

Curriculum for the Master Programme in Applied Geoinformatics / Angewandte Geoinformatik

Curriculum version 2009W

This Curriculum has been accepted by the University of Salzburg Curriculum Commission for Geography on Juni 16, 2009, superseding the previous Curriculum for the Bachelor- and Masters programmes in Geography (Version 2007).

The Academic Senate of the University of Salzburg decrees this curriculum based on Austrian federal law / „Bundesgesetzes über die Organisation der Universitäten und ihre Studien (UG 2002), BGBl.I Nr. 120/2002 idgF“, defining the Master's programme in “Angewandte Geoinformatik”.

§ 1 General Framework and Admissions

(1) The Master's programme in Applied Geoinformatics - Angewandte Geoinformatik has a duration of four semesters and requires 120 ECTS credit points. Graduates will be awarded the academic degree of „Master of Science“ / „MSc“.

(2) The Master's programme in Applied Geoinformatics is structured into modules. Any credit granted for prior / parallel studies shall preferably be awarded based on entire modules.

(3) For admission to the Master's programme in Applied Geoinformatics a Bachelor's or equivalent degree in a spatially oriented discipline is recommended (e.g. Geography, Surveying, Environmental Sciences, Resource Management, Ecology, Planning). Graduates from other disciplines like Computer Science or any other subjects without basic qualifications in Geoinformatics are recommended to take pertinent bachelor level credits as electives.

(4) This study programme can be offered in German or English languages or in a combination of these.

§ 2 Qualification Profile

Geoinformatics is a methodologically oriented transversal discipline based on spatial concepts and techniques. It is applied across a range of application domains, like planning, resource management, logistics, mobility management, marketing, conservation, safety and

security etc. Graduates need to liaise with and into application disciplines and have their core competences in geospatial information management.

Qualifications acquired in the Applied Geoinformatics Master's programme leverage conceptual and methodological foundations from spatial sciences like Geography, basic knowledge and practical skills in Geoinformatics are expected.

The study programme develops advanced conceptual and methodological knowledge, spatial analytical thinking, technical skills and problem solving competences across Geoinformatics core subjects, specifically in:

- Geospatial data acquisition and cartographic communication;
- Data modeling and spatial databases;
- Representation, analysis and simulation of dynamic systems;
- Analytical methods, specifically GIS, Remote Sensing and Statistics;
- Standards and architectures of open, distributed systems and spatial data infrastructures;
- Development of geospatial applications.

Graduates are expected to be capable of moving towards implementing and leading complex projects and applications, and to contribute within spatial data infrastructures. They have the competence to provide decision support across all Geoinformatics application domains.

Qualifications are complemented with professionally oriented skill sets, facilitating group work, communication of results and decision support.

This study programme is built on scientific foundations, develops a science-based work style and work ethics, and qualifies for admission to doctoral programmes.

§ 3 Structure and Elements

The Applied Geoinformatics Master's programme is built from compulsory and elective modules. Within compulsory subjects choices can be offered. Elective credits can be freely chosen from any academic discipline, the curriculum commission in charge can make recommendations for elective subjects.

Modules and classes are listed in § 5.

Within the study programme, at least two seminar-type classes have to be taken.

In addition to the university-based modules, students are required to take an external placement / internship according to § 7.

Students complete the programme with a master thesis and a committee-based final master's examination.

Classes shall be offered and external credits shall be recognized in a way allowing for a term abroad / international study semester without necessarily delaying graduation.

§ 4 Types of Classes

(a) Classes (Lehrveranstaltungen - LV) aim at scientific learning, with the following types of classes allowed as part this curriculum:

(1) Lectures (Vorlesungen - VO) introduce parts of the discipline and its methods.

(2) Labs (Übungen - UE) build knowledge and skills in methods and techniques and support the development of application experience in individual, project-based or group work.

(3) 'Summer Schools' -,short intensive programmes' (SS): residential short courses developing knowledge and skills on specialized topics and/or methods in mostly international, project-oriented settings.

(4) Portfolio (PF): individual, publicly accessible online presentation of a student's work and products from classes and other pertinent work in geoinformatics assessed by the master thesis supervisor, implemented e.g. as a (we)blog.

(5) Seminars (SE) focus on important scientific topics and debate. This type of classes fosters theoretically based analytical and problem-solving competences and a critical approach to Geoinformatics applications. Written seminar papers are based on strong conceptual and empirical foundations, analysis of pertinent scientific literature and are presented in a group setting. Seminar papers require a high standard of written and oral presentation. All seminar participants are expected to actively participate in discussions.

(6) Excursions (field trips - EX) allow field-based learning and practice. Conceptual foundations, methods and techniques are being practically applied and validated.

All classes with the exception of VO and PF require students' presence and are continuously assessed by instructors (all student activities are part of the final grade).

(b) Certain types of classes limit the number of participants. (These maximum numbers can be exceeded with the explicit permission of class instructors):

- SE: 15
- UE: 25
- EX: 25

§ 5 Study Programme: Topics and Modular Structure

Below, modules and classes for the Applied Geoinformatics Master's programme are listed. The semester assignment serves as a recommendation only and is an indication of a logical sequence, but does not necessarily correspond to class offerings in the annual course catalog.

		Type	hrs	ECTS	Semester			
					I	II	III	IV
Module 1	Applied Geoinformatics		7	12				
Compulsory	GIS Project	PK	3	5	5			
Compulsory	Analysis and Modeling	SE	2	3		3		
Choice of ...	Data acquisition (special topics)		2	4	4			
	Geomorphological Applications of GIS		2	4				
	...							
Module 2	Theory and Methods in GIScience		8	12				
Compulsory	GIScience: Theory and Concepts	SE	2	3			3	
Compulsory	Image Analysis in Remote Sensing	UE	2	3	3			
Compulsory	Cartography and Geovisualisation	UE	2	3	3			
Choice of ...	Geostatistics		2	3		3		
	Quantitative Methods		2	3				
	...							
Module 3	Geoinformation Management		8	12				
Compulsory	Design of Geospatial Data Models	UE	2	2	2			
Compulsory	Distributed GI-Architectures	VO	2	2	2			
Choice of ...	OpenGIS: Standards and Architectures		2	4		4		
	Web-Services and Online-Applications		2	4			4	
	Location Based Services		2	4				
	...							
Module 4	Applications Development		8	12				
	Software Development	VO,UE	4	6	3	3		
	Geo-Application Development	UE	4	6		3	3	
Module 5	Systems Analysis		4	6				
	Systems, Models, Simulation		2	2		2		
	Geosimulation		2	4	4			
Module 6	Geographical Exkursion(s) or 'Short Intensive Programme(s)'		4	4				
		EX, SS	4	4		4		

Module 7	Professional Qualifications		8	12				
	Project Management	UE	2	3		3		
	Moderation and Communication	UE	2	3	3			
	(Arbeits- und Unternehmensrecht)	VO	2	3		3		
	(BWL für Unternehmer)	VO	2	3			3	
	...							
Module 8	Electives			6	1	2	3	
	Portfolio			2				2
	Internship / Placement			10				10
	7 weeks external placement - §7							
	Master Thesis			30		0	4	26
	Master (final) Exam			2				2
Total				120	30	30	30	30

§ 6 Master Thesis

For master theses §23 of the University of Salzburg statute is applicable. The selected master thesis topic has to be based on any content from modules 1-5.

§ 7 Internship / Placement

- (a) Students are required to complete an external placement of (minimum) 7 weeks (fulltime equivalent) for orientation in potential employment areas. Placements can be split in two periods with a minimum of 3 weeks for the shorter period. This placement is rated with 10 ECTS points.
- (b) Internships shall be completed at institutions outside the University of Salzburg at any organisation recognized by the curriculum commission. A written internship agreement between host organisation and student is strongly recommended.
- (c) In case of (documented) difficulties of identifying and obtaining an external placement, students shall be offered the opportunity of contributing to a project within the university. This does not imply any compensation.
- (d) An internship / work certificate issued by the host organisation serves as the basis for awarding credit and shall at least state the following:
 1. Location and unit of internship host institution / employer.
 2. Duration and FTE of internship
 3. Short description / profile of roles and activities
 4. Written assessment by supervisor at host organisation

§ 8 Priorities in classes with limited capacity

Classes with limited capacity (see § 4 b) will prioritize admission based on major / study programme: Applied Geoinformatics, then Geography, followed by any other.

Students in the Applied Geoinformatics programme are prioritized based on their progress, with students already having earned a higher number of ECTS points within this programme admitted first.

§ 9 Examinations

- (1) Classes can be graded / assessed individually, or within module exams.
- (2) All class papers have to be submitted in digital formats when requested by the instructor.
- (3) Oral exams are public.

§ 10 Master Exam

- (1) The first part of the master exam consists of exams / credits for all modules listed in § 5.
- (2) The second part of the master exam is conducted as a committee-based oral examination in two subjects based on modules 1-5. Subjects are selected by the candidate.

Admission / registration requirements for § 10 (2):

- Proof of completion of § 10 (1)
- Passing grade for master thesis according to § 6
- Completion of internship according to § 7

§ 11 Validity and Transition Regulations

- (a) This curriculum and any changes are applicable / in force from September 1 after publication (see University of Salzburg statute - Teil Studienrecht, § 8 (2)).
- (b) Students under prior curricula can declare in writing their acceptance of this curriculum. From Feb 29, 2012 all students are subject to this curriculum.
- (c) Until winter semester 2011/12 a graduation from the preceding as well as this curriculum will be facilitated based on declared equivalence of classes.