NOTE: This document is a translation of the original document "Mitteilungsblatt – Sondernummer der Paris Lodron Universität Salzburg. 110. Curriculum für den Universitätslehrgang 'Geographische Informationssysteme (UNIGIS professional)' an der Universität Salzburg (Version 2023W)" from May 30, 2023. **The original document is the legally binding document**! The English version only serves the purpose of translation.

Translation: Team UNIGIS Salzburg, September 2023

Bulletin – Special Issue of the Paris Lodron University of Salzburg

110. Curriculum for the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" at the University of Salzburg
(Version 2023W)

Contents

In the meeting on May 23, 2023, the Senate of the Paris Lodron University of Salzburg enacted the curriculum for the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" in the following version, which was proposed by the Curricular Commission Geoinformatics, at the University of Salzburg, in the form of a circular resolution, on May 17, 2023.

The legal basis is the Federal Law on the Organisation of Universities and their Studies (Universities Act 2002 - UG), Federal Law Gazette I No. 120/2002, as well as the study law section of the Statutes of the University of Salzburg, as amended.

Preliminary Remarks

Distance learning programs in the field of Geoinformatics have been offered at the University of Salzburg since 1994. This curriculum serves as a further development, based on the professional and technical progress, didactic experience, current legal framework conditions as well as the requirements of the European Higher Education Area.

The University Programme for Further Education follows a 'blended learning' approach, i.e., a flexible format for variable, in particular, open study forms and can, therefore, be offered in different organisational variants. A key element is the need for location-independent, education while working. Therefore, the University Programme for Further Education in form of distance learning is supported by corresponding materials, respective forms of supervision, media, and organisational structures.

The UNIGIS University Programmes for Further Education are continuously developed within the framework of an international cooperation with partner universities and the 'UNIGIS International Association', subjected to quality assurance and positioned as a brand, worldwide.

§ 1 General Information

(1) The total scope for the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" amounts to 60 ECTS credits. It is a distance learning University Programme for Further Education and comprises two semesters.

(2) Graduates receive the Academic Certificate in Geographical Information Systems. A translation into other foreign-language formulations is admissible.

(3) ECTS credits are assigned to all performances that are to be delivered by the students. One ECTS credit point corresponds to 25 hours of work and describes the average workload required to achieve the expected learning outcomes. The workload of one academic year corresponds to 1500 real-time hours and, thus, to an allocation of 60 ECTS credits.

(4) According to the demand and the organisational possibilities, the University Programme for Further Education is offered to cohorts of students, the beginning and

interval of which are to be determined by the program director, taking into account the demand, sufficient supervision possibilities as well as didactic requirements. Due to the special character of the University Programme for Further Education that is particularly suited for student who are also working, semester-oriented regulations for the division of the study year do not apply. Instead, flexible part time schedules are set by the program director.

(5) The University Programme for Further Education can be conducted in German and English as well as in mixed forms. Professional requirements and prior knowledge of students are to be taken into consideration. In addition, the University Programme for Further Education can be offered in other languages regarding instruction and support, depending on the need and available competence. This can be done in cooperation with suitable partner institutions.

(6) Students with disabilities and/or chronic illnesses must not experience any disadvantages in the University Programme for Further Education. The principles of the UN Convention on the Rights of Persons with Disabilities, the Equality Act, and the principle of compensation for disadvantages apply.

§ 2 Admission Requirements

(1) The prerequisite for the admission to the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" is a general university entrance qualification for an Austrian University or a University of Applied Sciences.

(2) Equivalent qualifications to §2(1) can be recognised and are subject to determination by the program director. The prerequisite for this is several years of professional experience in the field of Geoinformatics.

(3) The program director has the right to request a proof of sufficient language skills.

(4) The program director has the right to invite each applicant to a personal admission interview.

The program director decides on the admission to the University Programme for Further Education.

§ 3 Qualification Profile, Professional Fields, and Target Groups

(1) Subject of the University Programme for Further Education
Geoinformatics is a method-oriented cross-disciplinary subject based on spatial concepts and methods, which is used in the context of and in cooperation with numerous fields of application (e.g. planning, resource management, logistics, mobility, nature and environmental protection, geosciences, archaeology, marketing, or security).

The aim of the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" is to provide further education and supplementary training for graduates of various secondary and post-secondary educational programs in the form of a flexible course of study that is particularly suited for people who are already working.

UNIGIS professional imparts application-oriented knowledge for the project-related, solution-oriented use of Geoinformatics against the background of the corresponding concepts and methods. While the compulsory modules cover essential core areas of Geoinformatics, the elective modules allow for the individual design of specific professional qualification profiles and skills.

(2) Qualification Profile and Competencies (Learning Outcomes)

Graduates of the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" are carriers of central competences of explicit spatial information processing. In particular, they are:

- familiar with the acquisition, reference, and documentation of appropriate geodata,
- able to identify context-relevant spatial objects and attributes, model heterogeneous data sets with them in a formalised way, and build up corresponding geodatabases,
- particularly skilled to think spatially and are able to select appropriate analysis methods for solving complex problems and to use them for the extraction of information and the interpretation of spatial data,
- able to develop their own applications and scripts to functionally extend existing GI systems or to automate processing sequences,
- trained in the use of cartographic principles to visualise and communicate spatial contents.

In addition, graduates possess specialised knowledge, competencies, and skills in freely selectable application-specific or technology-oriented sub-areas of the subject.

The close-knit combination of conceptual-methodological content with application scenarios, using contemporary GI software, does not only lead to a critical understanding of theory, but also provides specialised skills for solving complex, real-world problems. The program fosters subject-specific thinking and techniques, analytical methodological skills, and decision-making competences in key areas of Geoinformatics. Student-oriented teaching and communication methods are used to promote independent lifelong learning.

The University Programme for Further Education corresponds to level 6 of the European Qualifications Framework.

(3) Relevance of the University Programme for Further Education for Society and the Job Market

The University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" meets the increasing demand for qualified specialists in numerous sectors of the economy and administration. Having a well-founded Geoinformatics competence is often a career-defining additional qualification in all professional fields in which spatial data are relevant; for example, in planning, energy and resource management, nature conservation

and environmental management, geosciences, logistics, security management, software development, marketing, surveying or archaeology.

Graduates of the University Programme for Further Education UNIGIS professional are eligible for the following occupational fields, which can be connected to their professional domain of origin as an additional qualification:

- Geoinformatician (or related designations)
- Geodata acquisition and management
- Data analysis and data visualisation
- Geo-application development

(4) Target Groups

The University Programme for Further Education UNIGIS professional is aimed at:

- persons from different application disciplines who want to collect, manage, analyse, and visualise spatial data within the scope of their professional activities,
- users of Geoinformatics who want to give their sectoral and/or self-taught knowledge a sound, up-to-date basis to be able to develop independent solutions for complex problems, as well as
- people from different application disciplines who want to improve their chances on the job market.

§ 4 Organisation and Structure of the University Programme for Further Education

The University Programme for Further Education UNIGIS professional consists of 8 modules, adding up to 60 ECTS credit points.

Module	ECTS
M 01 Introduction to Geoinformatics	6
M 02 Data Modelling and Data Structures	6
M 03 Data Acquisition and Data Sources	6
M 04 Geodatabase Management (Geo-DBMS)	6
M 05 Application Development	6
M 06 Spatial Analysis	6
M 07 Visualisation and Cartography	6
WM 01 Electives	18
Total	60

§ 5 Types of Courses

The following types of courses are offered in the University Programme for Further Education:

Lecture with Lab (VU) combines the theoretical introduction to a subfield and the teaching of practical skills. A lecture with lab is not subject to examinations and attendance is not compulsory. This type of course can be taken as supervised self-study distance learning unit.

Interdisciplinary Project (IP) uses approaches, ways of thinking, and methods of different disciplines to interconnect topics and combines theoretical and practical objectives. An interdisciplinary project is an examination-immanent course with compulsory attendance, whereby attendance in distance learning mode can be established through co-presence in online meetings.

§ 6 Study Content and Schedule

In the following, the modules and courses of the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" are listed. The assignment to the semester sequence is a recommendation, and it ensures the optimal educational trail, building on prior knowledge.

The detailed descriptions of the modules, incl. the knowledge, methods, and learning outcomes, can be found in Appendix I: Module Descriptions.

University Programme for Further Education "Geographic Information Systems (UNIGIS professional)"						
Module	**Course**	**h/week**	**Type**	**ECTS**	**Semester with ECTS**	
					I	**II**
(1) Compulsory Modules						
Module M 01: Introduction to Geoinformatics						
M 01.1 Introduction to Geoinformatics		3	VU	6	6	
Subtotal Module M 01		3		6	6	
Module M 02: Data Modelling and Data Structures						
M 02.1 Data Modelling and Data Structures		3	VU	6	6	
Subtotal Module M 02		3		6	6	
Module M 03: Data Acquisition and Data Sources						
M 03.1 Data Acquisition and Data Structures		3	VU	6	6	
Subtotal Module M 03		3		6	6	
Module M 04: Geodatabase Management						
M 04.1 Geo-DBMS		3	VU	6	6	
Subtotal Module M 04		3		6	6	

Module M 05: Application Development					
A total of 6 ECTS must be completed from the following courses (or equivalent courses).					
M 05.1 Basics of Application Development	3	VU	6		6
M 05.2 Geoprocessing with Python	3	VU	6		6
M 05.3 Developing Web-Applications with JS and Mapping Libraries	1,5	VU	3		3
M 05.4 Automated Data Analysis with R	1,5	VU	3		3
Subtotal Module M 05	3		6		6

Module M 06: Spatial Analysis					
M 06.1 Spatial Analysis	3	VU	6		6
Subtotal Module M 06	3		6		6

Module M 07: Visualisation and Cartography					
M 07.1 Visualisation and Cartography	3	VU	6		6
Subtotal Module M 07	3		6		6

Total Compulsory Modules	21		42	24	18

(2) Electives according to §7

Module WM 01					
From the following courses, 18 ECTS must be completed. The range of courses is based on current, subject-specific qualification requirements, is subject to ongoing adaptation, and is determined by the responsible curriculum commission. In accordance with the provisions of §7(1), further study achievements can be credited for this module.					
*If not already selected as part of Module 5 "Application Development".					
WM 01.1 Developing Web-Applications with JS and Mapping Libraries*	1,5	VU	3		
WM 01.2 Automated Data Analysis with R*	1,5	VU	3		
WM 01.3 Basics of Application Development*	3	VU	6		
WM 01.4 Geoprocessing with Python*	3	VU	6		
WM 01.5 Enterprise GIS	3	VU	6		
WM 01.6 Environmental Monitoring	3	VU	6		
WM 01.7 EuroGIS – the European Dimension of GIS	3	VU	6		

WM 01.8 Geomarketing und Business-GIS in der Praxis (in German)	3	VU	6		
WM 01.9 Landschaftsanalyse mit GIS (in German)	3	VU	6		
WM 01.10 LiDAR in Theory and Application	3	VU	6		
WM 01.11 Project Management	3	VU	6		
WM 01.12 Automated GIS Workflows with QGIS and Python	3	VU	6		
WM 01.13 Remote Sensing	3	VU	6		
WM 01.14 Spatial Simulation	3	VU	6		
WM 01.15 OpenGIS and Distributed GI Infrastructures	3	VU	6		
WM 01.16 Project	6	IP	12		
Subtotal Module WM 01	9		18	6	12
Total Electives	**9**		**18**	**6**	**12**
Total Compulsory and Elective Modules	**30**		**60**	**30**	**30**

§ 7 Electives

(1) Within the framework of the Electives (Module WM 01), credits can also be covered by external courses (e.g. courses on special and in-depth topics, or summer schools). Credits can be given for practice-oriented and professionally relevant training and educational courses, provided that they were completed successfully (required certificate should include individual performance assessment, i.e. grading) at other accredited post-secondary educational institutions and that they advance and/or complement skills and knowledge acquired in UNIGIS compulsory modules. Equivalent scientific achievements (e.g. publications) can also be recognised.

(2) Within the framework of the Electives, a project study with a total of 12 ECTS can be completed.

(3) All courses can be offered as distance learning units. Project work is offered in the format of a term paper.

§ 8 Assessment and Exams

The provisions of §§72-79 UG and the section on study affairs of the Statutes of the Paris Lodron University Salzburg apply. Examinations by means of electronic communication according to §19a of the Statutes of the Paris Lodron University Salzburg are permitted.

§ 9 Tuition Fees

(1) Students of the University Programme for Further Education have to pay a tuition fee.

(2) The course fee can vary depending on the study type, the study organisation, or in case of cooperation with other universities. It is set by the vice-rector for academic affairs.

§ 10 Evaluation

The University Programme for Further Education is subject to continuous evaluations involving students, faculty members, and the program director.

§ 11 Date of Commencement

The curriculum and any amendments to the curriculum shall enter into force on the first day of the month following the announcement.

§ 12 Transitional Regulations

(1) Students who are enrolled in the University Programme for Further Education "Geographic Information Systems (UNIGIS professional)" at the Paris Lodron University of Salzburg, (Version 2016, Bulletin - Special Issue 200, June 27, 2016) at the time when this curriculum comes into effect are entitled to complete their studies until June 31, 2025, at the latest.

(2) Students are entitled to voluntarily change to this curriculum at any time within the admission deadlines. A written irrevocable declaration to change into this curriculum must be addressed to the study admissions office.

Annex I: Module Descriptions

Module Name	Introduction to Geoinformatics
Module Code	M 01 (GISINTRO)
Total Workload	6 ECTS
Learning Outcomes	Graduates of the module - understand the added value of the spatial dimension as a reference framework for orientation. - have an overview of the basic components of typical GIS projects and can incorporate GIS functionalities in this broader context. - have an overview of the main fields of application of GIS, can broadly outline their development, and anticipate both current trends and future market potential. The latter facilitates the effective evaluation of priorities within one's own continuing education and learning path. - can answer simple, practical problems, which include a spatial component, by means of professional GIS software. - know the basic challenges of spatial referencing and are capable of integrating spatial data, which are available in different forms of geodetic data and projections, into a single spatial reference system. - have acquired the knowledge to compare and evaluate reference systems in terms of their suitability for a specific application.
Module Contents	This introductory module has a special position, being the first study component of the curriculum. It provides orientation and sets the frame for working with the subsequent modules. Specifically, it supports the students in getting familiar with the distance-learning materials and environment, which are used in subsequent modules. In addition to these objectives regarding the study format, the following domain-related contents are offered: - Terminology and functional characteristics of geographic information systems - Typical application areas of geographic information processing - Current trends in Geoinformatics - Overview of secondary information resources for GIS in terms of life-long learning - Practical training to use professional GI software - Competent use of coordinate reference systems and projections for the practical work in GIS
Courses	M 01.1 VU Introduction to Geoinformatics (6 ECTS)
Type of Assessment	Assignment

Module Name	Data Modelling and Data Structures
Module Code	M 02 (DATAMODL)
Total Workload	6 ECTS
Learning Outcomes	Graduates of the module - have a profound overview of common data structures in GIS software, - can effectively compare and evaluate geodata structures based on their requirements and characteristics; consequently, they can identify the appropriate data structures for a specific problem of a project. - are aware to the vagueness of day-to-day terminology and concepts in describing spatial relations and recognise the necessity of formal logical data models as alternative to their description in GIS. - comprehend the importance of interoperability as basis for distributed spatial information processing and spatial data infrastructures. - can interpret the parameters of key OGC-compliant services and use them in order to integrate external resources to their own applications (local, in the cloud). - understand the approach, structure, and use of markup languages, can verify XML instances regarding their syntax and validate them against XML schemas. They can interpret GML schema files and create simple GML files. - are capable to contrast GML with alternative formats of web-based data exchange and to identify the most suitable technology.
Module Contents	This module provides a profound overview of common data structures and data models in GIS. It explores how the real world around us can be displayed (application- and goal-oriented) in all its complexity with data models and data structures. Specific module contents include: - Basics of a formal description of spatial phenomena and relationships - Modelling spatial information - Spatial models – data models – data structures - Vector model - Grid models (raster) - Representation of continuous space - Object-oriented data models - Interoperability, OGC, and standardisation - WMS, WFS, WCS and OGC-CS - Standards (GML) and quasi-standards (GeoJSON) for structuring and communication of spatial data - Complementary training in another professional GI software
Courses	M 02.1 VU Data Modelling and Data Structures
Type of Assessment	Assignment

Module Name	Data Acquisition and Data Sources
Module Code	M 03 (DATSRCAQ)
Total Workload	6 ECTS

Learning Outcomes	Graduates of the module - know the most common methods for geodata acquisition, understand their basic functioning, can evaluate their suitability for practical application scenarios, and can plan and guide data acquisition projects. - have the skills to collect and process primary data. They can, for example, acquire and process GNSS data, can apply digital image processing methods in order to extract thematic information from multispectral image data, use services for geocoding address data, or digitise analogue data using automated processes. - can integrate heterogeneous datasets of various formats and sources into a homogenous geodatabase. - are aware of the importance of data documentation and familiar with the appropriate metadata standards. - know about national and international spatial data infrastructures.
Module Contents	The third module applies to the practical aspects of the 'population' of spatial data structures with real-world information. It provides an overview of primary and secondary acquisition methods with the goal of gaining insight into the genesis and the suitability of spatial data for specific use cases. A substantial part is the access and the report of important digital resources as well as the valorisation of geo-information by a standard-compliant documentation. Specific module contents include: - Identification of required data from the application and user perspective - Data quality and cost - Surveying - Global Navigation Satellite Systems (GNSS) - Photogrammetry - LiDAR - Optical sensors and radar - Remote sensing platforms (satellite, aircraft, UAV) - Digitising, scanning, vectorising - Data with indirect location reference, geocoding of address data - Data transfer: norms and standards, format transformations - Metadata, metadata standards - National and global spatial data sources, open government data - Geodata infrastructure, data catalogues, INSPIRE - Legal and ethical aspects, copyright, and open licenses of geodata
Courses	M 03.1 VU Data Acquisition and Data Sources
Type of Assessment	Assignment

Module Name	Geodatabase Management
Module Code	M 04 (GEODBMS)
Total Workload	6 ECTS
Learning Outcomes	Graduates of the module - can evaluate the range and performance of database systems for managing geographical data and can compare them with other forms of data storage. - know the typical phases of the data modelling process and can automatically perform this process on the basis of simple, practical application scenarios.

	- can check existing ER models on efficiency and correctness, and can develop ER diagrams for their own use cases. - can create simple databases, including the graphical representation of the data model and the definition of data types for attribute and geometry data. - can perform and optimise queries using SQL statements. This applies to attribute queries as well as to simple spatial queries. - Understand the use of geodatabases in combination with GI systems.
Module Contents	In this module, the conceptual foundations of conventional database systems are introduced by working on hands-on examples. On this basis, the knowledge is transferred to spatial data management and geodatabase systems. Specific module contents include: - Architecture of database management systems - Database design and documentation - Relational data modelling - Normalisation - Solid basics of SQL query language as a universal language for data definition, data control, and data management - Practical work with a SQL front-end - Glossary of terms and specifications of GeoDBMS - Spatial models in DBMS - Spatial SQL operations according to OGC - Spatial indexing
Courses	M 04.1 VU Geodatabase Management
Type of Assessment	Assignment

Module Name	Application Development
Module Code	M 05 (APPLDEV)
Total Workload	6 ECTS
Learning Outcomes	Graduates of the module - have a structured knowledge of software development, which allows them to work in developer-teams or to communicate with developers, as an expert in GIS. - understand the basic structures of procedural and object-oriented programming and can use these skills to for their own programming tasks. - can develop their own programs to adapt existing application and automate workflows.
Module Contents	This module introduces the students to GIS-related programming. It covers an overview of different software architectures and technologies that are used in different job-related contexts. To fit the needs of this practical approach, students can choose from a selection of courses, which do all cover the learning objectives mentioned above.
Courses	A total of 6 ECTS must be completed from the following courses (or equivalent courses): M 05.1 VU Basics of Application Development (6 ECTS) M 05.2 VU Geoprocessing with Python (6 ECTS) M 05.3 VU Developing Web-Applications with JS and Mapping Libraries (3 ECTS)

	M 05.4 VU Automated Data Analysis with R (3 ECTS)
Type of Assessment	Assignment

Module Name	Spatial Analysis
Module Code	M 06 (GEOGANAL)
Total Workload	6 ECTS
Learning Outcomes	Graduates of the module - can identify the potential and limitations of spatial analysis to capture relationships and trends in spatial data and to support spatial decision-making processes. - can analyse complex, real-world problems by disserting them into methodically manageable sub-tasks and processing them with state-of-the-art GIS software and tools. - have a wide repertoire of analytical methods and techniques and can evaluate their suitability for a particular purpose. They can also conduct a sensitivity analysis for parametrisation within a method. - know the advantages of graphical modelling tools for structuring extensive analysis procedures. - can assess the role and influence of alternative data models on the result of an analysis method and can conduct analysis across data models. - know a selection of appropriate analytical methods and techniques for the generation of decision-relevant information in complex problem solving tasks.
Module Contents	Spatial analysis methods are a central feature of geographic information systems. This core area within Geoinformatics aims at translating domain problems, based on conceptual problem structuring, towards analytical methods and tools. This module introduces the fundamental methods and techniques of geographical analysis. Specific module contents include: - Graphic modelling as a practical methodology for the design and documentation of analytical processes - Map algebra as an ordering scheme, appropriate operators - Spatial selection and aggregation, regionalisation - Aggregate data, MAUP and ecological fallacy - Distance scales and distance metrics, applications of distance-based methods - Cost surfaces in surface transport and dispersion analyses - Spatial interpolation (deterministic, geostatistical) - Multi-thematic integration (intersection, assessment, multi-criteria method) - Route optimisation and allocation in networks - Terrain analysis (slope, exposure, radiation, visibility, hydrological run-off)
Courses	M 06.1 VU Spatial Analysis (6 ECTS)
Type of Assessment	Assignment

Module Name	Visualisation and Cartography
Module Code	M 07 (VISCARTO)
Total Workload	6 ECTS
Learning Outcomes	Graduates of the module - can apply cartographic data representation methods efficiently and profitably in various project phases: from data exploration, to data analysis, to the presentation of results. - can develop media- and purpose-oriented representations of spatial data that are appropriate for the respective target audience. The resulting maps take data inherent characteristics (data level, data distribution, standardisation), perceptual-psychological conditions (gestalt perception, colour) as well as (carto-)graphic conventions into account. - can draw on classical cartographic concepts such as generalisation or classification as well as on new visualisation techniques such as 3D visualisation and animation. - can reflect on cartographic products critically, identify areas for improvement, and contribute substantially to the discourse on cartographic work.
Module Contents	Knowledge on the visual communication of spatial information is essential since nearly every GI professional actively designs maps at some point. This module aims at professionals from different domains to take advantage of cartographic data processing approaches for their respective tasks. Specific module contents related to conventional as well as digital forms of publication (web-mapping, mobile-mapping) include: - Cartographic application fields and paradigms - Cartographic design process - Generalisation and classification - Perception of forms and visual variables - Colour models and use of colour (including consideration of colour vision deficiency) - Development of map symbols and interaction - Map annotation and text - Thematic maps, diagrams, and diagram maps - Map design and layout - Digital devices and output formats - 2.5D/3D visualisation - Web-mapping technologies and APIs - Dynamic visualisation
Courses	M 07.1 VU Visualisation and Cartography (6 ECTS)
Type of Assessment	Assignment

Module Name	Electives
Module Code	WM 01
Total Workload	18 ECTS
Learning Outcomes	Graduates of the module - Expand the core competencies and skills acquired in the core modules by selected topics to foster their individual learning objectives.

Module Contents	
Courses	WM 01.1 VU Developing Web-Applications with JS and Mapping Libraries (3 ECTS)*
	WM 01.2 VU Automated Data Analysis with R (3 ECTS)*
	WM 01.3 VU Basics of Application Development (6 ECTS)*
	WM 01.4 VU Geoprocessing with Python (6 ECTS)*
	WM 01.5 VU Enterprise GIS (6 ECTS)
	WM 01.6 VU Environmental Monitoring (6 ECTS)
	WM 01.7 VU EuroGIS – the European Dimension of GIS (6 ECTS)
	WM 01.8 VU Geomarketing und Business-GIS in der Praxis (in German) (6 ECTS)
	WM 01.9 VU Landscape Analysis with GIS (6 ECTS)
	WM 01.10 VU LiDAR in Theory and Application (6 ECTS)
	WM 01.11 VU Project Management (6 ECTS)
	WM 01.12 VU Automated GIS Workflows with QGIS and Python (6 ECTS)
	WM 01.13 VU Remote Sensing (6 ECTS)
	WM 01.14 VU Spatial Simulation (6 ECTS)
	WM 01.15 VU Open GIS and Distributed GI Infrastructures (6 ECTS)
	WM 01.16 IP Project (12 ECTS)
	*If not already selected as part of Module 5 "Application Development".
Type of Assessment	According to the selected courses.