practical knowledge on how to use learning and communication tools of the GIMA distance-learning mode. - Improve GIS skills.
Learning materials	- Manuals and guides - PowerPoint presentations - Blackboard - Blackboard Virtual Classroom - Adobe Connect - ESRI campus courses
Examination	Presentation of case study results, but no assessment
Schedule	Tuesday (week 36): Introductions, lectures, exercises Wednesday (week 36): Lectures, exercises, intake interviews Thursday (week 36): Excursion

Module 1: Methods and Techniques for Geo-information Management and Application

Course name	**Methods and Techniques for Geo-information Management and Application**
Course code	**GEO4-GIMA1**
ECTS credits	10.0
Level	Master
Course language	English
Period / time-slot	Week 36-49
Coordinators	Main: Ellen-Wien Augustijn (UT-ITC) [t] +31 (0)53 487 4414 [e] p.w.m.augustijn@utwente.nl Assistant: Maarten Zeylmans van Emmichoven (UU) [t] +31 (0)30 253 1237 [e] m.j.zeylmansvanemmichoven@uu.nl
Lecturers	Ellen-Wien Augustijn (UT-ITC) [e] p.w.m.augustijn@utwente.nl Jan Clevers (WUR) [e] jan.clevers@wur.nl Alvaro Lau Sarmiento (WUR) [e] alvaro.lausarmiento@wur.nl Katinka Jager-Ringoir (UT-ITC) [e] k.a.jager@utwente.nl Richard Knippers (UT-ITC) [e] r.knippers@utwente.nl Maarten Zeylmans van Emmichoven (UU) [e] m.j.zeylmansvanemmichoven@uu.nl
Entry requirements	- Letter of acceptance of the MSc Geographical Science programme Geographical Information Management and Applications - Understanding of Geo-Information Science terminology - Preferably also basic level of GIS skills - Basic academic skills
Activities Education	- Lectures - Practical exercises - Distance learning - Digital classroom sessions - Data analysis and visualization - Reading assignments - Technical documentation - Individual written assignments
Themes	- Introduction to remote sensing - Introduction to data modelling and databases - Introduction to analytical modelling & spatial analysis - Introduction to spatial referencing and visualization - Introduction to Python programming - Introduction to Machine Learning
Profile	- The course is meant as introduction of in-depth contents of geo-information and serves as the basic methods and techniques for all other modules. - Module 5 will enhance the knowledge with respect to database technology and data analysis.
Contents	This module focuses on the technological aspects of geo-information management. The geo-information process can be split up into four main aspects: (1) data acquisition including Remote Sensing, (2) data storage, (3) data manipulation and analysis, and (4) visualization. The aim of the module is to provide a general introduction to these aspects. After completion of this module, students have basic knowledge about data acquisition methods and tools.

	Besides the geo-information management process, the module contains a basic introduction to machine learning and programming.
Course objectives	*After successful completion, the student will be able to:* - Write a personal development plan and provide a reflection on this plan at the end of the course. - Describe and understand the basics of the geo-information process, including the role of data modelling. - Understand the principles of data acquisition (including an introduction in Remote Sensing), data storage, data analysis, and visualization technologies. - Understand the basics of quality issues of geo-information. - Apply basic methods in handling geo-information using the ArcGIS software and Python programming. - Analyse basic problems, decide on solutions and summarize findings in a in technical report.
Learning materials	- Parts of the textbooks, announced in the description of this course module (*books might change in time, consult module coordinator or secretary*): o Heywood, D.I., S.C. Cornelius and S.J. Carver (2011), An Introduction to Geographical Information Systems, 4th edition. Harlow: Pearson Education o De Smith, M.J., M.F. Goodchild and P.A. Longley (2009), Geospatial Analysis, A comprehensive Guide to Principles, Techniques and Software Tools, 3rd edition. Leicester: Matador. Available as printed book, but also free of charge as a web version or pdf: www.spatialanalysisonline.com o The Living Textbook (LTB) developed by the ITC faculty of the University of Twente. Only available as a digital tool. Login details will be provided during the course. - ArcGIS - Blackboard - Specialized websites
Examination	- Presentation virtual classroom session (completed) - Five graded Individual written assignments (50% total - 10% each) - Written closed book examination (50%) - Two ungraded tasks (completed)
Exemption	Not possible
Schedule	Friday (week 36): Lectures, exercises Monday (week 37): Lectures, exercises Tuesday (week 37): Lectures, exercises *Distance learning:* *On-going feedback and monitoring* Monday (week 49): Feedback lectures Tuesday (week 49): Computer examination, evaluation
Degree of freedom	*none*

Module 2: Basic Geo-information Application Project

Course name	**Basic Geo-information Application Project**
Course code	**GEO4-GIMA2**
ECTS credits	10.0
Level	Master
Course language	English
Period / Time-slot	Week 49-12
Coordinators	Main: M. J. Zeylmans van Emmichoven [e] m.j.zeylmansvanemmichoven@uu.nl Assistant: To be announced [e]
Lecturers	J. A. Verstegen [e] j.a.verstegen@uu.nl R. Knippers [e] r.knippers@utwente.nl M. J. Zeylmans van Emmichoven [e] m.j.zeylmansvanemmichoven@uu.nl To be announced [e] To be announced [e] L. de Oto l.h.deoto@utwente.nl M. van Veller m.g.p.vanveller@utwente.nl
Entry requirements	Letter of acceptance of the master programme Geographical Information Management and Applications 1. Students who have a pass grade (5.5 or higher) on the basis of the assignments of Module 1 (without supplementary test) are allowed to start with Module 2. 2. Students who do not meet rule 1 but have a pass grade (5.5 or higher) on the basis of Module 1 as a whole (without supplementary test) are allowed to start with Module 2.
Activities / Education	- Lectures - Supervisors discussions - Distance learning - Writing project plan - Literature research - Preparing & analysing data - Peer-review - Visualisation of results - Writing group report - Oral presentation - Evaluation
Themes	- Basic GI analysis in the form of a project - Peer review processing - Introduction to spatial data, ethics and spatial data quality issues - Introduction to search electronically for scientific literature - Introduction to oral presentation skills - Application of analytical modelling & spatial analysis - Application of cartography & visualization of project results
Rationale	- The course is meant to apply the acquired knowledge of module 1 (GEO4-GIMA1), by carrying out a project in an academic/scientific fashion. - The course serves as an introduction to the later Module 6, where similar up-scale and enhanced projects have to be performed.

Content	During the first days the participants will be introduced to different types of projects and the datasets needed in them. Issues like data handling and data quality and ethics will be dealt with, as well as methodological reflexion. Thereafter the students will work groupwise on a project. Therein the participants are not only asked to work on their own project, but they will also be involved in monitoring and evaluating the progress and results of a counter group. *Students will work in groups of 3 persons and select their project from a range of different cases that will be presented at the start of the course.*
Objectives	*The student will be able to:* - Demonstrate practical experience in basic methods and techniques for geo-data handling - Show awareness of the influence of data quality aspects on the outcomes of the GI application project - Show practical experiences with integrated software handling - Demonstrate the practical integration and application of knowledge of module 1 (basic methods and techniques) into a GI application project - Integrate existing scientific knowledge into a case-study oriented GI-project - Demonstrate a critical methodological and ethical attitude concerning geo-data handling in practical situations *Final attainment level:* At the end of module 2 participants are able to properly prepare, plan and execute a scientific-oriented GI application project and present orally and in writing the results of their projects with a critical awareness of relevant data quality and ethical aspects and of appropriate methodological and visualization issues.
Learning materials	- Literature is dependent on the selected case to serve as academic theory - QGIS, ArcGIS (Pro), Agisoft Metashape, ERDAS/IMAGINE or any other GI-software - Blackboard - PowerPoint or any other presentation software
Distance learning component	- General module information will be made available electronically (Blackboard) - Project case group areas will be made available for the mutual communication between group members (Blackboard) - The supervisor will communicate with his groups regularly (e-mail and Skype/MS Teams) - Frequently asked questions will be made available (Blackboard)

Module 3: Management of Geo-information in Organisations

Course name	**Management of Geo-information in Organisations**
Course code	**GEO4-GIMA3**
ECTS credits	10.0
Level	Master
Course language	English
Period/time-slot	Week 12-25
Coordinators	Main: Frederika Welle Donker (TUD) [t] +31 (0)15 278 1383 [e] f.m.welledonker@tudelft.nl Assistants: Łukasz Grus (WUR) [e] lucas.grus@wur.nl Jaap-Willem Sjoukema (WUR) [e] jaap-willem.sjoukema@wur.nl Bastiaan van Loenen (TUD) [e] b.vanloenen@tudelft.nl
Lecturers	Frederika Welle Donker (TUD) [e] f.m.welledonker@tudelft.nl Łukasz Grus (WUR) [e] lucas.grus@wur.nl Jaap-Willem Sjoukema (WUR) [e] jaap-willem.sjoukema@wur.nl Bastiaan van Loenen (TUD) [e] b.vanloenen@tudelft.nl Plus: guest lecturers (optional)
Entry requirements	Letter of acceptance of the master programme Geographical Information Management and Applications
Activities / Education	- Lectures - Distance learning - Literature research - Individual assignments - Case study - Writing a business plan - SWOT analysis - Supervisor discussions - Online presentations - Classroom presentations - Evaluation
Themes	- Geographic Information (GI) in practice on organisational level - Managerial aspects of GI - Spatial Data Infrastructures (SDI) - Policies, legal and ethical aspects of (spatial) data on global (e.g. UN Conventions), regional (e.g. EU Directives and Regulations) and national level - Governance of Spatial Data Infrastructures
Profile	- The module aims to raise the awareness of how geo-information should be organised and promoted in the real world. It emphasizes on why geo-information should be used and how that is possible. - The module relates to Module 4 (GEO4-GIMA4), although in this case GI is embedded in an organisation; it is business driven rather than project driven. - The module comes with many deadlines and, thus, simulates real world business.
Contents	The main objective is to write a business plan for a management data strategy for a specific GI-organisation. The business plan focuses mainly on the incorporation of SDI-facilities to improve the data sharing within the organisation and between organisations. The business plan is based on internal resources and external conditions using business methods and tools for organisation (infrastructure) planning, development and management. Students will carry out a case study in a GI-organisation to prepare the business plan. The module deals with several types of GI-organisations differing in roles (governmental vs. industrial; GI-Producer vs. GI-User oriented) and scale (Global, Regional, National, State, Local

	and Corporate). When planning, developing and managing a suitable environment for a specific GI-organisation, GI-managers should focus on several organisation-internal resources (Data, People, Access Network, Standards, Policy, Governance) and on several external conditions, such as legal, cultural, technological, economical, ethical, and institutional aspects. Special emphasis is put on spatial data infrastructures, intended to improve and to support data management. To support the decisions made, several business methods and tools exist for organisation planning, development and management. Application of these knowledge and methods/tools in a business plan is core business of this module, so that GI-managers can make efficient use of available resources. The business plan will include an inventory of existing datasets and policies, a user-needs analysis, a proposal for a (change) strategy and a feasibility study, including a cost-benefit analysis, a time planning and a SWOT analysis.
Course objectives	*After successful completion, the student will be able to:* - Understand how key GI-organizations are organised, their differences, their roles and their scale level of application. - Remember and understand the principles of management science and management information sciences and apply the organizational resources (Data, People, Access Network, Standards, Policy, Governance) to GI organizations. - Understand the concepts, processes and main components of spatial data infrastructures and their requirements to support data sharing within and between GI organizations. - Apply the main methods and tools for organization (infrastructure) planning, development and management through the application of a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats), a cost-benefit analysis and a feasibility study. - Evaluate the existing management of GI of an organization. - Create and present a business plan for the management of a GI-organization.
Learning materials	- A selection of literature which will be announced in the description of this course module, which includes: o Budhathoki, N. R., B. Bruce, et al. (2008). "Reconceptualizing the role of the user of spatial data infrastructure." GeoJournal 72(3-4): pp. 149-160. o Hennig, S. and M. Belgiu (2011). "User-centric SDI: Addressing Users Requirements in Third-Generation SDI. The Example of Nature-SDIplus." Perspektiv(nr. 20): 30-42. o van Loenen, B. and M. Grothe (2014). "INSPIRE Empowers Re-Use of Public Sector Information." International Journal of Spatial Data Infrastructures Research 9(2014): pp. 86-106. o Vancauwenberghe, G. and B. van Loenen (2017). Governance of open spatial data infrastructures in Europe. The social dynamics of open data. F. van Schalkwyk, S. G. Verhulst, G. Magalhaes, J. Pane and J. Walker. Cape Town, African Minds: pp. 63-88. o Welle Donker, F. and B. van Loenen (2016). "Sustainable Business Models for Public Sector Open Data Providers " JeDEM Journal of eDemocracy & Open Government 8(1): pp. 28-61. - Further literature to be announced in the description of this course module - Video clips, lectures and lecture notes - PowerPoint or any other presentation software
Examination	- Individual (sub) case presentations, attendance all group members required (formative) - One individual exercise (Statement Explanation 1) (formative) - Two individual exercises (Statement Explanations 2 and 3) (each 20%), (formative) - Group's management strategy (business) plan (60%) (summative) *Percentages subject to amendments.*
Exemption	Not possible
Schedule	Friday (week 12): Lectures, exercises Monday (week 13): Lectures, exercises Tuesday (week 13): Lectures, presentations *Distance learning:* *On-going supervision* Monday (week 25): Prepare for final presentation Tuesday (week 25): Dissemination of the case study results through an innovative presentation or otherwise; guest lecture and/or site visit; course evaluation

Degree of freedom	*Free choice of case study set-up, i.e., students can define their research focus and strategy (approx. 3.0 ECTS)*

Module 4: Introduction to Geo-information Project Management

Course name	**Introduction to Geo-information Project Management**
Course code	**GEO4-GIMA4**
ECTS credits	10.0
Level	Master
Course language	English
Period/time-slot	Week 37-49
Coordinators	Main: Dick Ettema (UU) [e] d.f.ettema@uu.nl Marien de Bakker (HAS) [e] m.debakker@has.nl Assistant: Paulo Raposo (UT-ITC) [e] p.raposo@utwente.nl
Lecturers	Dick Ettema (UU) [e] d.f.ettema@uu.nl Marien de Bakker (HAS) [e] m.debakker@has.nl Paulo Raposo (UT-ITC) [e] p.raposo@utwente.nl
Entry requirements	Letter of acceptance of the master programme Geographical Information Management and Applications
Activities / Education	- Lectures - Distance learning - Academic reviewing - Literature research - Individual assignments - Case study - Supervisor discussions - Presentation - Evaluation
Themes	- Characteristics and organisational context of (GI related) projects - Scientific context of project management - Project management methodologies - Tools and techniques supporting the management of a project - Management models, roles and skills - Staffing and return of investment of GI related projects - Development, presentation and evaluation of GI related project proposals - Academic writing
Profile	- The course focuses on the management of projects (related to GI) - The course is distinct from Module 3 (GEO4-GIMA3) which specifically deals with the management of geo-information from an organisational point of view. - The course approaches project management from an academic perspective.
Contents	The course is split in the following three parts. Contact period Enschede: - Introduction to project management; organisational context; scientific context; project management methodologies; supporting tools and techniques (workshop); management models, roles and skills; staffing and return on investment; academic writing Distance period: - Writing of an academic paper on project management topic (in groups of two, with distant supervision)

	- Case study on developing a comprehensive proposal for a GI related project (group work and individual tasks with distant supervision) Contact period Utrecht: - Feedback and assessment of distant tasks - Peer review and presentation of project proposals - Examination based on a compulsory list of literature and lecture notes
Course objectives	*After successful completion, the student will be able to:* - Describe and position projects and project management within an organisational and a scientific setting. - Acquire and apply key project management knowledge and skills necessary to initiate, plan, control and direct a GI related project. - Identify, specify, organize and evaluate key project management aspects and elements contributing to a valid GI related project proposal based on prior given requirements and constraints. - Demonstrate his/her ability to write an academic paper within the project management domain according to prescribed writing guidelines.
Learning materials	- Compulsory list of literature (announced in the detailed module description of this course) including substantial parts of the following e-book: Jack R. Meredith, Samuel J. Mantel, Jr., Scott M. Shafer, Margaret M. Sutton: Project Management in Practice, 7th Edition, ISBN: 978-1-119-70304-4336 pages August 2020, ©2020; E-book rental (150 days) $ 417.00, E-book $ 130.95 Older version only after consultation - Lecture notes - MS Project Professional (or open-source software) - Blackboard - MS PowerPoint or any other presentation software
Assessment	- Individual exam (written, closed book) based on a compulsory list of literature and lecture notes (25%) - Assignment in groups of two on writing an academic paper (25%) - Group assignment on writing a project charter (10%) - Group assignment on writing a final project proposal incl. process report (25%) - Individual assignment on reviewing literature within a given project management knowledge area incl. peer review (10%) - Group assignment on presentation and peer review of final project proposals (5%) *Percentages are subject to amendments.* The successful completion of this module depends on two requirements. First, a satisfactory overall grade for the module must be obtained (see GIMA Teaching and Examination Regulations). Second, a minimum grade of 5.5 must be obtained for the assignment on writing an academic paper. Assuming all effort requirements were met, then failing the second requirement implies that re-writing the academic paper remains as the only option for alternative assessment. For additional details see the implementation of GIMA Teaching and Examination Regulations.
Exemption	Not possible.
Schedule	Wednesday (week 37): Lectures, exercises Thursday (week 37): Workshop Friday (week 37): Lectures *Distance learning:* *On-going supervision* Wednesday (week 49): Examination, assessment and feedback on academic paper and project proposal, preparation for project proposal presentations and review Thursday (week 49): Assessment and feedback on academic paper and project proposal (cont.), presentations and peer review of project proposals, evaluation
Degree of freedom	For the case study: free choice of project company set-up and (within given constraints) free choice of GI problem being addressed. For the academic paper: free choice of a topic related to project management in the field of GI (approx. 3.5 ECTS)

Module 5: Advanced Methods and Techniques for Geo-data Handling

Course name	**Advanced Methods and Techniques for Geo-data Handling**
Course code	**GEO4-GIMA5**
ECTS credits	10.0
Level	Master
Course language	English
Period/time-slot	Week 50-12
Coordinators	Main: Rob Lemmens (UT-ITC) [t] +31 (0)53 487 4529 [e] r.l.g.lemmens@utwente.nl Assistant: Derek Karssenberg (UU) [t] +31 (0)30 253 2768 [e] d.karssenberg@uu.nl
Lecturers	Rob Lemmens (UT-ITC) [e] r.l.g.lemmens@utwente.nl Simon Scheider (UU) [e] s.scheider@uu.nl Marco Helbich (UU) [e] m.helbich@uu.nl Derek Karssenberg (UU) [e] d.karssenberg@uu.nl Oliver Schmitz (UU) [e] o.schmitz@uu.nl Wilko Quak (TUD) [e] c.w.quak@tudelft.nl Martijn Meijers (TUD) [e] b.m.meijers@tudelft.nl Ellen-Wien Augustijn (UT-ITC) [e] p.w.m.augustijn@utwente.nl
Entry requirements	- Letter of acceptance of the master programme Geographical Information Management and Applications - Passed Module 1 (GEO4-GIMA1)
Activities / Education	- Lectures - Distance learning - Academic reviewing - Literature study - Individual assignments - Case study (in-depth analysis) - Reporting - Presentation - Evaluation
Themes	- Spatial analysis - Geodata models - Geodatabases - Python programming - Spatio-temporal modelling - 3D modelling - Web-based geodata dissemination - Machine Learning
Profile	- The course continues on where Module 1 (GEO4-GIMA1) left off. - The course addresses more than Module 1 (GEO4-GIMA1) on the processes behind GI. - The course will be followed by the application of the contents in Module 6 (GEO4-GIMA6).
Contents	Two phases: a breadth-first phase, and an in-depth phase. The breadth-first phase covers in principle six topic assignments (potential changes to be announced): 1. Spatial analysis 2. Simple and advanced geodata models

	3. Geodatabases and their design and use 4. Python programming 5. Spatio-temporal modelling 6. Web-based geodata dissemination Most of the in-depth phase will build on one of the breadth-first topics and also includes a topic on Machine Learning and one on 3D geodata.
Course objectives	*After successful completion, the student will be able to:* - Have an overview of simple and advanced spatial data models and understand which model serves which purpose. - Be proficient in elementary (query) spatial data operators, in both raster and vector domain. - Understand and be able to set up and carry out spatial computations. - Understand the principles of spatiotemporal modelling in GIS. - Understand, and to some extend apply, the principles of spatial planning support. - Understand how geodata can be made public using information sharing technology developed for the internet. - Have specialized themselves in one of the offered in-depth study topics.
Learning materials	- Reader with background information for breadth-first topics - Software tools comprising ArcGIS, UML editor, PostGIS, PCRaster, basic text/code editor, Flowmap, and Blackboard - PowerPoint or any other presentation software
Examination	Breadth-first phase (60%) : The Breadth-first phase is composed of 6 topic assignments exercises (44%) and a written exam (56%) (closed book) In-depth phase (40%) : The In-Depth phase is composed of a written report (75%) and a presentation (25%) *Percentages subject to amendments.*
Exemption	Not possible
Schedule	Wednesday, Thursday and Friday (week 50): — Lectures and exercises *Distance learning:* — *On-going supervision* Monday and Tuesday (week 12): — Examination, preparations, discussions, presentations and evaluation
Degree of freedom	*Choice of in-depth topic based on 1st or 2nd preference*

Module 6: Advanced Geo-information Applications

Course name	**Advanced Geo-information Applications**
Course code	**GEO4-GIMA6**
ECTS credits	10.0
Level	Master
Course language	English
Period/time-slot	Week 13-25
Coordinators	Main: Arend Ligtenberg (WUR) Assistant: Edward Verbree [t] +31 (0)317 481845 [e] arend.ligtenberg@wur.nl [t] +31 (0)15 2784268 [e] e.verbree@tudelft.nl
Lecturers	Arend Ligtenberg (WUR) [e] arend.ligtenberg@wur.nl Edward Verbree (TUD) [e] e.verbree@tudelft.nl Rob Lemmens (UT-ITC) [e] r.l.g.lemmens@utwente.nl Maarten Zeylmans van Emmichoven (UU) [e] m.j.zeylmansvanemmichoven@uu.nl Corné Vreugdenhil (WUR) [e] corne.vreugdenhil@wur.nl
Entry requirements	- Letter of acceptance of the master programme Geographical Information Management and Applications - Passed Module 1 (GEO4-GIMA1) - Passed (or actively participated in, and about to pass) Module 2 (GEO4-GIMA2). If grade of Module 2 is not yet published at the start of Module 6, students may nevertheless start with Module 6 1. Students who have a pass grade (5.5 or higher) on the basis of the breadth-first part of Module 5 (including both breadth-first assignments and breadth-first exam, and without supplementary test) are allowed to start with Module 6. 2. Students who do not meet rule 1, but have a pass grade (5.5 or higher) on the basis of Module 5 as a whole (all components of breadth-first and in-depth, and without supplementary test) are allowed to start with Module 6.
Activities / Education	- Lectures - Supervisor discussions - Distance learning - Literature research - Project Plan - Reporting - Presentation - Evaluation
Themes	- Volunteered Geo-information and open data - Spatial (GIS) models and databases - Spatial Simulations - Webmapping and webapplications - Spatial Datascience
Profile	- The module synthesises all other content modules 1-5. - The module is a follow up of Module 2 (GEO4-GIMA2) regarding the applications. - The module is a follow up of Module 5 (GEO4-GIMA5) regarding the contents. - The module provides an impression of the remaining part of the GIMA course
Contents	During the first two days the participants have lectures about the course set-up, project and organisational management and case specific information. Examples of projects are given and discussed and a start is made with setting up the project. Depending on the topic chosen in module 5, students choose from different cases, which include: - Linked data and volunteered geo-data (ITC)

	- Lidar and point clouds (TUD) - Finding geo-data produced by the crowd (ITC) - Spatial temporal land use modelling (WUR) - Agent Based Modelling (WUR) - Air Quality and Route Planning (WUR) - Generating DEM from stereophotos (UU) - GIS Workplace Together with three or four other students, the student works on the case he/she picked. The group work includes: writing a project plan, preparing data, data analysis, visualizing results and scientific reporting. Additionally each individual student has to write a paper based on a literature review. In the last week of the module the students will present their case. *Topic may be subject to amendments.*
Course objectives	*After successful completion, the student will be able to:* - Integrate knowledge and skills of the previous modules (1, 2, 4, 5). - Apply project management and progress monitoring skills to prepare, plan, execute, manage and monitor a GIS project. - Summarize and report relevant and state-of-the-art research relevant to the project by executing a scientific literature study. - Independently use appropriate GI techniques and methods in the context of specific applications. - Present the methodology and results in an appropriate manner for a specific context. - Develop a critical attitude towards data and data processing methods. - Evaluate organisational restraints and consequences.
Learning materials	- *Literature is dependent on the selected case to serve as academic theory* - ArcGIS or any other GI-software - Blackboard - PowerPoint or any other presentation software
Examination	- Project results (presentation, report, individual assignment) (60%) - Individual assignment (40%) *Percentages subject to amendments.*
Exemption	Not possible
Schedule	Wednesday (week 13): Lectures Thursday (week 13): Lectures Friday (week 13): Discussion with supervisor *Distant learning:* *On-going supervision* Wednesday (week 25): Presentations, visit to mid-terms and defences, Thursday (week 25): Presentations, evaluation
Degree of freedom	Free choice of project and contents of project (approx. 7.0 ECTS)

Module 7: Thesis

Course name	**Thesis**
Course code	**GEO4-GIMA8**
ECTS credits	30.0
Level	Master
Course language	English
Period/time-slot	All time (six months fulltime or twelve months part-time)
Coordinators	Edward Verbree (TUD) Frank Ostermann (UT-ITC) e-mail: thesis.gima@uu.nl
Lecturers	All GIMA staff (see staff info in Course Catalogue)
Entry requirements	- Letter of acceptance of the master programme Geographical Information Management and Applications - Passed at least five out of six content modules (GEO4-GIMA1 to GEO4-GIMA6)
Activities / Education	Independent thesis research
Themes	Thesis
Profile	This is the last or one but last module, where the student needs to prove he/she can master all knowledge and skills in the form of a thesis.
Contents	The (individual) academic research that results in a master thesis deals with a specific need or issue that is relevant to the present-day practice of geo-information management and application. In some cases the subject of the thesis will originate from a student project carried out in module 6 or the internship; in other instances the subject of the thesis will be brought forward by the student or GIMA lecturers. In all cases the subject of study should reflect the main objectives of the GIMA programme.
Course objectives	After successful completion, the student will be able to: - Demonstrate his/her ability to use and integrate knowledge and competences acquired in the six modules and possibly the internship for an advanced, master level research, development and/or design project that adheres to international scientific standards and shows originality and scholarship. - Demonstrate his/her ability to present the process and the results of the project in both written and oral format and to defend and discuss one's work in conformity with international scientific conventions.
Learning materials	GIMA Master Thesis Regulations
Examination	Entry requirement for the thesis defence: Must have passed all six content modules GEO4-GIMA1 to GEO4-GIMA6. Final grade based on (percentages indicate weights): - Written thesis (50%) - Research process (30%) - Presentation (10%) - Discussion (10%)

Examination dates	After submitting the (approved) Research Identification (**15 September 2023** latest) the following dates are allocated for the midterm and final presentations. **Midterm presentation** At one of the following dates and locations, the students will be assessed for their Midterm presentation; to be scheduled, obey the deadlines for submitting the ERP (8 weeks before) and the Midterm report (one week before). **In Bold, the nominal dates are listed.** 15 September 2023, UT-ITC, Enschede > deadlines: ERP 21 July 2023, Midterm-report 8 September 2023 **8 December 2023, UU, Utrecht** **> deadlines: ERP 13 October 2023, Midterm-report 1 December 2023** 22 March 2024, WUR, Wageningen > deadlines ERP 26 January 2024, Midterm-report 15 March 2024 19 June 2024, TUD, Delft > deadlines: ERP 24 April 2024, Midterm-report 12 June 2024 **Final presentation** At one of the following dates and locations, the students will be assessed for their Final presentation; to be scheduled, obey the deadlines for submitting the Final Report (4 weeks before). **In Bold, the nominal dates are listed.** 15 September 2023, UT-ITC, Enschede > deadlines: Final-report 18 Augustus 2023 8 December 2023, UU, Utrecht > deadlines: Final-report 10 November 2023 **22 March 2024, WUR, Wageningen** **> deadlines: Final-report 23 February 2024** 19 June 2024, TUD, Delft > deadlines: Final-report 22 May 2024 In case of too many candidates for one day, additional examination days for both the midterm and final presentations will be: 14 September 2023, UT-ITC, Enschede 7 December 2023, UU, Utrecht 21 March 2024, WUR, Wageningen 21 June 2024, TUD, Delft Any updates to deadlines, additional examination dates, and the concrete, detailed schedule will be communicated by the Thesis Coordinators through announcements on the course's electronic learning management systems, and/or e-mails. The concrete, detailed schedule will be published no earlier than two weeks before the examination days, because it depends on the formal go/no-go decision of the thesis reviewers.
Exemption	Not possible
Schedule	Friday 19 June 2024, TUD, Delft: Lectures *Scheduled date 1: examination date* Mid-term attendance and peer-review *Scheduled date 2: examination date* Mid-term presentation *Scheduled date 3: examination date* Thesis defence
Degree of freedom	*Not applicable*

Regulations	**Article 1 – General** 1. These regulations apply to all students enrolled in the GIMA MSc programme, whether fulltime or part-time. 2. The last or one but last part of the programme consists of carrying out a scientific research, development and/or design project resulting in a written thesis and two presentations (mid-term and final defence). 3. In line with the objectives of the GIMA programme, the master thesis should have a substantial empirical and/or design content. 4. Students are expected to work on their thesis for a time period equivalent to 30 ECTS. 5. The thesis should be based on individual, independent, and original research, development, and/or design work. 6. The thesis project may deal with an issue of interest to the student's employer under strict conditions relating to the scientific level and independence of the thesis project, as well as clarity on the final say by Supervisor and Professor. 7. Part of the thesis work may be conducted outside the Netherlands with 'distance supervision'. A special arrangement should be drafted and approved by the student, the Supervisor and the Thesis Coordinators. The arrangement should specify tasks and responsibilities of the student and the Supervisor and arrangements for regular communication. **Article 2 – Aims of the master thesis** *See course objectives above* **Article 3 – Scientific standards** 1. Both the research, development and/or design, as well as the written thesis and publications, will have to adhere to international scientific standards. 2. The thesis should include: a. an introduction to and conceptualization of the topic (conceptual model based on an international review of relevant scientific literature), b. clearly stated goals and objectives, c. a dedicated, detailed, and justified methodology and application of methods and techniques, d. a transparent description of the work process and the outcomes of the study, e. a thorough, critical discussion of results in line with the project goals and objectives, and f. an abstract or summary, publishable in a magazine for peers. 3. The thesis has to be produced according to international standards for a scientific publication with respect to complete listing of sources used, full insight into methods used, and systematic literature references. 4. During the project, the Dutch code of conduct for scientific work (The Netherlands Code of Conduct for Scientific Practice) of the Association of Universities in the Netherlands has to be followed.

Plagiarism or other scientific misconduct will not be accepted. Submitted theses will be checked on plagiarism with the help of plagiarism detection software. In case of plagiarism, the Thesis Examination Committee will decide not to assess the thesis, further consequences will be decided by the Board of Examiners.

Article 4 – Organisation

1. The Board of the GIMA MSc programme appoints a main and an assistant MSc Thesis Coordinator (see entry "Coordinators" above). They execute their tasks in cooperation with the Programme Director.
2. The Thesis Coordinators organize the contacts, meetings, seminars, et cetera of the thesis phase of the GIMA programme, monitor the progress of the thesis projects, and resolve conflicts between students and Supervisors.
3. The Thesis Coordinators inform the GIMA Programme Director regularly on the overall organisation of mid-term presentations and thesis defences and examinations.
4. Students have to take the initiative and start the thesis research process by either developing a topic themselves, or select a theme from a list posted on the GIMA Blackboard site. The Thesis Coordinators maintain the list and update it regularly, at least at the beginning of every academic year. Once the student has decided on a topic, he/she can contact a prospective Supervisor, who has to be formally employed by one of the four GIMA universities.
5. If the prospective Supervisor agrees, the student should inform the Thesis Coordinators about the chosen topic and Supervisor. If the student has difficulties finding a topic and/or Supervisor, he/she should contact the Thesis Coordinators immediately, so that they can support the requests or mediate an alternative.
6. The Thesis Coordinators take the final decision about the allocation of topics and Supervisors.
7. A student can have additional 'daily' supervisors (e.g. from a private company or a public agency where the research takes place), but these do not have a formal role within the process, i.e. they do not decide whether a student can submit his/her Extended Research Proposal, nor are they member of the Thesis Examination Committee.
8. Each student will have one Responsible Professor, who is from the same university as the Supervisor and who ensures the scientific quality (see Article 3) together with the Supervisor.
9. The total amount of time available for supervision is 50 hours, including the time of the Supervisor, Reviewer, Responsible Professor, and Thesis Coordinators.

Article 5 – Phasing

1. Before starting an MSc thesis project, every student must have attended the one day Introduction on research skills and thesis writing. The Thesis Coordinators will organize this introduction on the last day of the contact week in Delft.
2. After successfully completing at least 5 out of the 6 GIMA modules, students are expected to immediately continue with either the thesis or the internship. Every student (fulltime or part-time) informs the Programme Director and the respective Thesis or Internship Coordinators by **7 July 2023** about their plans. In case a student starts with the thesis, he/she must submit a Research Identification (see below) via Blackboard before **15 September 2023** to allow participation in the December mid-term presentations.
3. The thesis research follows the regular phasing of a scientific study. The main steps are:
   A. preparing a Research Identification (RID),
   B. developing an Extended Research Proposal (ERP) containing theme, objectives, approach, schedule, contact hours,
   C. writing the first chapters based on the literature review, resulting in a conceptual model and an analysis/design scheme,
   D. carrying out empirical analysis and/or design activities,
   E. writing the empirical and/or design chapters,
   F. writing the final chapters on interpretation of results, evaluation and discussion.
4. After completing phases A, B and C, students have to report on their progress in a public presentation and discussion session. This mid-term presentation results in a decision to continue with the thesis research (GO), or addresses concerns to revise the work done (NO-GO).
5. Before giving their own mid-term presentation, every student is advised to attend at least one other session of mid-term presentations. This is an important formative learning moment and preparation for the students' own mid-term presentation.
6. After the entire thesis research (phases A-F) and **all** content modules GEO4-GIMA1 to GEO4-GIMA6 have been successfully completed, the student will give a second public presentation, the thesis defence.
7. The Thesis Coordinators will organize four seminars per year to accommodate these thesis defences during the contact weeks.
8. A typical phasing sees the full-time student submitting his/her Research Identification

15 September at latest, followed by his/her mid-term presentation in December in Utrecht or, ultimately in March in Wageningen, and the defence at the following opportunity, i.e. March in Wageningen or July in Delft. Part-time students are expected to defend in September or at the latest December. If a student meets the criteria mentioned in Article 5.2 in a month other than June/July, a similar thesis time planning is expected, starting with the month of fulfilling the starting criteria.

9. The students themselves (and not their Supervisors) are responsible for meeting these phasing expectations.
10. Students must immediately inform their Supervisor, Thesis Coordinators, and Programme Director in case of unexpected circumstances (e.g. prolonged illness, personal problems) that may prevent the student to abide by the strict planning described above.
11. In case a student deviates from the outlined phases above without having reported any such unexpected circumstances, he/she MUST contact his/her Supervisor and inform him/her and the Thesis Coordinators of an action plan, covering:
    a. The reason(s) for the delay
    b. The actions to be taken to give the mid-term presentation, or to defend the thesis on the next opportunity (including a detailed time planning with deadlines for the separate steps). If a student fails to contact his/her Supervisor, or the Supervisor considers a provided action plan to be insufficient or unrealistic even after revisions, the Supervisor will inform the Thesis Coordinators, who will try to find a solution and will inform the Programme Director about that solution.
12. The Programme Director will consider the delay and may ultimately decide to stop supervision and work on the current thesis topic. The topic will then be made available for selection to other students again. The delayed candidate may be allowed to choose another topic.
13. Upon approval of the completed research by the Responsible Professor and the Supervisor, the student submits via Blackboard a digital version of his/her thesis as PDF-file, plus any appendices containing data or code/software as a zip archive. Additionally, the Supervisor and the Responsible Professor have a right to a printed copy, which the student has to provide. Both can waive this right, but it is the student's obligation to inquire whether a digital copy is sufficient.
14. If, after the completion of the thesis, a student still has to do an internship, it is expected that the student submits an internship plan to the Internship Coordinator ultimately 1 month after the date of the thesis defence.

Article 6 – Assessment

1. The student first prepares a Research Identification (RID) using the available template. After its approval by the Supervisor, the student submits the RID via Blackboard for review by the Thesis Coordinators. After their approval, the student has completed phase A of the thesis research process and can continue with phase B.
2. The student then prepares an Extended Research Proposal (ERP). The ERP has to be approved by the Supervisor and Responsible Professor, before submitting it via Blackboard to the Thesis Coordinators at least eight weeks before the intended mid-term presentation. This completes phase B, and the student can continue with phase C.
3. At least one week before the mid-term presentation, the student submits a draft of the thesis report to the Supervisor and via Blackboard to the Thesis Coordinators. This draft should include at least the first chapters based on the literature review, resulting in a conceptual model and an analysis/design scheme. This completes phase C.
4. Only after completing phase C will the student be allowed to give his/her mid-term presentation. The mid-term presentation consists of 20 minutes presentation, followed by 10 minutes discussion. Immediately after the mid-term presentation, the Supervisor and chairing Thesis Coordinator will review in a closed session the student's progress, based on the presentation, the original ERP, and the draft thesis report. The Supervisor and chairing Thesis Coordinator then take a formal 'go'/'no-go' decision immediately after the mid-term presentation, and communicate this decision to the student.
5. In case of a 'go' decision, the student can continue with the remaining phases D-F, and the Supervisor proposes the name of a Reviewer from one of the GIMA partner universities, but not from the same one as the Supervisor. In case of a 'no-go' decision, the student will have to revise the Extended Research Proposal and/or the submitted thesis draft according to feedback provided by the Supervisor and chairing Thesis Coordinator. The student has two weeks for the revisions once he/she received the feedback, before discussing the revisions during a (video call) meeting with the Supervisor and the Thesis Coordinator. If both agree that the revisions are sufficient, the student receives a 'go' and can continue with the phases D-F. If they consider the revisions to be insufficient, the student will have to retake the entire mid-term process, starting with the submission of a new ERP, for the next regular mid-term presentations. Another 'no-go' decision there will lead to a fail, and the student will have to restart the

	entire thesis research process with a new topic and different Supervisor. 6. For each mid-term presentation, the Thesis Coordinators will appoint up to two students to act as peer reviewers, who will fill out a mid-term review form and raise a question on the basis of their review. All student reviews will be registered by the Thesis Coordinators. 7. After all the phases A-F have been completed, the student submits his/her work to the Responsible Professor and Supervisor, who have to approve the research. In case the work is not approved, the student has to revise and extend his/her work according to the recommendations of the Supervisor and Responsible Professor. 8. The student has to ensure that the Thesis Coordinators are sufficiently informed about the approval (or lack thereof), by forwarding Supervisor and Responsible Professor approval to thesis.gima@uu.nl, as well as any action plan and expected delay. 9. If the work is still not acceptable after the requested revisions, the student will have to start a new thesis project with a different Supervisor. 10. The Reviewer will inform the Thesis Coordinators two weeks before the intended date whether the submitted work is 'defensible'. A submitted thesis is 'defensible' if there is a meaningful chance to succeed in the defence. If the Reviewer deems the submitted work 'indefensible', the Thesis Coordinators may decide, after deliberation with the Supervisor and Responsible Professor, to postpone it to the next opportunity. 11. After the thesis defence, the student will receive a written assessment of the thesis work, signed by all members of the Thesis Examination Committee. Further details on assessment and defence are given under Thesis Defence Procedures below. 12. All MSc-theses graded may be made public with a short announcement in national and international magazines by the Thesis Coordinators. 13. The MSc thesis will be available for the public via the digital UU thesis library. All MSc theses are also available on Blackboard. **Article 7 – Final regulations** 14. In the event of any situation that is not covered by these master thesis regulations, or when there is a good reason to deviate from these regulations, a written request can be submitted to the Board of Examiners by the student and/or the Supervisor. The final decision rests with the Board of Examiners. Up to two attending students will be appointed to peer-review their fellow student's presentation.
Thesis Defence Procedure	**The thesis** The thesis must be written in English and must contain a one-page summary. The thesis must be prepared in A4 format and bound, and must use the GIMA cover page. **The Examination Components** The Thesis Examination Committee (TEC) will assess the thesis research along four components (in parentheses the weight of the component for the final grade): 1. Written thesis (50%) 2. Research process (30%) 3. Presentation (10%) 4. Discussion (10%) A detailed rubric is available in the electronic learning management system. **1. Written thesis** The written thesis is the most important part of the assessment. The following three aspects are considered in the assessment: • scientific content and level: problem definition, relevance of research questions, critical discussion, understanding and mastering of the topic and innovation. • scientific method: methodology, appropriateness of case studies, data and data collection procedures, objectives vs. results and conclusions. • presentation of the work: structure, logical sequencing, insight revealed, layout, organisation, language use, total length and expressive skills. **2. Research process** This part assesses the candidate's working method and actual research process, considering: • originality and motivation, • independence of thought and own initiative, • planning of time and how that has been adhered to, • communication with supervisors and other involved staff.

	3. Presentation The public presentation has a maximum duration of 30 minutes. It should be of high academic standard but aim to present the research in way understandable by non-specialists. It should explain the thesis motivation, followed approach and obtained results using appropriate visual means. The assessed aspects are: • structure, logical sequencing, insight revealed, • quality of the presentation slides, organisation, use of language, length, expressive skills. **4. Discussion** The discussion is the process of defending the thesis in the presence of the TEC and the public. The discussion always takes place after the completed defence presentation. It generally lasts between 25-30 minutes. The TEC Chair moderates the discussion, usually giving the Reviewer the first opportunity to ask questions, followed by the Supervisor and then him- or herself, with external supervisors and the public last if time permits. Questions should: • focus directly on the thesis and work on the thesis, • pertain to subjects directly related to the field of study in which the student is graduating. **The Assessment** The whole thesis research is assessed by the TEC consisting of • the Supervisor (GIMA staff member), • a Reviewer (the Reviewer will only review the final report), • the Chair (if possible the Responsible Professor, if unavailable any of the other three GIMA Responsible Professors; if no other Responsible Professor is available, then another chair who has been appointed by the Board of Examiners beforehand). Chair and Reviewer assess only the written thesis, presentation and discussion, not the research process. If the thesis research involves external supervisors (e.g. from a company), they will be invited to the defence, but have no formal role there. The GIMA Supervisor will collect their opinions about the quality of the research and report them to the TEC. The TEC assesses the thesis research with respect to the four Examination Components during a closed session (usually 15-20 min) bearing in mind the knowledge and skills that the GIMA student is expected to possess: • working in an individual and independent fashion, • overseeing the implications of an assignment, • carrying out research, • demonstrating professional competence, • giving written and oral presentations, • carrying out discussions. The TEC decides on a final mark (rounded to 6.0, 6.5, 7.0, 7.5, 8.0, 8.5, 9.0, 9.5, 10) based on the four Examination Components, which are weighted according to the percentages as stated under examination. The Chair fills out the assessment form, providing short summaries of the assessment results, noting the final mark, and then communicates the outcome to the student.
Graduation ceremony and student unenrolment	Upon successfully completing the thesis OR the internship as the last course module, the student can choose to obtain the diploma during a graduation ceremony (with the earliest opportunity being the next examination date after the last assessment results have been submitted), or to collect it from Studiepunt Geowetenschappen at the University of Utrecht or (only for students living outside the Netherlands) to receive the diploma by mail carrier (see also: Completion of MSc GIMA programme, in the section General Information of this Course Catalogue, and the GIMA Module 7 step-by-step guidelines for course participants below).

GIMA Module 7 (MSc thesis research) step-by-step guidelines for course participants

Notes:
These "step-by-step" guidelines complement the official "GIMA Master Thesis Regulations" and the "Procedure MSc Thesis Examination Regulations", as they are published in Blackboard and in this Course Catalogue. In case of doubt, the official Regulations are binding. The guidelines below are only meant to assist GIMA course participants in their planning of activities. The course participants themselves are responsible for time planning and management and for executing the steps listed below.

Communication

- All communication with the Thesis Coordinators is through thesis.gima@uu.nl.
- Relevant information and announcements can be found on the module's Blackboard page. Make sure to monitor it well.

Starting up

- Students are expected to proceed to the next step (MSc thesis or internship) in case they have completed (passed) at least 5 of the first 6 GIMA Modules (1 to 6).
- Before starting with the thesis research, every student must participate in a one day introduction on the thesis, offered during the Delft contact week.
- Find a **topic**. Students may either formulate their own research topic or select one from those that are offered/ suggested in GIMA Blackboard Module 7. The (individual) thesis research should deal with a specific need or issue that is relevant to the present-day practice of geo-information management and applications.
- Find a **Supervisor**. Students contact a formal Supervisor from one of the 4 GIMA universities whose research expertise is related to the intended thesis topic, and discuss the research ideas with him/her. Students may find a potential Supervisor through earlier GIMA modules, or in the course catalogue's list of involved staff and their fields of specialization, or the Supervisor might be mentioned in the proposed topics.
- Additional supervisors. Students can have additional supervisors (NB the lower case 's') because they are interested in the thesis research, or because the thesis research is embedded in an external institution's or company's work. However, these 'second' or 'daily' supervisors, while they may actually do most of the supervision, do not have a formal role in the GIMA process, and will not sit on the Thesis Examination Committee.
- The Supervisor will inform the **Responsible Professor**: The Responsible Professor ensures that the scientific quality of the work is sufficient to GIMA standards, and acts – together with the Thesis Coordinators – in case of problems. For example, if serious disagreements between student and the Supervisor arise, they can advise and mediate. However, normally, the Responsible Professor will not be involved in regular supervision, and does not automatically form part of your Thesis Examination Committee (although in fact this is often the case, depending on availability and overall scheduling constraints). The Responsible Professor usually is one of the professors representing the four partner universities: Prof. *Alexander Klippel* (WUR), Prof. *Dick Ettema* (UU), Prof. *Peter van Oosterom* (TUD), and Prof. *Menno-Jan Kraak* (ITC/UT). However, replacing Responsible Professors are possible. In any case, the Responsible Professor has to be of the same university as the Supervisor.
- Complete the "**Research Identification**" (template found in Blackboard-Folder "Module Information / Forms and Templates") and submit it as soon as it is ready, but before **15 September 2023** (in case the student starts with your thesis in the new academic year) as PDF via e-mail to the Thesis Coordinators and upload it also in Blackboard (Tab "Submissions"). After the approval of this Research Identification by the Thesis Coordinators, the student is formally registered for the GIMA thesis research (Module 7).
- Students need to ensure formal **registration** at Utrecht University as a participant of the GIMA programme.
- Students with a Supervisor from Wageningen University will also have to complete a so-called "**bijvakformulier**", that is available through the GIMA Blackboard module.
- Preferably, students should **attend at least one other session of mid-term presentations before their own.** The mid-term presentations are held together with the thesis defences 4 times a year during the contact weeks at one of the universities. It is best to plan attendance to one of these sessions as early as possible. Please see the time table for the contact days in the Course Catalogue or on Blackboard.

Extended Research Proposal (ERP)

- Prepare an ERP (see "Template for Extended Research Proposal" in Blackboard) and **ask the Supervisor and Responsible Professor for approval** to submit it.
- **Upload the ERP** via Blackboard (Tab "Submissions"), and **send it as PDF via e-mail to the Thesis Coordinators, with Supervisor and Responsible Professor in CC as proof of their approval**.

- The **deadline** for the ERP will be announced in time by the Thesis Coordinators, but it is usually eight weeks before the mid-term presentation day, plus/minus a day or two.

Mid-term presentation

- At least one week before the mid-term presentation, students **send a draft thesis with the completed chapters to the Supervisor** and upload it also via Blackboard (Tab "Submissions"). **Without this draft thesis, no mid-term presentation will be scheduled!**
- Students prepare and give their mid-term presentation (**duration 20 minutes + 10 minutes for questions**).
- Immediately after the mid-term presentation, the Thesis Coordinator chairing the session and the Supervisor will assess the progress based on the ERP, the completed thesis chapters, and the presentation. They will also read the results of the student peer review(s). They will then inform the student about the outcome (go/no-go) of the mid-term evaluation and discuss the next steps. The student will receive a digital copy of the signed mid-term evaluation form within a few days.
- In case of a **'go'**, the student should also **submit the mid-term presentation via Blackboard as soon as possible.**
- In case of a **'no-go'**, the student will receive a list of comments with suggested improvements within a few days. From the day of receiving this list, the student has then **two weeks to revise the ERP and thesis draft** accordingly, before resubmitting any revised documents in Blackboard, and presenting the revisions during a video call with the Thesis Coordinator and the Supervisor. If both agree that the revisions are sufficient, the initial 'no-go' is changed into a 'go'. If the revisions are deemed insufficient, then the student has to retake the entire mid-term process, starting with the ERP. On a second 'no-go' decision, the student has find a new topic and a different Supervisor.
- The mid-term evaluation form should also contain a suggestion for the name of a potential Reviewer of the final thesis report. The **external Reviewer** has to be from a different GIMA university than the supervisor. He/she will assess the final thesis report, and be part of the Thesis Examination Committee. The final decision on the Reviewer lies with the Thesis Coordinators.

Research completion and thesis defence

- When nearing completion of the thesis research (and the deadline approaching), students need to plan well to **give the Supervisor and Responsible Professor sufficient time for reading and approving the work**! This is especially important for the September date in Enschede, because the deadline will lie in mid-August during the summer holiday period. The planning process is the responsibility of the student, and a lack of planning is no reason for extension of the deadline.
- GIMA thesis research must be finished by the official, binding deadline, which will be communicated in time via Blackboard announcements and e-mail and usually is four weeks before the defence day. **On that date, at the very latest, the final thesis report must be submitted in digital format, together with the approval from the Supervisor and the Responsible Professor (again, proof of approval via e-mail in CC is sufficient)**.
- The thesis has to be **uploaded as PDF via Blackboard** (Tab "Submissions") to allow for automated plagiarism checks. Generally, the Thesis Coordinators will only send the PDF to the reviewer, so students need to make sure that everything required to assess the work is included there, e.g. any essential original code and other original supplementary material (e.g. questionnaires) should be in an appendix in the main thesis PDF report IF this code or material does not exceed 10-15 pages. For data sets and longer code or material, students should upload a second zipped file, which includes ALL produced data sets and ALL developed software or code. **GENERAL IMPORTANT NOTE FOR ALL DIGITAL SUBMISSIONS**: Please check the size of the thesis PDF. Even with lots of colour images and figures in printable quality (300 dpi), no thesis PDF needs to be larger than 20 MB. Please reduce file size if necessary to allow sending it to Reviewers via e-mail. Additionally, the Supervisor and the Responsible Professor have a right to a printed copy, which the student has to provide. Both can waive this right, but it is the student's obligation to inquire whether a digital copy is sufficient.
- For the final thesis report, the **GIMA cover page must be used**, which can be found in GIMA Blackboard Module 7 (>Documents>Forms and Templates). The printed thesis must also be bound (glue or spiral).
- **Fulfilling these requirements does NOT guarantee participation in the defences**: The external Reviewer will assess the thesis, and might come to the conclusion that it is not (yet) defensible. Because the external Reviewer will inform the Thesis Coordinators within two weeks, the detailed schedule for the defences will be published two weeks before the defence date at the earliest. In the rare circumstance that the external Reviewer vetoes the defence, the Thesis Coordinators will inform the participants immediately, in any case before the publication of the definite schedule.
- Students defend the thesis in **a public presentation of 30 minutes duration** on one of the 4 GIMA thesis defence days that are organized every year. Immediately after the presentation, they will have to answer the questions posed by the members of the TEC and public (if TEC chair allows). The duration of this discussion is also up to 30 minutes.

- Shortly before, on, or immediately after the defence day: If the student has already completed the internship, he/she should fill out the "**Alumni form**" (BB Module 7 >Documents>Forms and Templates) and send it to the GIMA Secretary (gima.geo@uu.nl). In any case, please complete the **M7 evaluation** (found in the GIMA BB Evaluations module).
- Students should upload the **final (e.g. PowerPoint) presentation** on BB (GIMA M7 > Submission), and after completing all other degree requirements (including the internship) the digital version of your thesis to the digital UU thesis library https://www.uu.nl/en/university-library/advice-support-to/students/student-theses

Graduation

- If the thesis defence was the last thing to do for the GIMA programme, and the student has completed all other degree requirements (including the internship), it is suggested that he/she starts the automatic graduation procedure immediately after the defence. This may save some unnecessary tuition fees.
- Detailed guidelines for going through this procedure can be found here: http://students.uu.nl/en/geo/gima/practical-information/graduation It is the student's own responsibility to follow these guidelines. Please note that the communication will be through your UU e-mail address.
- One of the steps is to check whether all GIMA study results are in Osiris and are correct. If something is wrong, please contact studiepunt.geo@uu.nl.
- Students should also inform the GIMA Programme Director (gima_pd@uu.nl) and the GIMA Secretary (gima.geo@uu.nl) whether they want to attend the next GIMA Graduation Ceremony (during the next GIMA contact days) or whether they want to collect your degree certificate from Studiepunt Faculty of Geosciences in Utrecht.
- For the next career steps, it is worthwhile to consider to publish the GIMA thesis research results in a scientific or professional journal or to present it at a conference. This is normally done in consultation with the Supervisor, who will then be a co-author. Successful publications will be presented on the GIMA website.

Step	Student	Supervisor	Thesis Coordinator	Responsible Professor	Reviewer
0			Maintain and update thesis topic list		
1	Find Topic		Support upon request		
2	Contact Supervisor		Support upon request		
3		Agree on Supervision			
4	Develop RID				
5		Approve RID			
6	Submit RID by Sep 15				
7			Approve RID		
8	Develop ERP				
9		Approve ERP		Approve ERP	
10	Submit ERP eight weeks before mid-term				
11	Submit Thesis Draft one week before mid-term				
12	Mid-term presentation				
13	*If Go:* continue with developing thesis *If No-Go*: one attempt to repair ERP and thesis draft; if repair sufficient, continue with next step, else go back to step 8	Assess mid-term: Go/No-go	Assess mid-term: Go/No-go		
14	Continue and complete thesis research				
15		Approve thesis		Approve thesis	
16	Inform Thesis coordinators about approvals (forward e-mails) Submit thesis four weeks before defense				
17			Organize mid-term and defence days; requesting reviews		
17					Go/No-go two weeks before defence
18			Publish schedule		
19	Public Defence				
20	Submit evaluation etc.				

Module 8: Internship

Course name	**Internship**
Course codes	**GEO4-GIMA7 (30 ECTS internship) and GEO4-GIMA9 (20 ECTS internship + 10 ECTS additional courses)**
ECTS credits	30.0
Level	Master
Course language	English
Period/time-slot	All time (five months full-time or ten months part-time)
Coordinators	Main: Nandika Tsendbazar (WUR) Assistant: Frederika Welle Donker (TUD) e-mail: internship.gima@uu.nl
Lecturers	All GIMA staff (see staff info in Course Catalogue)
Activities / Education	- Internship, or the combination of internship and additional university course(s) - Internship report or article (to be) published. The article can be either submitted to a peer reviewed journal or a professional GI related magazine - Personal reflection report - A summary, slide presentation or poster summarising the activities of the internship. Optional: activities related to the selected university course, such as presentations at workshops, development of educational material, assistance during hands-on sessions, making evaluation reports during seminars etc.
Themes	- Gaining geo-information work experience amongst peers within the geo-information working field at an academic level. - *Optional*: gaining additional relevant knowledge related to geo-information, be it applied or theoretical, given in a university course
Profile	This module serves to give evidence that the student has gained work experience at MSc level and applied all knowledge obtained in previous modules within a working field, be it in a research institute, a governmental or non-government organisation.
Contents	The internship allows the student to gain practical experience in a (geo-information) professional working environment. The internship contributes to the successful fulfilment of the required knowledge and experience of an academic and professional GIMA graduate. It allows the student to expand his/her professional experience and create a sound-proof for graduation. Therefore, the internship is considered an academic internship. The content of the internship must have a research topic. The amount of time spent on this topic must be at least 60% of the internship duration. A maximum of 40% of the internship duration can be spent on developing other professional skills through activities offered by the internship provider, such as attending internal courses, assisting with project management, further development of programming skills, participating within existing projects, etc. The internship is carried out within geo-information companies, agencies, and research institutes in the Netherlands or abroad. The internship cannot be carried out in one of the four university departments involved in GIMA: Delft, Utrecht, Wageningen and Twente under normal circumstances. There are three internship options: 1. Option 1 entails that the internship (30 ECTS, 840 hours) is completely carried out in one organisation. 2. Option 2 entails that the internship is carried out at two different internship providers. For example, a person enrolled in the full-time degree programme could do two internships, each lasting at least 15 ECTS, (420 hours). If the internship is divided between two internship providers, the total internship must

	be at least 30 ECTS and the internship regulations apply in full to each of the two internships. This means two sets of assessment deliverables (internship report / article, personal reflection report and summary / poster / presentation) must be submitted. 3. Option 3 is a combination of an internship of at least 20 ECTS (560 hours) and (an) additional university course(s), whereby the total package must be at least 30 ECTS. The additional course(s) can be at an external university or at GIMA universities. The courses must be at MSc level and be relevant and give new (supplementary) knowledge to the GIMA curriculum. The courses must be completed successfully before the internship. Proof of success must be handed in to the GIMA Programme Director and Internship Coordinators before starting the internship, as well as submitting to Student Affairs Geosciences of Utrecht University to obtain the required ECTS. For Option 3, a written request must be submitted to the GIMA Programme Director and the Internship Coordinators for acceptance **before** participation. The ECTS for additional courses can also be used to gain relevant knowledge/skills for the GIMA MSc thesis. If this is the intention, the written request must also be submitted to the MSc Thesis Coordinators.
Course objectives	*After successful completion, the student will have:* - Applied in practice and tested the theoretical and practical knowledge accumulated in modules 1–6. The modules contributed to mastering the student's syllabus and improving the student's basis for graduation. - Acquired or increased technical experience, insight into business, and social and other skills. - Been given the opportunity to become familiar with a geo-information workplace.
Learning materials	- GIMA Master Internship Regulations; - GIMA Master Internship Guidelines; - Rubric for assessment of MSc GIMA version 2017 (or later).
Examination	*Internship (options 1, 2 and 3 above):* - Professional skills 45% - Internship report or article 45% - Personal reflection report 10% The supervisor of the providing internship organisation (Workplace Supervisor) assesses the professional skills (A). The internship report/article (B) and personal reflection report (C) are assessed by the GIMA supervisor, while the Workplace Supervisor may also be asked to provide input for assessment of the internship report/article (B). The GIMA Internship Coordinator is formally the examiner. The elements are graded according to the developed rubric of assessment for internships. The elements of assessment are: **Part A: Professional skills (45%)*** 1. Initiative and creativity 2. Insight in functioning of another organisation 3. Adaptation capacity 4. Commitment and perseverance 5. Independence 6. Handling Supervisor's comments and development skills 7. Time management **Part B: Report internship (45%)*** 1. Formulation goals, framework research project 2. Theoretical underpinning, use of literature 3. Use of methods and processing data 4. Reflection on results 5. Conclusions and discussion 6. Fluency of language and writing skills **Part C: Personal reflection on internship (10%)*** 1. Report on personal reflection of the internship and of the GIMA course *Optional additional university courses (option 3 above):* As defined in the course description in the Course Catalogue or Study Guide concerned. Proof of a pass must be supplied to the GIMA Internship Coordinators to complete the Module assessment.

Exemption	An internship exemption is possible when specific conditions are fulfilled as described in the Internship regulations below (article 7).
Schedule	Not applicable Students are allowed to start any time when eligible.
Degree of freedom	*Optional university course(s) (10 ECTS at maximum)*
Regulations	**Article 1 – General** a. These regulations on the internship (in Dutch *stage*; also referred to in English as the work placement or traineeship) apply to all students enrolled in the GIMA MSc degree programme, whether full-time or part-time. b. The second half of the GIMA programme includes a mandatory internship period of 30 ECTS. The duration of this internship will be at least 840 hours, which is 5 months on full-time basis, excluding public holidays, personal holidays, and sick leave of considerable duration. c. In the case of illness or other unforeseen absence, the internship provider will have to be informed immediately. In the case of a sick leave of more than 5 working days (consecutive or in total), the GIMA Supervisor and Internship Coordinators will have to be informed as well. The GIMA Supervisor, in consultation with the internship provider, will then look for a solution to compensate for the days lost. d. There are three options to fill in the internship period: 1. In Option 1, the internship (30 ECTS) is done in one organisation (company, (government) agency, research institute, or university). 2. In Option 2, the internship is done at two different organisations (companies, (government) agencies, research institutes or universities), or a combination of organisations. For example, a student could do two internships, each lasting at least 15 ECTS. If the internship is divided between two internship providers, the total internship must be 30 ECTS and the internship regulations apply in full to each of the two internships. 3. Option 3 is the combination of an internship of at least 20 ECTS and additional university courses, whereby the total package must be at least 30 ECTS. The additional courses can be at an external university or at GIMA universities. The courses must be at MSc level and be relevant and new (supplementary) to the GIMA curriculum. The courses must be completed successfully. For this third option, a written request must be submitted, before participation, to the GIMA Programme Director and Internship Coordinators for acceptance. When accepted, the student submits the UU Study Plan to the GIMA Board of Examiners for formal approval. The learning outcomes and the email address of the Board of Examiners are available in the Course Catalogue. When approved by the GIMA Board of Examiners follow the procedure of enrolling as “national guest student” or in Dutch ‘bijvakstudent’ to the university where the course(s) you wish to follow is offered. For the procedure to enrol as national guest student at GIMA universities see the links: WUR, TU Delft, UT These ECTS for additional courses can also be used to gain relevant knowledge/skills for the GIMA MSc thesis. When this is the case, the written request must also be submitted to the MSc Thesis Coordinators. e. The internship may not be at one of the departments of the four partner universities involved in GIMA. **Article 2 – Aims of the internship** a. To apply in practice and test the theoretical and practical knowledge the student has accumulated in the first six modules, thereby contributing to mastering the student’s syllabus and improving the student’s basis for graduation. b. To enable the student to acquire technical experience, insight into business, professional social interaction with experts in the field of GIS and other skills. c. To give the student the opportunity to become familiar with a geo-information workplace.

Article 3 – Organisation and set-up

a. After successfully completing GIMA Modules 1 to 6 (or at least 5 out of these 6) students are expected to immediately continue with either the thesis or the internship. Normally, Module 6 is the last module that will be completed (in July). In that case, it is expected that every student (full-time or part-time) inform the Programme Director and the respective Thesis or Internship Coordinator before September 1 about whether he/she starts with the thesis or with the internship.
b. All documentation and information related to procedures and deliverables are available in Module Internship on BlackBoard. Information related to procedures is available under the tab 'Course Information'. Deliverables must be uploaded via the tab 'Submissions'. In total, there are seven submissions. These are:
    1. Internship Identification Description (IID)
    2. Internship Agreement
    3. Internship Personal Learning Goals (PLG)
    4. Extended Internship Proposal (EIP)
    5. Internship Report or Article
    6. Personal reflection report (PRR)
    7. Summary report or poster or power point presentation of the internship
c. The internship will be done in of the following: either commercial companies, non-profit organisations or research institutes in the Netherlands or abroad.
d. The work the student is expected to carry out must be of a level appropriate for a person with a university master degree in geo-information.
e. The student is expected to take the initiative to find an internship. When looking for and arranging their internship, students may use the designated notice board (on Blackboard), social media or other channels. If this search proves to be difficult, the student can contact the GIMA Internship Coordinators for assistance in finding an appropriate internship.
f. The student is expected to contact a GIMA supervisor from one of the four GIMA universities whose expertise matches the chosen internship topic. Students may find a potential GIMA supervisor because of the subjects taught or supervision provided in earlier GIMA modules. Students may also use the list of potential supervisors with their fields of specialization in this course catalogue.
g. The internship workplace and internship assignment will be chosen in consultation with the GIMA Internship Coordinators.
h. When a student starts with the internship, he/she must submit an internship Identification Description to the Internship Coordinators before starting the internship. It is also allowed, and, in fact, recommended to submit the Internship Identification Description during the final stages of the thesis research period and before the thesis defence. Before the commencement of the internship, the student must upload the Internship Identification Description to Submissions – Step 1 Internship Identification Description and inform the Internship Coordinators by email of this submission. The Internship Identification Description must contain:
    - name of the internship provider;
    - name of the external internship supervisor;
    - contact information of the internship supervisor (phone no. and email)
    - proposed GIMA internship supervisor;
    - start and end date of the internship;
    - brief description of the internship research topic.

    The Internship Identification Description (IID) should be around 2-3 pages and include a brief description of the problem statement, possible research question(s)/objective(s), proposed methodology, expected outputs and outcomes. The IID needs to contain a literature list of at least five references.
i. This Internship Identification Description must be submitted on Blackboard. After submission, the student will inform the GIMA Internship Coordinators of the submission by email. Based on this Internship Identification Description, the Internship Coordinators will discuss the proposed internship with the student during the internship intake meeting. The Internship Coordinators will then assess whether the internship fulfils the required internship level (Go/No Go).

    The responsibility for finding a GIMA supervisor lies with the student. Should the student have problems finding a GIMA supervisor, the Internship Coordinators will assist the student. After the approval of the Internship Identification

	Description and agreement of the proposed GIMA supervisor by the Internship Coordinators, a student is formally registered for the GIMA internship (Module 8). j. After the approval of this Internship Identification Description, the "GIMA Work Placement" agreement (contract) is completed and signed by the student, the Workplace Internship Supervisor, and the assigned GIMA Internship Supervisor. This signed agreement is also submitted on Blackboard (Submissions – 2 Internship Agreement). The GIMA Internship Coordinators must be notified of the upload by email. k. After the third week of commencement of the internship, at least three personal learning goals must be formulated and uploaded to Blackboard. For further details concerning personal learning goals, see Blackboard – Submissions – Internship Personal Learning Goals. After submission, the student will inform the internship coordinators and GIMA supervisor of the submission by email. l. After the third week of commencement of the internship, an Extended Internship Proposal of the research topic needs to be submitted. The Extended Internship Proposal consists of: • name of the internship provider; • name of the external internship supervisor; • contact information of the internship supervisor (phone no. or email); • name and affiliation of GIMA internship supervisor; • start and end date of the internship; • brief description of the problem statement and context, research question(s)/objective(s), an extended description of the methodology of the internship description, expected outputs and outcomes, a time planning, and an extended list of literature. This Extended Internship Proposal is submitted to Blackboard – Submissions – 4 Extended Internship Proposal and the student informs his/her GIMA Supervisor and GIMA Internship Coordinators of the submission. m. After the third week of commencement of the internship and preferably after the Personal Learning Goals and the Extended Internship Proposal documents have been submitted, the student will schedule an Internship Kick-off meeting with the student, Workplace Supervisor(s) and the GIMA Supervisor. This internship kick-off meeting will take place either at the location of the internship provider, or online as a conference call. During the internship kick-off meeting, the GIMA internship supervisor, the external internship supervisor, and the student discuss the internship activities based on the Extended Internship Proposal and the Internship Personal Learning Goals, and GIMA internship procedures. **Article 4 - The GIMA internship supervision** a. The GIMA Internship Coordinator must approve the student's Internship Identification Description before commencement of the internship. b. The GIMA Internship Coordinator is responsible for checking the suitability of the content and standard of the student's internship duties before the start of the internship. The GIMA Internship Supervisor is responsible for ensuring that the internship activities follow the scientific standard for GIMA while considering the internship duties and the completeness of submitted documents. c. The day-to-day supervision of the student is the responsibility of the Workplace Internship Supervisor of the internship organisation. d. If the Workplace Internship Supervisor and/or student have any complaints or problems, they should contact either the GIMA Internship Supervisor or the GIMA Internship Coordinators to discuss these complaints or problems. **Article 5 – The internship report, personal reflection report and summary** a. On completion of the internship, the student will have to submit three digital written documents (all three are uploaded to BlackBoard 'Submissions'). These three documents are: 1. an internship report or article 2. a personal reflection report 3. a summary of the internship, poster or slide presentation summarising the internship

b. The student will have to write a report or article of the work done during the internship and submit it as a digital document, no later than 1 month after the internship has ended. The internship report must be at least 25 A4-pages long but no longer than 40 A4-pages. An article can either be for a professional or peer-reviewed publication. Verification of publication of the article must be given to the GIMA Internship Supervisor and GIMA Internship Coordinators. In addition to the article, a short report is required describing methodology activities not fully described in the article. In such case, this can be included in the Personal Reflection Report.

c. The internship report must contain at least the following:
   1. problem statement / formulation of goals, framework research project;
   2. extended description of research method;
   3. a critical reflection on results and products made. It is expected that conclusions, recommendations and discussions of the results and made products are well-founded;
   4. a literature list of relevant articles, reports, etc. to support the applied methods and to support given discussions of the results and products;
   5. any reports / manuals, etc. which were written as part of expected deliverables of the internship provider, may be added to the internship report as an appendix.
   6. In addition, to uploading the internship report to Blackboard Submissions a digital copy of the report or article will have to be sent to the Workplace Internship Supervisor.

   After uploading this report, the GIMA Internship Coordinators and the GIMA Internship Supervisor should be notified of the upload by email.

d. The second report is the Personal Reflection Report. This report must be at least 5 A4 pages, and must contain the following:
   Concerning the internship:
   1. A description of the student's introduction to and supervision within the providing internship organisation;
   2. A description of the nature and organisational structure of the internship providing organisation;
   3. The student's duties during the internship;
   4. The student's academic opinion of the level and usefulness of the internship and the terms of employment;
   5. The student's reflection on the personal learning goals.

   Concerning the GIMA curriculum:
   1. the student's academic opinion of the contribution or non-contribution of each GIMA module to the internship;
   2. the student's academic opinion of what is lacking in the GIMA curriculum in relationship to tasks carried out during the internship.

   Concerning the personal learning goals:
   1. An academic reflection upon the personal learning goals

   After uploading the Personal Reflection Report to Blackboard, the GIMA Internship Coordinators and the GIMA Internship Supervisor should be notified by email of the upload to Blackboard.

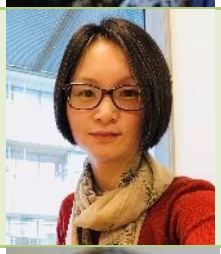
e. The third document is a summary of the internship. This summary can be one of the following:
   a. a digital summary of the internship report (approximately 1000 words);
   b. a digital poster presentation;
   c. a slide presentation summarising the internship activities and/or outcomes.

   After uploading the Summary, Poster or slide presentation of the internship to Blackboard, the GIMA Internship Coordinators and the GIMA Internship Supervisor should be notified of the upload in Blackboard by email.

Article 6 - Assessment

	a. The internship has three assessment parts. These are Part A: professional skills, Part B: internship report or article, and Part C: personal reflection report. The contribution percentage of each assessment part to the final mark is as follows: • Part A: Professional skills 45% • Part B: Internship report or article 45% • Part C: Personal reflection report 10% b. The internship provider will assess the professional skills in Part A of the Assessment Form and may provide input for the academic assessment of the Internship Report or Article (part B). This can be descriptive, preferably in the comment box of the assessment form, or as an advisory mark for the Internship Report / Article. In case of an advisory mark, this mark may be taken into account by the GIMA Internship Supervisor when finalising the mark for the final report. The GIMA Internship Supervisor will assess the internship report or article in Part B and personal reflection report in Part C of the Assessment Form. The assessment form is available from the GIMA Internship Coordinators or can be downloaded from Blackboard. c. All parts are assessed according to GIMA guidelines provided in the attached rubric. The rubric is available from the GIMA Internship Coordinators or can be downloaded from Blackboard. d. Students who do not submit their internship report or (first draft of their) article to their GIMA internship supervisor before the 1-month deadline for submission has expired will be penalised: their maximum final mark will be reduced from 10 to 6. e. The GIMA Internship Supervisor submits the assessment form to the GIMA Internship Coordinators, who will pass it on to the GIMA Programme Director for inclusion in the database / OSIRIS. **Article 7 – Exemption** a. A student may only be exempted from the internship requirement if the following conditions are met: • proof can be supplied that the student has a minimum of 3 years work experience in a geo-information environment; • the student has written a 3000-word essay discussing how the work he or she did in the geo-information environment is related to the GIMA modules; • the student has handed in a portfolio of the projects in which he or she was involved when working in a geo-information environment; • the student has submitted a written request for exemption to the Board of Examiners. All documents relating to the points above must be submitted to the Board of Examiners through the Secretary of the Board of Examiners (boardofexaminers.geo@uu.nl). **Article 8 – Final regulations** In the event of a situation arising that is not covered by these internship regulations, or if there is good reason to deviate from these regulations, a written request must be submitted to the Board of Examiners. The final decision rests with this Board of Examiners.
Remarks	**Graduation ceremony and deregistration** Upon successfully completing the internship as the last course module (when the thesis has successfully been completed as well), the student can choose to obtain the diploma during a graduation ceremony. The earliest available graduation ceremony will be the next thesis defence date after the last assessment results have been submitted). Students can also choose to collect their diploma from Student Affairs Geosciences at Utrecht University, or (only for students living outside the Netherlands) to receive the diploma by mail carrier (see also: Completion of MSc GIMA programme, in the section General Information of this Course Catalogue), and https://students.uu.nl/en/geo/gima/practical-information/graduation for information about submission deadlines and graduation procedures).

Staff Information

Inst.	Title	Name / Field of work	Mod.	Picture	Email
WUR	Dr	**Athanasiadis, Ioannis** data science, big data, environmental informatics, decision support systems, metadata and ontologies and machine learning.	7 8		ioannis.athanasiadis@wur.nl
UT-ITC	Dr. Ir.	**Augustijn, Ellen-Wien** Simulation models, Data structures and analysis	1 7 8		p.w.m.augustijn@utwente.nl
UT-ITC	Dr.	**Chang, Ling** Radar remote sensing, Time series modeling, InSAR	7 8		ling.chang@utwente.nl
WUR	Dr. Ir.	**Clevers, Jan** Remote sensing: Crop monitoring, Vegetation Indices, Vegetation monitoring, Imaging spectroscopy	1 7 8		jan.clevers@wur.nl
HAS		**de Bakker, Marien** GIS in organisations, Project management	4		m.debakker@has.nl
UT-ITC	Dr. Ir.	**de By, Rolf** Space-time data, Storage and computation Social networks, Databases	7 8		r.a.deby@utwente.nl

Inst.	Title	Name / Field of work	Mod.	Picture	Email
WUR	Dr. Ir.	**Bruin, Sytze de** uncertainty analysis to assess fitness-for-purpose, data acquisition, including spatial and temporal sampling and sensing, spatio-temporal interpolation and other quantitative methods used in spatial and temporal analysis (e.g. time series analysis).	7		sytze.debruin@wur.nl
UT ICT	Prof Dr.	**de Jong, Steven** Geohazards, Land degradation and remote sensing, Earth observation and Geocomputation	7		s.m.dejong@uu.nl
UT-ITC	MSc	**De Oto, Lucas** GIS, Spatial analysis, Digital cartography, Remote sensing for natural resources management	1		l.h.deoto@utwente.nl
TUD	Dr.	**Diaz Mercadoa, Vitali** Hydrology, spatio-temporal modelling, point cloud data	7 8		v.diazmercado@tudelft.nl
WUR	Dr.	**Grus, Łukasz** Spatial Data Infrastructures, Open data, Data science, Basic registrations	3 7 8		lucas.grus@wur.nl
UU	Dr.	**Helbich, Marco** Spatial analysis, Spatial statistics, Human geography and planning, Urban geography	5 7		m.helbich@uu.nl

Inst.	Title	Name / Field of work	Mod.	Picture	Email
UT-ITC		**Jager-Ringoir, Katinka**	1		k.a.jager@utwente.nl
TUD	Dr.	**Kara, Abdullah** Valuation information, land administration	7 8		a.kara@tudelft.nl
UU	Prof Dr.	**Karssenberg, Derek** Computational Geography	5 6 7 8		d.karssenberg@uu.nl
WUR	Prof Dr.	**Klippel, Alexander** XR, embodiment, virtual field trips, spatial cognition, wayfinding, geographic event conceptualization, formal characterizations of dynamic spatial processes, location-based services, landscapes and land cover concepts, crowd-science and crowd-sourcing, and featured prominently in recent projects, Virtual Reality, and 3D modeling.	0 7		alexander.klippel@wur.nl
UT-ITC	Drs.	**Knippers, Richard** GI Education, Mapping and Geovisualization, Spatial Referencing	1 2 7 8		r.knippers@utwente.nl
UT-ITC	Drs.	**Köbben, Barend** Data visualisation & mapping, Distributed geo-services, Webcartography, Web applications	7		b.j.kobben@utwente.nl

Inst.	Title	Name / Field of work	Mod.	Picture	Email
WUR	Dr. Ir.	**Kooistra, Lammert** Unmanned aerial systems, Remote sensing, Imaging spectroscopy, Precision agriculture, Multi-variate statistics	7		lammert.kooistra@wur.nl
UT-ITC	Prof Dr.	**Kraak, Menno-Jan** Geovisualization	0 7		m.j.kraak@utwente.nl
UT-ITC	Dr.	**Kuffer, Monika**	7		m.kuffer@utwente.nl
WUR	MSc	**Lau Sarmiento, Alvaro** Forest ecology, GIS, Remote sensing, Terrestrial laser scanning	1 7		alvaro.lausarmiento@wur.nl
UT-ITC	Dr. Ir.	**Lemmens, Rob** Open GIS and internet GIS, Mobile GIS and Interoperability, Semantic modelling crowdsourcing, VGI	5 6 7 8		r.l.g.lemmens@utwente.nl
WUR	Dr. Ir.	**Ligtenberg, Arend** GIS modelling for land use planning, Information management, Spatial models, Mobile applications, 3D Visualization	6 7 8		arend.ligtenberg@wur.nl

Inst.	Title	Name / Field of work	Mod.	Picture	Email
TUD	Dr.	**Maat, Kees** Travel behaviour and the built environment, Spatial statistics, Statistical choice modelling	7		c.maat@tudelft.nl
TUD	Dr. Ir.	**Meijers, Martijn** Map generalization, Vario-scale maps, 5D modelling, Python programming	5 7 8		b.m.meijers@tudelft.nl
UT-ITC	Dr.	**Morales, Javier** Design of geo-information services, Architectures for distributed (geo-information) systems, Spatial Data Infrastructures, Web technology, Business process management	7 8		j.morales@utwente.nl
UT-ITC	Dr.	**Ostermann, Frank** Crowdsourced and volunteered geographic information, Citizen Science, Reproducible Research	7		f.o.ostermann@utwente.nl
TUD	Dr.	**Ploeger, Hendrik** Land administration, Land use planning, Open data	8		h.d.ploeger@tudelft.nl
TUD	Drs.	**Quak, Wilko** Spatial DBMS Geography Markup Language (GML) Information modelling (UML) Semantic modelling	5 7		c.w.quak@tudelft.nl
TUD	Dr.	**Rafiee-Voermans, Azarakhsh** Remote sensing, Laser scanning, BIM-GIS, Geo-games, Machine learning	7 8		a.rafiee@tudelft.nl

Inst.	Title	Name / Field of work	Mod.	Picture	Email
UT	Dr.	**Raposo, Paulo** Cartography, map generalization, geovisualization, GIS programming	4		p.raposo@utwente.nl
WUR	Dr.	**Reiche, Johannes** Radar remote sensing of forests	7 8		johannes.reiche@wur.nl
UU	Dr.	**Scheider, Simon** Conceptual modeling, Geographic data analysis and knowledge extraction	5 7 8		s.scheider@uu.nl
WUR	Dr.	**Sjoukema, Jaap Willem** volunteered geographic information (VGI) key registry systems like large-scale topography (BGT) and cadastral (BRK), crowdsourced feedback systems, abm, and spatial data infra structure			jaap-willem.sjoukema@wur.nl
WUR	Dr. Ir.	**Speelman, Erika** Spatial models, Agent-based modelling, Companion modelling, Participatory gaming and simulation	8		erika.speelman@wur.nl
WUR	Dr.	**Tsendbazar, Nandika** satellite remote sensing based land monitoring: in particular (e.g., global) land cover and land cover change monitoring, including monitoring wetland and croplands. Earth Observation based SDG monitoring with a focus on land degradation and urban sustainability.	7 8		nandin.tsendbazar@wur.nl

Inst.	Title	Name / Field of work	Mod.	Picture	Email
UU	Dr.	**van der Zee, Egbert** Web 2.0, User generated content, Social network analysis, Cluster/Hot Spot analysis, Spatial behaviour, Sharing economy, Ttourism	2 7 8		e.l.vanderzee@uu.nl
TUD	Dr. Ir.	**van Loenen, Bastiaan** Information Policies, Open data, Spatial Data Infrastructures (SDI), Location privacy, Land registration	3 7 8		b.vanloenen@tudelft.nl
TUD	Prof Dr. Ir.	**van Oosterom, Peter** Spatial databases, Map generalization (vario-scale), Land administration	0 7		p.j.m.vanoosterom@tudelft.nl
TUD	Ir.	**Verbree, Edward** (Indoor) positioning 3D	6 7 8		e.verbree@tudelft.nl
WUR	MSc	**Vreugdenhil, Corné** (Open) geodata, Spatial analysis, Modelling & visualization	6 7 8		corne.vreugdenhil@wur.nl
TUD	Dr. Ir.	**Welle Donker, Frederika** Information Policies, Open data, Spatial Data Infrastructures (SDI), (Open data) business models economic aspects of information, Societal cost-benefit analysis	3 7 8		f.m.welledonker@tudelft.nl

Inst.	Title	Name / Field of work	Mod.	Picture	Email
UT-ITC	Prof Mr. Dr. Ir.	**Zevenbergen, Jaap** Land Administration and Management	7 8		j.a.zevenbergen@utwente.nl
UU	Drs.	**Zeylmans van Emmichoven, Maarten** Geodata ArcGIS ERDAS/Imagine Remote Sensing	0 1 2 6 7 8		m.j.zeylmansvanemmichoven@uu.nl
UT-ITC	Prof Dr. Ir.	**Zurita-Milla, Raul** Spatio-temporal analytics Geocomputation Remote Sensing GIS and VGI Data integration Big data and Open Science	7		r.zurita-milla@utwente.nl

Course Venues

University of Twente - ITC

Faculty of Geo-Information Science and Earth Observation
Hallenweg 8, 7522NH Enschede, Building 19 (Langezijds).
URL: http://www.itc.nl

E-mail: info-itc@utwente.nl

Download the campus app to navigate around campus:
https://www.utwente.nl/en/service-portal/communication/websites-portals/campusapp

Download the map of thew campus with directions:
https://www.utwente.nl/download/campusmap.pdf

Utrecht University

Vening Meinesz Builing A
Princetonlaan 8a
3584 CB Utrecht
tel: (+31) 30 253 7210

URL: http://geo.uu.nl

Route description
See https://www.uu.nl/organisatie/vastgoed-en-campus/campus-usp-de-uithof/bereikbaarheid/plattegrond for an interactive map.

By car:

From Amsterdam:
- A2, Exit Utrecht Noord
- Follow the N230 till A27
- A27, intersection Rijnsweerd direction De Uithof
- A28, First exit De Uithof

From Hilversum or Breda:
- A27, intersection Rijnsweerd direction De Uithof
- A28, First exit De Uithof

From Den Haag/Rotterdam or Arnhem:
- A12, junction Lunetten direction Amersfoort
- A27, intersection Rijnsweerd direction De Uithof
- A28, First exit De Uithof

From Den Bosch and Eindhoven:
- A2, junction Oudenrijn direction Amersfoort
- A27, junction Lunetten direction Amersfoort
- A28, First exit De Uithof

From Amersfoort:
- A28, Exit De Uithof (after exit Zeist/Den Dolder)

You'll arrive at the Uithof on the north side. Buildings are numbered. The Willem van Unnik building is number 2. There are several parking locations on the Uithof (see map). The Marinus Ruppert building is number 21.

By public transport:
From/to Utrecht Central Station:
- Every 5 minutes tramline , exit at stop Padualaan
- Every 7 minutes, bus 27 or 28, exit at stop Botanische Tuinen.

Wageningen University & Research

Droevendaalsesteeg 3
Building: 102
6708 PB Wageningen
The Netherlands

URL: http://www.wur.nl

Route description

By public transport:
All trains between Utrecht and Arnhem stop at Ede-Wageningen Station, with exception of the ICE-trains. Take bus line 88 to Wageningen Bus station and exit at bus stop Droevendaalsesteeg (bus departs from the southern exit 'zuid' of the railway station; coming from platform 3/4, turn left). For detailed travel information see www.9292ov.nl, or the NS train journey planner, www.ns.nl, or call 0900-9292. Alternatively, take a taxi.

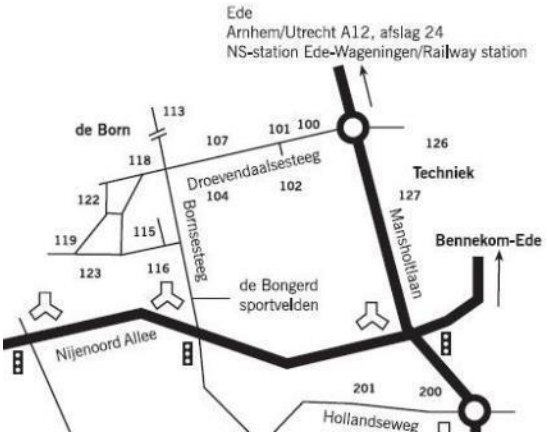
By car:

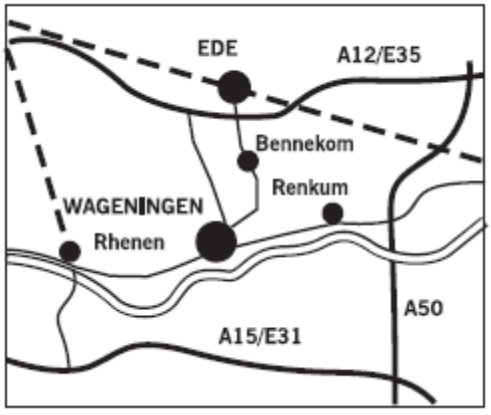
From Utrecht or Arnhem:
From the A12 motorway take the 'Ede, Bennekom, Wageningen' exit.
Follow signposts to Wageningen.
Once you enter Wageningen follow the Wageningen UR signs for the building number.

From Nijmegen:
From the A50 motorway take the 'Renkum, Oosterbeek, Wageningen' exit.
Follow signposts to Wageningen.
Once you enter Wageningen follow the Wageningen UR signs for the building number.

From Tiel:
From the A15 motorway take the 'Rhenen' exit.
Follow signposts to Wageningen.
Once you enter Wageningen follow the Wageningen UR signs for the building number.

Building number
All buildings of Wageningen UR have a unique building number. Signs along the main roads in Wageningen show where clusters of buildings are located (for example, building numbers 100-200). Within the various clusters, routes to individual buildings are shown.





Delft University of Technology

In principle the GIMA Week at Delft University of Technology takes place at the
Faculty of Architecture and the Built Environment
Building 8 on the campus map
Julianalaan 134
2628 BL Delft,
The Netherlands
E-mail: info@tudelft.nl

Route description to the Faculty of Architecture and the Built Environment:

By public transport:
Take the train or bus to Delft Central Station. The following buses travel between Delft Central Station and the Faculty of Architecture on the TU Delft campus.

Bus 40: get off at bus stop "Julianalaan"
Bus 69: get off at bus stop "Julianalaan"
Bus 121: get off at bus stop "Julianalaan"
Bus 174: get off at bus stop "Julianalaan"
Bus 60: get off at bus stop "Michiel de Ruijterweg"
Bus 37: get off at bus stop "Michiel de Ruyterweg"
Bus: 80: get off at bus stop "Michiel de Ruijterweg"

By car:
From the A13, heading Den Haag/Amsterdam and Rotterdam: exit Delft-Zuid and follow the signs to TU Delft. Take a right turn onto Schoemakerstraat. Then take the sixth turning on the left, the Zuidplantsoen. You fill find the car park on your right, at the rear of the building.

FAQ

Where can I see what marks I have?
You can see your marks in the Blackboard environment of the specific module. The official marks are sent to the Student Administration of the UU, and will be accessible via Osiris. Please check these marks on Osiris, UU.

Why do I have two accounts?
Both the UU and the UT-ITC provide you with an account consisting of an e-mail address and a student number. You get the UU account because you are formally a student of UU, and to get access to the Blackboard environment. As of 2018-2019, the formal e-mail address within GIMA will be the UU email address (and no longer the UT email address). The UT-ITC account is for use of the student accommodation during the first contact weeks.

I started GIMA full-time, but now I notice it takes a lot more time than I expected. I would like to switch to part-time. How do I arrange that?
To make it official at the UU, use http://qdesk.uu.nl to find the correct form. You will have to discuss this with the programme coordinator. Please note, that you cannot switch back once you switched from one mode to the other.

I would like to stop with GIMA and receive proof of my finished modules. How do I arrange that?
See the special section 'Completion of the GIMA programme' in this Course Catalogue.

I would like to have access to a certain module via Blackboard
Please send an email to gima.geo@uu.nl and your request will be processed.

I would like to have the documents that I left in the group folder of a module last year
That's tricky. Not all modules are kept online for eternity. The best thing to do is save relevant documents on your own computer when ending a module.

I would like to ask for exemption of the GIMA internship. What do I have to do?
Have a look at the GIMA work placement regulations (in the Course Catalogue). There are the conditions needed to substantiate your request. Sent the documents plus accompanying letter to the chairman of the Examination Committee.

Where can I reach the chair of the Examination Committee?
The chair of the Examination Committee can be found in the section General Information, under GIMA management. Contact details of all staff members are provided in the Staff Information section of this course catalogue.

Can I email my fellow students? I have built a nice web mapping service (e.g.) and would like to show my work.
That is possible through the GIMA general information Blackboard module, choose communication, send email, etc.

How do I change my address after moving?
You can do that via http://www.studielink.nl . Also, it will be appreciated if you send an email to gima.geo@uu.nl.

I am a foreign student – how do I get myself to the venues?
A separate guidebook is available on how to get around in the Netherlands. You can find it on our website http://www.msc-gima.nl, Blackboard or e-mail gima.geo@uu.nl .

I want to graduate before a specific date. When do I have to hand-in my internship report?
You have to make agreements with your supervisor on this matter, as he/she will need time to assess your report. The final hand-in dates and the procedures of the UU can be found here. Also notify the GIMA Programme Director about the arrangement, as he is responsible for forwarding your grade to Osiris.

Can I get hardware or software at a discount through one of the four universities?
You can go to Surfspot and use your login of the Utrecht University to get hardware or software at a lower price.

I want to do an ArcGIS web-course. How do I arrange that?
As a student you have free access to the ESRI Virtual Campus web courses. For access login with your solis-id to https://uni-utrecht.maps.arcgis.com (choose solis-id sign in).
At the top right of the screen under your login name, expand the pulldown menu and pick "Training". You will have Free access to the web courses: choose catalog → course catalog. Under "FORMATS" select "Web Courses".
All web courses should be "Free". If they do not show as free, please send an email to
m.j.zeylmanseanemmichoven@uu.nl with your name and solis-id to verify your account details.

Is it possible to do an English language course at one of the universities?

Some GIMA students have done a language course at the TU Delft. You can find the courses here. However, you do not have a student number at this university. It is thus not possible to register for the course through the normal procedure. Please contact the contact persons of the course that you are interested in.
Another option is to do a language course at another institution. There are several institutions that offer language courses, like the Volksuniversiteit or Babel in Utrecht.

Is it possible to go abroad during the GIMA programme?
Yes, you are free to do your internship and/or thesis anywhere you like. You can find more information in the thesis and internship modules on Blackboard. You may also checkout the exchange possibilities at the Utrecht University.

Where can I find the year schedule, timetable and course catalogue?
Please take a look at the useful links page for current students.

Part II: GIMA regulations (OER)

GIMA
Geographical Information Management and Applications

Education and Examination Regulations
for the Master Joint degree
Geographical Information Management and Applications.

2023-2024

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The Education and Examination Regulations set out the degree programme-specific rights and obligations of students on the one hand and of Utrecht University on the other hand. The University's student charter of Utrecht University contains the rights and obligations that apply to all GIMA students.

These Regulations were adopted by the Dean of the Graduate School of the Faculty of Geosciences Utrecht University with the approval of the Faculty Council, the GIMA board and the GIMA Programme Committee.

This is a translated version of the officially valid Education and Examination Regulations in Dutch (Onderwijs- en Examenregeling).

SECTION 1 – GENERAL PROVISIONS

art. 1.1 – applicability of the Regulations

These Regulations apply to the teaching and examinations of the Master's degree programme in Geographical Sciences and to all students registered for this joint degree programme and to all students who apply for admission to this joint degree programme in the academic year 2023-2024.
The joint degree programme is is provided by by the GIMA Board, representing of Delft University of Technology, University of Twente, Wageningen University and Utrecht University.

art. 1.2 – definition of terms

In these Regulations, the terms below have the following meanings:

a. academic vacation periods: periods without any teaching obligations for teaching staff and learning obligations for students, as laid down in the academic calendar for the degree programmes.
b. academic calendar: the division of the academic year periodically determined by the GIMA Board
c. the Act: the Dutch Higher Education and Research Act 1992 (*Wet op het Hoger onderwijs en wetenschappelijk onderzoek 1992, WHW*).
d. component: a unit of study within the degree programme to educate and to test, as included in the GIMA study handbook and the university course catalogues course: the whole of the education and testing of a component.
e. course guide: document specifying for each course the aim and content of the course, the exit qualifications, effort requirements (such as the attendance and test requirements) that a student must meet to achieve the exit qualifications and to qualify for a final grade, required literature, the way in which the final grade is calculated, the timetable and the instructional formats, name and availability of the course coordinator.
f. course period: part of the academic year, the start dates of which are laid down in the academic calendar and the number of weeks in the calendar of the degree programme.
g. credit: a value expressed in EC, where the study load is expressed as one credit being equivalent to 28 hours of learning. The European Credit Transfer System (ECTS) ensures that credits are comparable within Europe.
h. dean: dean is from the Faculty of Geosciences Utrecht University
i. degree programmes: the Master's degree programmes referred to in Art. 1.1 of these Regulations, consist of a coherent whole comprised of courses. A Master's degree programme may include several Master's programmes.
j. education provision: the provision granted by the Director of Education to a student with a disability or chronic illness, which outlines the necessary and reasonable facilities to which the student is entitled.
k. effort requirements: phrase used for all the requirements that the student must meet during a course in order to be eligible for a final grade. These effort requirements are described in the University Course Catalogue and laid down in the course guide (see above).
l. examination: the final examination of the degree programme that is passed if all obligations of the entire Master's degree programme have been fulfilled.
m. examiner: an assessor whose competence has been determined by the Board of Examiners of the program.
n. GIMA Board representing TU Delft, University Twente, Wageningen University and Utrecht University
o. International Diploma Supplement: the annex to the Master's degree certificate, which includes an explanation of the nature and contents of the degree programme (partly in an international context).
p. module is the same as course
q. semester: part of the academic year (roughly 5 months), the start and end dates of which are laid down in the academic calendar. The academic year consists of two semesters: semester 1 (course period 1 and 2) and semester 2 (course period 3 and 4).
r. student: a person who is registered at the University to take courses and/or sit the tests and final examination of the degree programme.
s. Student Affairs Geosciences: student information desk and student progress administration unit of the Faculty.
t. test: interim examination as referred to in Art. 7.10 of the Act.

The other terms have the meanings ascribed to them in the Act.

SECTION 2 – ADMISSION

art. 2.1 – admission requirements of the degree programmes

1. Admission to the *Geographical Information Management and Applications* programme is granted to students with a Dutch or a foreign diploma confirming that they have acquired the knowledge, insights and skills at university Bachelor's level. Furthermore, students need to prove that they have gained the following specific knowledge, understanding and skills at university Bachelor's level, for instance equivalent to the advanced level of the major *Human Geography and Planning* at Utrecht University:
   a) knowledge in the field of geo-information, geography, GIS or another GIMA-related field of study
   b) insight into geographical data processes and collecting, processing and distributing information
   c) academic and research skills
   d) good command of the language or languages used in the programme

3. Students will be selected based on objective standards regarding:
   a) their previous academic performance in a relevant subject area
   b) relevant skills
   c) their command of the language or languages used in the programme
   d) the following additional selection criteria with proven relevance for the opinion on the suitability of the candidate:
      - motivation
      - average grade

art. 2.2 – English language (for Master's Degree Programmes taught in English)

1. Registration for the degree programmes is possible only after it has been demonstrated that the requirement of adequate command of the English language is fulfilled. Deficiencies in previous education in English must be made up before the start of the degree programme by sitting one of the following tests:
   - IELTS (International English Language Testing System), academic course. The minimum required IELTS score (overall band) is: 6.5 with at least 6.0 for the components 'writing, speaking, listening and reading'.
   - TOEFL (Test of English as a Foreign Language). The minimum required TOEFL score is 93 (internet-based test) with at least a score of 24 reading, 22 listening, 20 speaking and 20 writing.
   - Cambridge EFL (English as a Foreign Language) Examinations, with one of the following certificates:
     - Cambridge English C1 Advanced (CAE). Minimum score: 176 total, 169 writing.
     - Cambridge English C2 Proficiency (CPE). Minimum score: 180 total, 169 writing.
2. The holder of a university Bachelor's degree awarded in the Netherlands fulfils the requirement of adequate command of the English language.

art. 2.3 – admissions procedures

1. Responsibility for admission to the joint degree programme of the Graduate Schools and Master programme lies with the Board of Admissions of the Graduate School of Geosciences Utrecht University.
2. In order to determine eligibility for admission to the degree programme, the Board of Admissions will consider and evaluate the knowledge, understanding and skills of the applicant. The Board may request experts within or outside the University to assess the applicant's knowledge, understanding and skills in particular areas, in addition to a review of written documents of qualifications gained.
3. In order to determine eligibility for admission to a programme within the Master's degree programme, the Board of Admissions will examine whether the applicant meets the admission requirements referred to in Art. 2.1(1) or will meet them in time. In its review, the Board will include the applicant's core competences referred to in Art. 2.1(2), as well as the applicant's knowledge of the programme's language of instruction. On this basis the Board of Admissions will assess whether the candidate is able to achieve the exit qualifications of the Master's degree programme with sufficient effort within the nominal duration of the programme.
4. A request to be admitted to the Master's degree programme and a specific programme must be submitted to the Board of Admissions before the relevant deadline on the prospective student website (www.uu.nl/masters or www.uu.nl/internationalmasters). Requests submitted after these deadlines will not be considered. The decision not to process the request refers to the possibility of appeal to the Examination Appeals Board.
5. The applicant will receive written notification whether or not he or she has been admitted to the degree programme and a specific Master's programme. The possibility to appeal to the Examinations Appeal Board will be indicated in this notification.

art. 2.4 – conditional admission decision: pre-Master

1. If the outcome of the evaluation referred to in Article 2.3, paragraph 2, into the knowledge, insights and skills of the candidate is that the candidate does not yet meet the admission requirements referred to in art. 2.1, but will meet them after having passed a pre-master course tailored to the Master's Programme, the candidate will be given a conditional admission decision.
2. This conditional admission decision will state that the candidate concerned will be admitted to the Master's Programme if:
a. the pre-master course with the courses described therein and the study load, expressed in credits, has been passed
b. within the period stated in the admission decision.
3. The candidate will receive written confirmation of the conditional admission decision, which will point out the possibility to appeal to the Examinations Appeals Board.
4. After the conditions referred to in paragraph 2 (a) and (b) have been met, the conditional admission decision will be converted into a definitive admission decision.
5. After the expiry of the period referred to in paragraph 2(b), the student may no longer participate, or participate again, in the pre-master course of Utrecht University.
6. In the event of insufficient qualitative progress and/or participation in the defined deficiency programme, the Board of Admissions of the Graduate School may exclude the student from further or repeated participation.
7. The tailored package of courses, referred to in paragraph 1, is open only to candidates who hold the nationality of an EU/EER member state or Switzerland, or do not hold this nationality but do hold a residence permit that entitles them to statutory tuition fees.
8. The Board of Admissions may deviate from the requirements referred to in paragraph 4 in special cases. In any case, special dispensation will be given to refugees with residence status and refugees with a W-card, who have applied for asylum and have not yet received a final decision on their application. Deviation from the requirements is not possible if the candidate requires assistance from Utrecht University in applying for a visa, where the university acts as a sponsor.

SECTION 3 – CONTENTS AND STRUCTURE OF THE DEGREE PROGRAMMES

art. 3.1 – aim of the degree programmes

a) The programme aims:
The aim of the GIMA master programme is to educate suitable candidates to become highly skilled and all-round geo-information managers and/or application specialists. Therefore, the candidates will be introduced into the theoretical, methodological, technological, and organizational principles of working with Geographical Information (GI), together with the use of GI-technology in spatial applications.

b) The graduate is able to:
DOMAIN SPECIFIC
- a. Identify and understand geo-information concepts, methods and techniques.
- b. Use appropriate concepts, methods and techniques for the management and application of geo-information.
- c. Analyze the quality and usability of geo-information processes.
- d. Evaluate solutions for societal problems by applying knowledge of geo-information.
- e. Design and implement proof-of-concept geo-information-based solutions for societal problems.

SCIENTIFIC
- f. Independently formulate and execute research in accordance with academic standards within the field.
- g. Communicate clearly (both orally and in writing) with specialists and non-specialists to present and discuss the outcomes of research and design projects.
- h. Show awareness of the need to keep in touch with relevant developments within the discipline and show the ability to recognize, understand and apply new concepts and approaches as they emerge.
- i. Demonstrate understanding of the moral and ethical dimensions of scientific research and its applications, and the importance of intellectual integrity.

GENERAL LEARNING OUTCOMES
- j. Effectively organize, structure and plan phases in multidisciplinary teamwork.
- k. Critically reflect on own performance and results, as well as on those of colleagues.
- l. Design and plan a path to study in Geo-Information Science in a manner that is largely self-directed or autonomous. all-round geo-information managers and/or application specialists. Therefore, the candidates will be introduced into the theoretical, methodological, technological, and organizational principles of working with Geographical Information (GI), together with the use of GI-technology in spatial applications.

art. 3.2 – mode of attendance

The degree programme Geographical Sciences is offered full-time as well as part-time.

art. 3.3 – study load

The degree programme in Geographical Sciences has a total study load of 120 credits. .

art. 3.4 – programme': start date

1. The Graduate Schools offers the following Master's degree programmes and Master's programme.

Master joint degree programme	**Master programme**
Geographical Sciences	Geographical Information and Management Applications

The Master's degree programme prepare students for undertaking research in one or more sub-fields of Geosciences.

2. The Master's degree programme has one start date a year: 1 September.

art. 3.5 – components of the Master's programmes

1. Appendix 1 describes the core components of the programme and their study load.
2. The prospectus gives a detailed description of the content and the form of instruction of the components of the programme, including prior knowledge that is required to participate successfully.

art. 3.6 – optional courses taken at another Dutch research university

1. Courses provided by another Dutch research university qualify as optional programme components with the approval of the Board of Examiners. The credits and marks awarded by the other Dutch institution will be used.
2. The Board of Examiners, GIMA/SGPL Geosciences Utrecht University, will withhold approval if it is of the opinion that a replication of content exists in relation to courses already completed or yet to be completed by the student. In the event that courses are replicated in terms of their content, either wholly or in part, the Board of Examiners may limit the contribution of these courses to the examination through deduction of credits in proportion to the overlap.

art. 3.7 – optional courses taken at a foreign research university

1. Courses provided by a foreign research university qualify as optional programme components with the approval of the Board of Examiners. The Board of Examiners will decide whether these courses are at a sufficient academic level.
2. The Board of Examiners will withhold approval if it is of the opinion that a replication of content exists in relation to courses already completed or yet to be completed by the student. In the event that courses are replicated in terms of their content, either wholly or in part, the Board of Examiners may limit the contribution of these courses to the examination through deduction of credits in proportion to the overlap.
3. The degree programme will publish the procedure for contributing courses taken abroad on the student site:
   - stating at what moment and in what manner students may apply for approval for courses taken abroad;
   - giving students the option of applying for approval at such time that they have received a decision from the Board of Examiners by the start of their period abroad.
   4. Conversion of credits achieved for courses taken abroad is as follows:
      a. The credits will be taken over for courses provided by foreign universities within the European Union/European Economic Area that work with the European Credit Transfer System (ECTS) which have been approved by the Board of Examiners with regards to their content and level. Contrary to this, the Board of Examiners may decide to award a different number of credits if it is established that the credits awarded abroad do not correspond to the study hours.
      b. The credits will be converted for courses provided by foreign universities outside the European Union/European Economic Area that do not work with the European Credit Transfer System (ECTS) which have been approved by the Board of Examiners with regards to their content and level, in accordance with the university-wide conversion table. See www.uu.nl/credit-omrekentabel. The Board of Examiners may deviate from this in exceptional cases.
   5. Conversion of grades achieved for courses taken abroad is as follows:
   a. Foreign grades are converted into the alphanumerical results Pass/Fail; in addition, the original grades and assessment scale will be recorded in OSIRIS. Furthermore, the original results will be printed on the International Diploma Supplement referred to in Article 6.4, stating the information from Nuffic concerning the grading scales at foreign institutions www.nuffic.nl/onderwerpen/onderwijssystemen.

b. The foreign university will determine where the cut-off score lies for a pass, and records in the transcript whether the student has passed.
c. The foreign results will not count towards the student's average final mark.
d. The Board of Examiners will determine whether and how foreign results will count towards determining whether the student has passed with distinction (cum laude).

art. 3.8 – area with negative travel advice

1. Study components that require the student to travel to areas abroad or to the Caribbean territory of the Kingdom for which the Ministry of Foreign Affairs has issued a travel warning of classification red (do not travel) or orange (only necessary travel) that applies to the period that the study component is to be taken cannot be included in the degree programme.
   This also applies if the Ministry of Foreign Affairs has issued a negative advice for travel from the Netherlands.
2. At the student's request, on behalf of the Dean the provisions of the first paragraph may be deviated from in exceptional circumstances. Such deviation is only possible if it has been declared on behalf of the Executive Board that there are sufficient guarantees that the health and safety of the student will be safeguarded.
3. In the event that the travel advice classification changes to red or orange while the student is already present in the area abroad or in the Caribbean territory of the Kingdom, the Executive Board may advise students to return to the Netherlands if, having taken account of the local risks and impact of travelling, the Executive Board deems it unwise to remain. Students who do not follow the urgent advice to return cannot include the study component in the degree programme, unless an individual exemption as referred to in paragraph 4 is granted.
4. Upon a request by the student for an exemption from the urgent advice to return, on behalf of the Dean the provisions of the third paragraph may be deviated from in exceptional circumstances. On behalf of the Dean an exemption from the advice to return may be granted. An exemption can only be granted if it has been declared on behalf of the Executive Board that there are sufficient guarantees that the health and safety of the student concerned will be safeguarded.

art. 3.9– components taken elsewhere

1. The condition for gaining the degree certificate of the Master's examination of the programme is that at least of the obligatory courses of the joined Master's degree programme have passed.
2. Components passed elsewhere during the degree programme can only be incorporated in the student's examinations programme with prior permission from the Board of Examiners.
3. Exemption can be granted for components passed at an institute of higher education prior to the start of the Master's degree programme only on the basis of Art. 5.14.
4. Contrary to Art. 3.9.3, components that have been passed in a Master's degree programme at Utrecht University prior to the start of the Master's degree programme may be counted towards the student's examinations programme with the classification awarded.

art. 3.10 – actual teaching structure

The hybrid teaching structure of each course is shown in the University Course Catalogue and/or course guides and/or in the digital learning environment (Blackboard).

Students can view the timetables of the classes for which they are registered via https://www.msc-gima.nl/?s=timetable

SECTION 4 – COURSES

art. 4.1 – course

All courses that are part of the degree programmes have been included in the study handbook for the programme and can be found at the student site.

art. 4.2 – course admission requirements

The GIMA Board decides the order in which the required components of a Master's degree programme must be completed. This will be published in the prospectus

art. 4.3 – registration for courses

1. All the courses that are listed in the University Course Catalogue will take place.
2. If fewer than 10 students register for a courses, the course coordinator may decide, in consultation with the Programme director GIMA, to offer the course in a different instructional format and/or assessment
3. The programme director GIMA ensures that GIMA students are registered in four weeks before the start scheduled obligatory GIMA courses.
4. Students who do not meet course admission requirements (see art. 4.2) will not be registered for the course.
5. A student can register for a maximum of two courses of 10 EC per period. In the second year, students can register for a thesis or internship of 30 EC
6. An extra course must always be requested at the programme director GIMA. Requests may be made only during the regular registration period.
7. If the student fails to make adequate progress on the course and/or there is insufficient capacity for a course, the Director of Education may exclude the student from registration for a third course within a single course period.

art. 4.4 – attendance and effort requirements

1. Students are expected to participate actively in the courses they registered for.
2. Besides the general requirement for the student to participate actively in the course the additional effort requirements for each component, such as attendance and test requirements, are listed in the University Course Catalogue and laid down in the course guide.
3. Students may be granted exemption from attendance for reasons demonstrably beyond their control (for instance as a result of illness or personal circumstances), at the discretion of the course coordinator. Students must notify the study programme's secretariat of their absence in advance. The course coordinator may request the student to provide written evidence.
4. In the event of qualitatively or quantitatively inadequate participation, the course coordinator may exclude the student from further participation in the course or part of it.
5. Effort requirements (such as holding a presentation or writing a paper) can never expire. If students fail to meet an effort requirement in time for reasons beyond their control, they must report to the course coordinator immediately after the situation has arisen and, if instructed by the course coordinator, provide evidence of the exceptional circumstances (see also art. 5.6.1).
6. Students who wish to apply for special arrangements with regard to effort requirements as a result of chronic illness, disability or Outstanding Student Athlete status, may submit a request to the student adviser via OSIRIS-student. (see also Art. 7.3).

art. 4.5 – evaluation of the quality of education

1. The GIMA Board monitors the quality of education, and ensures that both the courses and the curriculum are evaluated. The Programme Director takes into consideration the advice and suggestions given by the Programme Committee regarding improving and ensuring the quality of the programme.
2. Students who have participated in the course will be informed of the results of the course evaluation.

SECTION 5 – TESTING

art. 5.1 – general

1. During the course, the student will be tested for academic schooling and on the extent to which the student has sufficiently achieved the learning objectives set. The testing of the student will be concluded at the end of the course.
2. The University Course Catalogue and course guide describe the effort requirements the student must meet to pass the course, as well as the criteria on which the student is assessed. In the event of a difference of opinion, the course guide will be followed.
3. The course coordinator can indicate in the course guide for at most one test component that obtaining a sufficient grade of at least 5.50 is a condition for awarding a sufficient final grade. Only in special cases and with the approval of the GIMA Board this condition can be linked to more than one test component.
4. Subject to what is stated in article 5.5. and 5.6 each test component that is part of the final assessment of a course is taken and assessed once.

5. If a student repeats a course, the last classification gained will count.
6. Should a student pass a course, but still wishes to repeat the course, the complete course must be repeated.
7. The Regulations of the Board of Examiners describe the testing process (see: student site).

art. 5.2 – Board of Examiners

1. The Dean of the Faculty of Geosciences Utrecht University will establish a Board of Examiners for each degree programme or group of degree programmes and will ensure that the Board of Examiners can operate independently and professionally.
2. The Dean will appoint the chair and the members of the Board of Examiners for a period of three years on the basis of their expertise in the field of the degree programme(s) in question or the field of testing, in which:
   - at least one member comes from outside the degree programme or group of degree programmes concerned, and
   - at least one member is a lecturer on the degree programme or group of degree programmes concerned.

   Re-appointment is possible. Before making this appointment, the Dean will consult the members of the Board of Examiners concerned.
3. Persons holding management positions that include financial responsibilities or who are wholly or partially responsible for Master's degree programmes are not eligible for appointment to the Board of Examiners or as chair of the Board of Examiners. These persons will in any event include the Dean, the Vice Dean, directors/heads/managers of a department, members of a department's management/governing team, members or chairs of GIMA Board and the Programme Director .
4. Membership of the Board of Examiners will end on completion of the term of appointment. The chair and members of the Board may also be dismissed by the Dean at their own request. The chair and members of the Board will be dismissed by the Dean if they no longer meet the requirements of paragraphs 2 or 3 of this article. The Dean may also dismiss a chair or members found to be performing their statutory duties unsatisfactorily.
5. The Dean will announce the composition of the Board(s) of Examiners to students and lecturers.

art. 5.3 – assessment of internship or research assignment and thesis

1. An internship or research assignment will be assessed by the academic supervisor and also examiner in question and by one or more other internal and/or external experts.
2. Master's theses will be assessed by at least two examiners.

art. 5.4 – grades

1. Grades will be awarded on a scale of 1 to 10. The final assessment of a course is either pass or fail, expressed in numbers: 6 or higher and 5 or lower respectively.
2. The final course grade will be rounded to one decimal place. A partial course grade will never be rounded.
3. The final course grade of 5 will not have any decimal places. An average grade of 4.95 to 5.49 is a fail (5); an average grade of 5.50 to 5.99 is a pass (6).
4. The course guide sets out the way in which the final course grade is calculated.
5. Alphanumeric results are awarded in the following cases:
   - a student who is registered for a course and has not participated in one of the test course exams will be given an NV (*Niet Verschenen* – No Show). If non-participation is for reasons beyond the student's control the student will be given an ND (*Niet Deelgenomen*– Not Participated);
   - a student who has not participated in all the test courses will be given an NVD (*Niet VolDaan* – Incomplete);
   - a student who failed to meet the condition of a sufficient minimum grade of 5,50 for a test component will be given an NVD (*Niet VolDaan* – Incomplete);
   - if the student has completed a course, but has not received a grade for it, he may be given a V (*Voldoende* – Satisfactory) as the result;
   - if the student has not completed a course but does not receive a numeric result, the student can be given an ONV (*ONVoldoende* - Unsatisfactory) as the result;
   - a student who has been granted exemption by the Board of Examiners will be given a VR (*VRijstelling* – Exemption);

art. 5.5– repeat exams: supplementary tests

1. If the student does not receive a pass grade but does receive a final grade of at least 4.00 before rounding, the student will be given a once-only opportunity to take a supplementary test.
2. If the student passes the individual supplementary test, a final grade of 6.00 for the entire course will be recorded in the student progress administration system. Partial course grades that the student has achieved will not be taken into account in establishing the final grade of the supplementary test.
3. If the student does not pass the supplementary test, the initial final grade will be entered into the student progress administration system, thus rendering all partial course grades no longer valid.
4. If the student cannot be awarded a sufficient final average grade of 5.50 or higher because the student has failed to pass one test component with the condition of a sufficient grade, the student

will be given one opportunity to take a supplementary partial test. The content of this partial test serves to replace the test component for which the mandatory minimum grade of 5.50 or higher is not achieved.
5. If a supplementary partial test is adequately repaired, the grade 5.50 is assigned to the test component and the final average grade will be recalculated according to the conditions specified in the course guide.
6. If the student does not pass the supplementary partial test, the final grade NVD will be entered into the student progress administration system, thus rendering all partial course grades no longer valid.
7. The student will not qualify for a supplementary test if the student has not met all the effort requirements of the course.
8. The student will not qualify for a supplementary partial test if the student has been awarded a pass.
9. The examiner will determine the form and content of the supplementary (partial) test.

art. 5.6– force majeure: replacement tests

1. Students who miss a test or part of a test owing to circumstances demonstrably beyond their control will be given only one opportunity to sit a replacement test. Only students reporting these circumstances beyond their control immediately after their occurrence to the course coordinator will be eligible to sit a replacement test (see also art. 4.4.).
2. The examiner will determine the form and content of the replacement test.
3. If the student is not present at the replacement test, or fails to meet the terms of the replacement test in good time, the student will not be offered another opportunity.

art. 5.7 – type of test

1. Testing as part of a course will take place as stated in the course guide.
2. Upon request, the Board of Examiners may allow a test to be administered in a manner which departs from the provisions of the first paragraph.

art. 5.8 – oral tests

1. Only one person at a time may be tested orally, unless the Board of Examiners decides otherwise.
2. An oral test will be administered as far as possible by two assessors of which one is the examiner, for a maximum of 60 minutes.

art. 5.9 – provision for testing in special cases

1. If not providing for an individual testing possibility would result in a 'special case of manifest unfairness', the Board of Examiners may decide to grant an individual testing possibility.
2. Requests for a special possibility to sit a test must be submitted to the Board of Examiners as soon as possible, together with supporting documentary evidence.

art. 5.10 – time limit for grading tests

1. Within 24 hours of administering an oral test the examiner will determine the grade and provide the student with a written statement of the grade awarded.
2. The examiner will grade a written or differently administered test or partial test within 10 working days of the test date, and will make this grade known.
3. If the mark is not available within this period time for reasons of force majeure, the examiner must communicate this to the student, indicating when the mark will be determined. Force majeure may only be established in consultation with the Director of Education.
4. If there is a third examiner, a new assessment period of 10 working days will commence, immediately following the first period of 10 working days. It is not possible to commence a new period following this second period.
5. Time frames for assessment do not apply during academic vacation periods.
6. The written statement of the grade awarded must inform the student of the right of inspection referred to in Art. 5.12 and of the possibility to appeal to the Examination Appeals Board.

art. 5.11 – period of validity

1. The term of validity of courses passed is eight years between test date and examination date.
2. Notwithstanding this, in case of special circumstances the Board of Examiners may, if the student requests, determine an extended validity period for a course, or impose a supplementary or replacement test.
3. Partial tests and assignments passed in a course that was not successfully completed will expire at the end of the academic year in which they were passed. Partial tests and assignments expire at the end of the course period in which they were passed, if the course concerned is taught more than once per academic year.

art. 5.12 – right of inspection

1. Within 20 working days after the announcement of the result of a written or digital test, the student is allowed to inspect the student's graded work upon request. A copy of that work will be supplied to the student on request.
2. During the period referred to in the first paragraph, the student may inspect the questions and assignments of the test concerned, as well as the standards on which the grade was based.

art. 5.13 – retention of tests

1. The assignments, answers and the work assessed in the written tests will be kept in paper or electronic form for a period of two years following the assessment.
2. The thesis and its assessment will be kept in paper or electronic form for a period of seven years following the assessment.

art. 5.14 – exemption

At the student's request, the Board of Examiners may, after consulting the examiner in question, grant exemption from a programme component if the student:

a. has already either completed a university or higher vocational programme component which is equivalent in content and level; or
b. has demonstrated, through work or professional experience, sufficient knowledge and skills in relation to that component.

art. 5.15 – fraud and plagiarism

1. Fraud and plagiarism are defined as an action or omission on the part of students which produces an incorrect representation of their own performance as regards their knowledge, skills and understanding, which may result in the examiner no longer being able to assess the knowledge or ability of the students in a proper and fair manner.
   Fraud includes:
   - cheating during tests. The person offering the opportunity to cheat is an accessory to fraud;
   - share answers with others while taking a test;
   - seeking the help of third parties during a test;
   - being in possession of (i.e. having/carrying) tools and resources during tests, such as pre-programmed calculators, mobile phones, smartwatch, smartglasses, books, course readers, notes, etc., unless consultation is explicitly permitted;
   - having others carry out all of part of an assignment and passing this off as own work;
   - gaining access to questions or answers of a test prior to the date or time that the test takes place;
   - perform (or try to perform) technical changes that undermine the online testing system;
   - fabricating survey or interview answers or research data;
   Plagiarism is defined as including data or sections of text from others/the student's own work in a thesis or other paper without quoting the source. Plagiarism includes the following:
   - cutting and pasting text from digital sources such as encyclopaedias and digital publications without using quotation marks and referring to the source;
   - cutting and pasting text from the internet without using quotation marks and referring to the source;
   - using excerpts from printed material such as books, magazines, other publications and encyclopaedias without using quotation marks and referring to the source;
   - using a translation of the abovementioned texts without using quotation marks and referring to the source;
   - paraphrasing of the abovementioned texts without giving a (clear) reference: paraphrasing must be marked as such (by explicitly linking the text with the original author, either in text or a footnote), whereby the impression is not created that the ideas expressed are those of the student;
   - using visual, audio or test material from others without referring to the source and presenting this as own work;
   - resubmission of the student's own earlier work without source references, and allowing this to pass for work originally produced for the purpose of the course, unless this is expressly permitted in the course or by the lecturer;
   - using the work of other students and passing this off as own work. If this happens with the permission of the other student, the latter is also guilty of plagiarism;
   - in the event that, in a joint paper, one of the authors commits plagiarism, the other authors are also guilty of plagiarism, if they could or should have known that the other was committing plagiarism;
   - submitting papers obtained from a commercial institution (such as an internet site offering excerpts or papers) or having such written by someone else, whether or not in return for payment.
2. a. In all cases in which fraud or plagiarism is found or suspected, the examiner will inform the student and the Board of Examiners of this in writing.
   b. The Board of Examiners will give the student the opportunity:
      - to respond to that in writing;
      - to be heard.
3. The Board of Examiners will determine whether fraud or plagiarism has occurred and will inform the student of its decision in writing of any sanctions in accordance with the stipulations of the fourth paragraph, stating the possibility of appeal to the Examination Appeals Board.
4. The Board of Examiners is authorized to impose sanctions. In doing so, the Board of Examiners shall ensure that the sanction is proportionate: the consequences of the sanction shall be in proportion to the degree and seriousness of the fraud or plagiarism committed.

5. One or more of the following sanctions may be imposed, depending on the nature and extent of the fraud or plagiarism committed, and the circumstances in which the fraud or plagiarism was committed, as well as the student's study phase:
   - invalidation of the paper or test submitted;
   - reprimand, a note of which will be made in OSIRIS.
   - removal from the course;
   - no longer being eligible for a positive degree classification (cum laude) as referred to in article 6.2;
   - exclusion from participation in tests belonging to the course concerned for the current academic year, or for a maximum period of 12 months;
   - complete exclusion from participation in all tests for a maximum period of 12 months.
6. In the case of extremely serious and/or repeated fraud or plagiarism, the Board of Examiners may recommend that the Executive Board permanently terminate the concerned student's registration for the programme.
7. If the Board of Examiners determines that there has been widespread or organised fraud, on a scale which would affect the test results in their entirety, the Board of Examiners will decide without delay that the test concerned is invalid and that all the participants must resit the whole test at short notice. The Board of Examiners will set the date on which the test must be retaken. This date will be no later than ten working days after the fraud was established, so that the participants can still benefit from their preparatory work for the test.

art. 5.16 – control of plagiarism

1. For the purpose of controlling plagiarism handing in an electronic version of written assignments by the student (such as papers, theses) can be imposed as a compulsory condition by the examiner of the relevant course, whether or not they are using a designated plagiarism detection system. If the student does not submit an electronic version of the assignment in time, the assessor may decide not to assess the assignment.
2. In all cases, submitting an electronic version of the final thesis is mandatory for students.
3. By submitting a written assignment, the student gives permission in the broadest sense of the word for the control of plagiarism via a plagiarism detection system as well as for recording the written assignment in databases, to the extent necessary, for future plagiarism checks.
4. In the event that a particular course decides to disclose documents, students reserve the right not to disclose their written assignment other than for the purpose of plagiarism as referred to in paragraphs 1 and 2 of this article.

art. 5.17 – right of appeal

The student has a right to appeal decisions taken by the Board of Examiners or by examiners. The appeal must be made in writing, and explaining the basis for the appeal, to the Examination Appeals Board within six weeks of taking the test or examination, or of the decision being made, pursuant to Section 7.61 of the Higher Education Research Act 1992.

SECTION 6 – EXAMINATION

art. 6.1 – examination

1. As soon as a student has fulfilled the requirements of the examinations programme, the Board of Examiners will determine the result of the examination and award a certificate, as described in art. 6.4.
2. Prior to determining the result of the examination, the Board of Examiners may conduct its own examination of the student's knowledge of one or more components or aspects of the degree programme. The Board of Examiners will only conduct such an investigation if it establishes that there are certain facts or circumstances that leads it to the conclusion that the Board of Examiners cannot vouch for the student having obtained the exit qualifications for the course (as referred to in art. 3.1 of the Education and Examination Regulations).
3. Assessment of the examinations file constitutes part of the final examination. The date of examination will be the last working day of the month in which the Board of Examiners has determined that the student has fulfilled all the requirements of the examinations programme. The student must be registered for the degree programme on the examination date.
4. Conditions to pass the examination are:
   - all components are passed;
   - the composition of the course package completed meets the level requirements set.
5. A further condition for passing the examination and receiving the certificate is that the student was registered for the degree programme during the period in which the tests and the final examination were taken. If the student does not fulfil this condition, the Executive Board may issue a statement of no objection in relation to the passing of the examination and the issue of the certificate, after the student has paid the tuition fees and administration charges owing for the 'missing' periods.
6. A student who has passed the examination and is entitled to a certificate may request the Board of Examiners to not yet grant the certificate and to postpone the examination date referred to in paragraph 3. This request has to be submitted within 10 working days after the student has been informed of the result of the examination. The student will indicate in this request a preferred examination date.

7. The Board of Examiners will grant the request in any case if the student:
   a. is to fulfil a management position for which TU Delft, University of Twente, Wageningen UR and Utrecht University has provided an administrative grant
   b. is to do an internship or take a component of a programme abroad.

   Postponement of the examination date is possible only once and for the duration of one academic year at the most. Postponement may only be granted for the duration of thirteen months for students who want to make use of tuition fee-board activities.

art. 6.2 – cum laude classification

1. If a student has demonstrated outstanding academic achievement in the student's Master's degree programme, the degree will be awarded cum laude; this classification will be noted on the degree certificate.
2. The cum laude classification will be awarded to the Master's examination if each of the following conditions have been met:
   1. the weighted average of the grades achieved for the Master's programme components is at least 8.00 before rounding.
   2. the student has received a minimum grade of 8.00 for the Master's thesis.
   3. the student has been granted no more than 7.5 credits in exemptions that do not count towards the examination programme (1-year programmes) or no more than 15 credits (2-year programmes).
   4. No decision has been reached by the Board of Examiners regarding commitment of fraud/plagiarism that would otherwise no longer qualify for a positive classification (cum laude).
   5. the Master's examination has been passed within one and a half years (one-year degree programmes) or three years (two-year degree programme).
3. The Board of Examiners may decide to award the cum laude classification even if not all the requirements referred to in paragraph 2 are met. Such a decision must be unanimous.
4. Classifications other than cum laude will not be noted on the degree certificate.

art. 6.3 – degree

1. The Master of Science joint degree will be awarded to the student who passes the examination.
2. The joint degree awarded will be noted on the examination certificate.

art. 6.4 – degree certificate and International Diploma Supplement (IDS)

1. The Board of Examiners will award a certificate as proof that the examination was passed.
2. The Board of Examiners will add the International Diploma Supplement in the English language to this certificate, which provides (international) insight into the nature and contents of the completed degree programme.

art. 6.5 – grading tables

1. The International Diploma Supplement gives the student's cumulative average mark and an ECTS Grading Table.
2. The cumulative average mark shows the student's academic performance on a scale of 1 to 10. It is calculated based on the final results for the courses the student has successfully completed within the degree programme. Courses that are not assessed on a numerical basis are not included in the calculation. The cumulative average mark is weighted based on the number of credits for each course.
3. The ECTS Grading Table gives a clear picture of Utrecht University's marking culture for educational institutions and employers outside the Netherlands. Based on the Grading Table, they can convert the results into their own marking system. The ECTS Grading Table is an institution-wide table for all Master's Degree programmes. This table uses a ten-point scale where only the marks from 6 to 10 are shown, as only passing marks are included in the Grading Table. The marks are expressed only as whole or half points. The percentage given with each mark indicates how frequently each mark is awarded.

   The ECTS Grading Table is calculated on the basis of:
   1. all final passing marks in courses undertaken towards the degree, excluding alphanumerical results;
   2. not weighted according to study load;
   3. in the three most recent academic years;
   4. of students who were registered for a Master's Degree programme at Utrecht University.

SECTION 7 – STUDENT COUNSELLING

art. 7.1 – student information system

1. The Faculty of Geosciences Utrecht University must record the individual study results of the students and make them available through Osiris-student.
2. Certified student progress files may be obtained from Student Affairs of the Faculty Geosciences Utrecht University.

art. 7.2 – academic advice and support

1. The Faculty of Geosciences Utrecht University is responsible for providing an introductory programme and student counselling to students registered for the degree programme.
2. The Faculty of Geosciences Utrecht University, is responsible for student counselling to students registered for the degree programme.
3. Student counselling encompasses:
    - encouraging students to feel part of the community;
    - supervising programme choices;
    - assisting a student to familiarise himself with the job market.
    - an introductory programme in the first week of the first semester of the first year of study
    - referring and assisting students who encounter difficulties during their studies.

art. 7.3 – disability and chronic illness

Students with special needs are afforded the opportunity to take classes and sit tests in the manner agreed in their Education provision. Requests for a provision are submitted to the student adviser via OSIRIS-student.

SECTION 8 – TRANSITIONAL AND FINAL PROVISIONS

art. 8.1 – safety net arrangements

In those cases not provided for in these regulations, or not provided for sufficiently clearly, the decision will be made:

a. by the Board of Examiners if on the basis of Articles 7.3j (permission for flexible study programme), 7.11 (award and postponement of degree certificate) and 7.12b (statutory powers of the Board of Examiners) of the Act or on the basis of Articles 3.6 to 3.9 (composition of optional course profile, optional courses), 5.5 to 5.11 (decisions on tests), 5.14-5.16 (exemption, fraud and plagiarism) and 6.1-6.2 (examination and cum laude) of these Education and Examination Regulations this falls within the competence of the Board of Examiners;
b. in all other cases by the dean Faculty of Geosciences Utrecht University or an officer appointed for this purpose on behalf of the dean, after the Board of Examiners has expressed its view.

art. 8.2 – hardship clause

In accordance with the rules laid down in these Education and Examination Regulations, the Board of Examiners will decide, unless this would have manifestly unreasonable consequences for the student that due to special circumstances are disproportionate to the purposes to be served by the rule.

art. 8.3 – amendments

1. Amendments to these Regulations will be laid down by the Dean after having heard the advice of the Programme Committee and after consultation with the Faculty Councils, in separate resolutions.
2. An amendment to these Regulations is not to be applied to the current academic year, unless it is reasonable to assume that it will not harm the interests of the students.
3. Furthermore, an amendment may not have an adverse effect for students on any other decision the Board of Examiners has taken pursuant to these Regulations with respect to a student.

art. 8.4 – publication

The Dean will publish these Regulations, as well as each amendment, on the internet.

art. 8.5– effective date

These Regulations take effect on 1 September 2023.

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Appendix 1: Structure of the joint degree programme GIMA

Required / theoretical	40 EC
Required (practical methods)	20 EC
MSc research/thesis	30 EC
Internship or Individual programme	30 EC

Compulsory components (120 EC)

Module 0	Introduction	-
Module 1	Methods and Techniques	10 EC
Module 2	Basic Applications	10 EC
Module 3	Management in Organisation	10 EC
Module 4	Project Management	10 EC
Module 5	Advanced Methods and Techniques	10 EC
Module 6	Advanced Applications	10 EC
Module 7	MSc Thesis	30 EC
Module 8	Internship	30 EC