

## **Newsletter – Special Edition of the Paris-Lodron-University Salzburg**

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### **145. Revised Curriculum for the Master's Programme "Applied Geoinformatics" at the Paris-Lodron-University Salzburg** (Version 2013)

The Senate of the Paris-Lodron-University of Salzburg has approved the curriculum for the Master's programme in "Applied Geoinformatics" ("MSc AGI") in the version set out below on June 25, 2013. This curriculum was agreed upon by the Curriculum Committee of the Department of Geography at the University of Salzburg on 17 April 2013.

Its legal basis is the Federal Act on the Organisation of the Universities and their Studies (UG 2002, BGBl. I Nr. 120/2002) as well as the statutory provisions pertaining to matriculation in the statutes of the University of Salzburg in the respective current versions.

#### **§ 1 General and Admission**

(1) The Master's programme "Applied Geoinformatics" requires the completion of 120 ECTS points, corresponding to a study period of four semesters.

(2) Graduates will be awarded the academic degree of "Master of Science", abbreviated "MSc".

(3) ECTS points are allocated for all the work that students produce. One ECTS point corresponds to 25 full hours of work and describes the overall student workload necessary in order to achieve the learning outcomes expected. The workload of one academic year covers 1500 full hours of work, which corresponds to 60 ECTS points.

(4) Graduates with a Bachelor's degree in the areas Geoinformatics, Geography, Geodesy/Geomatic Engineering and Cartography as well as in closely related study programmes are eligible for admission to the Master's programme in "Applied Geoinformatics". Admission is also possible on the basis of a degree in Computer Science as well as in Ecology, Earth and Environmental Sciences, Social and Economic Sciences and related areas. Conditional admission under the corresponding conditions of passing additional courses must be evaluated on a case-by-case basis.

(5) This programme is taught in English.

(6) Students with disabilities or chronic illnesses may not be disadvantaged in the study programmes. The regulations of the European Convention on the Rights of People with Disabilities, the Equal Treatment Act as well as the Concept of Compensation for Disadvantage are to be applied.

#### **§ 2 Subject Matter of the Study Programme and Qualification Profile**

### (1) Subject Matter of the Study Programme

Geoinformatics provides a computational as well as geoinformatics oriented, methodological-technical qualification with an interdisciplinary approach.

The skills acquired in the "Applied Geoinformatics" Master's programme build on a basic knowledge of the discipline and methodology in spatially oriented sciences such as Geography and are supported by a solid understanding of the practical application of Geoinformatics.

### (2) Qualification Profile and Competences (Learning Outcomes)

Geoinformatics is a method-oriented, cross-disciplinary subject based on spatial concepts and approaches. Such skills have value within a subject-specific context whilst they can be widely transferable across areas such as planning, resource management, logistics, mobility, marketing, nature and environmental protection, and security. Graduates will be confident in using key interfaces pertinent to spatial information processing.

Graduates with a Master's degree in "Applied Geoinformatics" are able to answer the research questions posed, including the development of hypotheses, the definition of objectives, the selection of methods, the implementation of a draft work programme, collection, analysis and interpretation of data as well as a written and oral presentation and interpretation of the results.

The study programme provides application-oriented knowledge based on the relevant theories and methods. Discipline-specific ways of thinking, analytical skills and techniques as well as problem-solving skills are developed in central areas of Geoinformatics, especially in:

- Geospatial data acquisition and cartographic communication;
- Data modelling and spatial databases;
- Representation and analysis, as well as dynamic system simulation;
- Methods of analysis in the general spectrum of Geoinformatics: GIS, Remote Sensing, statistics;
- Standards for architectures of open and distributed systems and spatial data infrastructures;
- Development of geospatial applications.

Graduates of the programme will be able to independently plan and organise complex projects and applications in Geoinformatics as well as to cooperate on projects in spatial data infrastructures. The aim is to provide decision-making skills in all areas of Geoinformatics.

The programme is science based, provides a broad range of academic working methods and prepares students for a doctoral degree programme.

During the course of study students should be taught basic scientific and methodological knowledge, taking into account the category of 'gender', enabling them to deal with geoscientific teaching and research material in a self-reflective and critical manner. Students will be enabled to recognise, understand and reflect ethically the meaning of the category 'gender' based on current social, political and economic processes.

### (3) Need and Relevance of the Study Programme for Science, Society and Labour Market

Graduates of the Master's programme in "Applied Geoinformatics" with a focus on methodological and technical areas of expertise have career perspectives in public administration (e.g. spatial data infrastructures and geoinformatic services and development, and applied areas such as in spatial planning, regional management, mobility, environment

and nature conservation) but also in the business world across a broad spectrum of industries. The programme covers all areas of data collection and data organisation, interpretation of results and decision support, communication of spatial information, as well as general management.

### **§ 3 Structure and Progression of the Programme**

The modules and individual courses of this Master's programme are listed in § 5 below. The allocation of the courses to specific semesters is a recommendation only and is designed so that each successive course builds upon and develops the knowledge acquired at each stage whilst ensuring that the annual workload does not exceed 60 ECTS points.

As set out in § 9, this programme requires students to complete an internship.

Students are required to develop a personal portfolio during the course of their studies. This portfolio should provide a record of class assignments, term papers and internship experience. The portfolio can take the form of an analogue collection of documents, of a digital (online) version (website, blog, etc.) or of a combination of analogue and digital documents. The supervisor of the Master's thesis confirms the submission of the portfolio at the end of the study programme, which is a prerequisite for the evaluation of the Master's thesis.

The Master's programme is completed with a Master's thesis and a Master's examination before an examination committee.

### **§ 4 Types of Courses**

The degree programme comprises the following types of courses:

(1) Lectures (VO) provide a coherent description and presentation of basic and specific scientific knowledge.

(2) Labs (UE) are intended to introduce students to the various methodologies of Geoinformatics whilst honing specialist knowledge through project and group work. A special lab form is 'field work' which includes practical outdoor assignments as well as a careful preparation and a final documentation of the results.

(3) Seminars (SE) introduce students to and provide the forum for an academic discussion of pertinent topics within Geoinformatics. They are designed to hone students' analytical and problem solving skills to produce a seminar paper in which they can demonstrate their ability to interpret and present complex theories and the findings of empirical research in a clear and coherent manner. Seminar papers will also be delivered orally in a didactically suitable way. The active participation of all students in the discussions is required.

(4) Integrated Projects (IP) contribute to the implementation and practical application of theoretical and conceptual knowledge in connection with methodological competences. Complete operational scenarios in work contexts will be planned, structured and implemented. Skills in project management, communication and presentation as well as economic issues will be applied in the context of a project. Integrated Projects will be frequently carried out in group work and completed by written reports and presentations.

(5) Colloquia (KL) are scientific lectures provided mainly through external scientists as well as practitioners. They serve to examine current scientific issues and to introduce current research and practice. The active participation by all students in the discussions is required.

With the exception of lecture courses, attendance is compulsory and involves continuous assessment. In lecture courses, assessment is based on a single written or oral examination at the end of the semester.

## § 5 Content and Modular Structure

The modules and individual courses of this Master's programme are listed below.

Detailed descriptions of the modules including the knowledge, methods and skills that need to be taught are given in Appendix I: Module Descriptions.

### Structure – Master's Degree "Applied Geoinformatics":

Modules / Courses	Sem.Hours	Type	ECTS	Semester			
				I	II	III	IV
<b>856M11 – Propedeutics and Electives</b>							
Subjects recommended in orientation interview Electives, from [856M13] or alternatives set by CK Short Intensive Programmes ('Summer Schools')			15	10	5		
Orientation and Introduction	1	UE	1	1			
Scientific Methods and Writing	1	UE	2	2			
<b>Total</b>			<b>18</b>				
<b>856M12 – GIScience: Theory and Research Methods</b>							
Lectures in GIScience	1	VO KL	2		2		
GIScience: Theory and Concepts	2	SE	4			4	
<b>Total</b>	<b>4</b>		<b>6</b>				
<b>856M13 – Methods in Geoinformatics (select 3)</b>							
Advanced Remote Sensing	4	UE	6	6			
Multivariate / Spatial Statistics	4	UE	6		6		
Geostatistics	4	UE	6				6
Geovisualization and Advanced Cartography	4	UE	6				
Geodata Acquisition	4	UE	6				
Geosimulation / Spatial Simulation	4	UE	6				
Location Based Systems and Services	4	UE	6				
<i>Additional options identified by CK</i>	4	UE	6				
<b>Total</b>	<b>12</b>		<b>18</b>				
<b>856M14 – Spatial Analysis and Modelling</b>							
Methods in Spatial Analysis	2	UE	2	2			
Analysis and Modelling	2	SE	4		4		
<b>Total</b>	<b>4</b>		<b>6</b>				
<b>856M15 – Geo-Application Development</b>							
Basics of Software Development	4	VO+ UE	6	6			
Application Development (web mobile other)	3	IP	6		6		
<b>Total</b>	<b>7</b>		<b>12</b>				
<b>856M16 – Spatial Data Infrastructures</b>							

Design of Geospatial Data Models	2	VO	3	3			
OpenGIS: Standards, Architectures and Services	2	VO	3		3		
SDI Services Implementation	3	IP	6			6	
<b>Total</b>	<b>7</b>		<b>12</b>				
<b>856M17 – I3: Interdisciplinary / Integrated / Interactive Project</b>							
Project (topics vary)	6	IP	10			10	
<b>Total</b>			<b>10</b>				
<b>Internship</b>							
<b>Total</b>			<b>12</b>		4	8	
<b>Portfolio</b>		UE	1				1
<b>Master's Exam</b>			1				1
<b>Master's Thesis</b>			24			2	22
<b>Grand Total</b>			<b>120</b>	30	30	30	30

Two courses of the Seminar type are compulsory in the "Applied Geoinformatics" Master's programme.

In the course of student guidance and counselling, during 'Orientation and Introduction' as well as possible admission procedures, recommendations for the completion of module [856M11] are offered depending on admission to the relevant study programme. These recommendations serve to balance out differences in prior knowledge and to enhance knowledge in areas such as Computer Science, Fundamentals of Geoinformatics (from the Bachelor's programme Geography), Geography or application disciplines. The module [856M11] must be fulfilled independent of and in addition to conditions that are specified in the framework of a conditional admission.

Students for whom no specific recommendations for the completion of module [856M11] are formulated can choose additional courses from module [856M13] in the framework of electives and courses suggested by the Curriculum Committee.

## § 6 Elective Modules

These modules are specified in § 5, especially module [856M11]. Courses from module [856M13] that are not chosen as required courses can be chosen as elective courses for module [856M11].

## § 7 Courses in Foreign Language

The Master's programme in "Applied Geoinformatics" is offered in English in line with the internationalisation of study programmes and qualifications. This also enables international exchange students to participate in academic programmes and helps prepare students to study abroad and for further studies at international universities.

## § 8 Studying Abroad

Students of the Master's programme in "Applied Geoinformatics" are encouraged to spend one semester at an international university. They are advised to study abroad either in the second or third semester of studies. The recognition of courses taken abroad as 'required courses' or 'elective courses' is granted by the governing body responsible for study matters. Applicants must submit the documents needed for the evaluation.

In addition to academic skills, students can acquire the following qualifications while studying abroad:

- Acquisition and improvement of subject-specific foreign language skills
- Acquisition and improvement of general foreign language skills (understanding of language, conversation, etc.)
- Acquisition and improvement of organisational skills through independent planning of everyday study life in international administrative and higher education structures
- Getting acquainted with and studying in international education systems as well as expanding one's own professionalism
- Acquisition and improvement of intercultural competences

Students with disabilities and chronic illnesses are assisted by the Office of the Rectorate 'Disability & Diversity' when looking for a university for their semester abroad.

## **§ 9 Compulsory Internship**

(1) Students must participate in internships during the course of their studies for a period of at least 8 weeks in order to identify possible professional fields. This internship may be undertaken at once or in two periods not shorter than 4 weeks.

(2) The internship is usually carried out outside the university at institutions recognised by the Curriculum Committee. The Curriculum Committee is responsible for approving placements based on a written internship agreement. The internship agreement and thus the intention to complete an internship as well as the choice of an institution must be reported the chairperson of the Curriculum Committee.

(3) In cases in which it is impossible for internships to take place outside of the university, students can acquire proof of practical experience by participating in a research project within the university depending on the possibilities of the department and with the approval of the body responsible for study matters. However, no financial support will be granted in this case.

(4) The confirmation of the internship must contain the following information in order to be considered for approval:

1. Place and organisational unit of the institution at which the internship was performed
2. Dates and type of employment during the internship
3. A brief description of the activities carried out
4. A written evaluation by those responsible for the internship

## **§ 10 Allocation of Places in Courses with a Limited Number of Participants**

(1) The maximum number of participants of the Master's programme in "Applied Geoinformatics" for various course types is limited as outlined below:

Labs and Colloquia: 25 (for Labs the number of participants can be adapted to the capacity of existing computer rooms if necessary)

## Seminars and Integrated Projects: 16

(2) In instances where courses with a restricted number of participants are oversubscribed, the following rules will apply: students in the Master's programme "Applied Geoinformatics" will be given first priority, then students of Geoinformatics electives (e.g. in the Geography Master's programme), followed by students from other fields of study. Students in the doctoral programme "Applied Geoinformatics" are also given priority in order to fulfil requirements within the framework of a conditional admission.

(3) For students of the Master's programme "Applied Geoinformatics", places in courses will be allocated based on their progress in the course of study, i.e. on the number of ECTS points completed in the required courses. If the students' progress in their studies is the same, the date of application for a course determines the allocation. Students conditionally admitted to the "Applied Geoinformatics" doctoral programme will be given the highest priority in course enrolment order to fulfil requirements stipulated by the curriculum. Free places will be allocated to students from other study programmes in the order in which the applications for a course are received.

(4) For students participating in international exchange programmes, additional places constituting at least ten percent of the maximum capacity in each course are available.

### **11 § Admission Requirements for Exams**

(1) The participation in courses of the IP type of the modules [856M15] and [856M16] requires the successful completion of all other courses of the respective modules.

(2) The participation in the course of the IP type of module [856M17] requires successful completion of at least 30 ECTS points in the Master's programme in "Applied Geoinformatics".

(3) Admission to exams in the modules [856M12] to [856M17] requires the successful completion of 'Orientation and Introduction' of module [856M11].

### **§ 12 Examination Regulations**

The modules listed in § 5 are individually assessed through course examinations or in the framework of module examinations (a combination of these two is also possible).

### **§ 13 Master's Thesis**

The regulations outlined in § 23 of the Statute of the University of Salzburg apply to the Master's thesis. The topic of the Master's thesis must correspond to a module of the curriculum. Students are entitled to suggest a topic or to choose from suggestions made by the available advisors. The topic for the Master's shall be chosen such that it is reasonable to expect a student to complete it within six months. A number of students may jointly work on a comprehensive topic provided that the performance of individual students can be assessed.

### **§ 14 Master's Examination**

(1) The first part of the Master's examination consists of the completion of examinations on all modules and courses listed in § 5.

(2) The second part of the Master's examination comprises an oral examination before an examination committee. The examination covers two areas:

- I. Presentation of the Master's thesis and discussion of the Master's thesis (oral defence)
- II. Exam questions from two subjects corresponding to the modules [856M12-16]

(3) Before registering for the final Master's examination, the following requirements must be met:

- Evidence of the successful completion of the first part of the Master's exam
- Evidence of the successful evaluation of the Master's thesis in accordance with § 13
- Evidence of the submission of the portfolio in accordance with § 3
- Evidence of the completion of the compulsory internship in accordance with § 9

### **§ 15 Effective Date and Transitional Provisions**

(1) The curriculum comes into force on 1 October 2013 and applies to all students who begin their studies in the winter semester 2013/2014.

(2) Students have the right to opt into the present curriculum at any time within the admission periods. They must send an irrevocable written statement of this choice to the Student Service Centre.

(3) It is possible for students studying under the curriculum version 2009 to complete their study programme until 1 October 2014. After this deadline they will automatically be subject to the new curriculum.

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