



Study Documentation

Master's Programme Land Management and Land Tenure

Faculty of Civil Geo and Environmental Engineering

Technische Universität München

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**Studiengangs-
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According to Art. 3 Abs. 2 of the Law, women and men are equally entitled. Therefore, all masculine names of persons and functions in this course documentation apply equally to men and women.

1. STUDY PROGRAM OBJECTIVES

1.1 Aim of study program

The land management and land tenure program addresses a particular need in society. Land is a valuable and scarce resource: people need land to grow food, to build cities, for investments as well as for housing. Therefore, access to land, rights over land, the management and administration of land as well as the settling of land conflicts are relevant for human kind. Different kinds of laws, international agreements and guidelines underline the importance of legitimate land rights and advocate a comprehensive kind of land management which can achieve sustainable and resilient rural and urban development, provide secure land rights and to prevent or mitigate land related conflicts.

Just during the last three decades the increasing use of natural resources has led to a non-assessable loss of biodiversity, high levels of land degradation and socio-economic disequilibrium in urban and rural regions of many developing countries. Single-sided or over-utilization of natural resources not only constricts the living space of flora and fauna, but also the living space and income basis for mostly poor people living in rural areas. Many of these people look for a better future in the cities which are believed to offer better possibilities. For these and many other reasons urban areas are put under pressure. This pressure is visible through increasing peri-urban development areas and through informal settlements or slums, and results in health and ecological problems. With this, criminality is increasing as well and is in many cases referring to land. The implementation of maladjusted land-use and tenure systems, as well as the realization of unequal structures of development, calls for innovative and highly participative strategies.

Examples of negative tendencies in developing countries are: lack of integral spatial planning, limited land registration, land grabbing, boundary conflicts, uncontrollable city development, neglecting of the problems of rural areas and respective program deficits, poor ecological planning, lack of legal certainty, half-hearted processes of agricultural reforms, lack of decentralization and participation of civil society, deficits in governance, high risks and defenselessness while facing rising natural hazards.

These tendencies have a considerable impact on the future development of many countries and regions. To face this challenge, at the international level various organizations are calling for new land tools. UN Habitat's Global Land Tool Network (GLTN) is developing practical tools for communities, professionals and governments to handle land related problems; the International Federation of Surveyors (FIG) has developed a discussion document on fit-for-purpose land administration; the Food and Agriculture Organisation of the United Nations (FAO) is advocating the 'Voluntary guidelines for responsible land tenure' and new concepts such as 'Continuum of land rights' have emerged. Such new tools need to be implemented and new theories and strategies of land and environmental risk management are needed, keeping in mind regional and national differences in culture, politics and law. Beside these, other main issues are land tenure and land administration, land use, land markets and valuation, land development and land readjustment, which are embedded in land policy, land law

and spatial planning. These call for cross-linked thinking and an exchange of experiences among experts from different countries and continents.

The Master's Program "Land Management and Land Tenure" (LMLT) provides the necessary theoretical knowledge, practical tools and applications, and social and interpersonal management skills to cater for future experts in this field which can develop and use the new instruments. This English Master program's main focus is on learning and applying technical, social, legal and institutional tools, methods and instruments to reform and intervene in land rights relations. Examples of such instruments include the development of fit-for-purpose cadastres and land registries, handling of the continuum of land rights, land use planning and land use control, and formulation and execution of land policies. Hence, the study program aims to contribute to the development of creative, innovative and feasible solutions for complex land management problems.

In the LMLT program Land management is conceived as an "umbrella" theme which includes pivotal political and societal spheres as well as static and dynamic components of land tenure, land administration, land development and land readjustment. These are necessary for fulfilling the need for a holistic and sustainable development of rural and urban areas, as well as sufficient recognition and prevention of hazards. All these aspects need to be adopted by well-educated land experts and thus are the core ideas behind our master's programme.

In the context of the high demand for sustainable development of urban and rural areas, issues of land policy, land tenure, land administration and land management are of crucial importance for all regions and countries of the world. These issues determine social, economic and ecological development in many developing countries. Particularly, the use of and access to land are of high priorities for development, but also is responsible for the rising conflicts, climatic and demographic changes.

Topics such as secure land rights and tenure, good governance, poverty reduction, social justice, sustainable economic growth, protection of natural living conditions as well as functioning land markets and planning systems – and many others – are accepted worldwide as basic requirements for sustainable development and important contributions to fulfilling the 2015 Sustainable Development Goals (<http://www.un.org/sustainabledevelopment/sustainable-development-goals/>) Millennium Development Goals and Implementing the Plan of the United Nations summit in Johannesburg in 2002.

1.2 Strategic meaning of study program

LMLT is one of the study programs of the Department of Civil, Geo and Environmental Engineering. This department is unique in Bavaria. The multicultural and trans-disciplinarity of the LMLT master contributes to developing and implementing knowledge in and beyond Bavaria, with international cutting-edge researches and implementations.

Based on national and international experiences, the programme aims to train responsible professionals who will take our expertise beyond borders when managing the built environment, developing infrastructures and using resources.

Moreover, the whole structure of the LMLT master goes in line with the Department's mission of transferring knowledge and applying it to practical cases, as it may be seen in the development of the study programme: the theoretical approach as the state-of-the-art in land management leads then to the acquisition of the technical skills, which should be applied in concrete case studies through an internship and a research project.

The LMLT Master program is most closely connected to the programs of the geodesy cluster, including Geodesy & Geoinformation, Cartography and ESPACE. The overarching goal of all these programs is to prepare students for professional, entrepreneurial and academic activities which are primarily geared to supporting construction of buildings, infrastructural works and management of natural resources. The geodesy cluster has a particular attention for maintaining constructing and maintaining information of objects in space by defining measuring, evaluating, visualising, mapping geospatial objects and their geospatial interrelations, and populating databases with such information. LMLT is specifically concerned with the object information, such as mapping of parcels, buildings and administrative areas, and connecting these to information about people, via land rights relations, land use relations, land value relations and land development relations. For graduates of LMLT it is important to be able to recognize and register such people-to-land (spatial) relations, and creating, changing and managing these, in order to support interventions in space, such as (re-)construction of roads, infrastructure and green areas.

Within the Faculty of Civil, Geo and Environmental Engineering, the master's programme contributes with a specific set of knowledge domain and tools to manage and change both built-up areas and green areas. The connection points are to the development and transferring of knowledge and skills as well as methods, strategies and good practice examples for sustainable land management in both the built-up areas and, including preventive and post-disaster measures with regard to environmental risks management and land conflicts management.

For a number of reasons LMLT is a separate program in its own kind and with its own relevance (and not a specialisation, of a special track of another program for example):

1. The international development character. The specific focus on applying the obtained skills and knowledge for development and in developing/transition countries. The LMLT program is less geared towards employment in the German or European market, unless there is a particular development connection (such as within BMZ/GIZ). Hence, TUM acts as a knowledge hub in which international experts and students share and develop new knowledge about land management.
2. The relatively narrow knowledge field of land information systems, cadastral data and land registration in the context of developing countries. Given that the

majority of land is unregistered in these countries this specific knowledge on how to adopt appropriate land informatization policies in a developing context would involve the development and implementation of new technologies (such as voluntary geographic information, fit-for-purpose cadastres) which would not be possible with conventional European knowledge and resources.

3. The combination of specific socio-legal knowledge and skills with geospatial knowledge and skills. A conventional geodesy and geo-information or spatial planning program tends to emphasize the *formal* (based on written law) aspects of describing and constructing built-up land, and de-emphasize the informal (based on customs, traditions, continuum of rights) character of legitimate land rights and land interventions. How to handle such aspects is a particular component of this study program.

2. Qualification profile

As the aim of the study program is to contribute to the development of creative, innovative and feasible solutions for complex land management problems, we acknowledge that the nature of these problems is threefold:

- 1) Contextual, i.e. related to the interplay of stakeholders within a local political, social, legal and institutional system. This means that there are no one-off, blueprint solutions which apply for each and every country of location. Laws and public administration differ per location. Hence one needs tools to understand and describe these.
- 2) Technical-methodological, i.e. related to tools and instruments, such as the (cadastral / parcel-based, land) information systems, methodologies, instruments, and regulation with which land interventions are prepared, executed and monitored.
- 3) Complex, volatile and unpredictable, i.e. people-to-land relations are sensitive and stakeholders may exhibit unpredictable reactions to external (government or privately induced) interventions. In addition, natural risks and disasters, such as earthquakes or tsunamis, or people-induced disasters have, such as geopolitical conflicts or boundary conflicts have proven to be highly uncertain. Hence, one needs proper synthetic capabilities to handle these.

Deriving solutions thus typically require a combination of both contextual insights, technical-methodological instruments and synthetic skills. The LMLT program is designed to deal with all these three aspects consecutively.

A silver thread in the entire program is also increase of social capabilities: crucial values of intervening in land affairs include professional and cultural openness, being transparent and the ability to collaborate locally, nationally and internationally. Therefore the program has an international and multidisciplinary character, enhanced through the engagement of internationally-recognized experts in the different fields related to land management, the master's program aims at transferring knowledge and skills through the sensitisation towards anthropogenic environments and issues, and the recognition of cultural assets as drives for development. This complies with

international standards and values or principles which imply a strong commitment to the improvement to the society as a whole.

- Upon completion of this program graduates should be able to:

1. Understand and describe land management problems in a broader societal, political geospatial and legal context.
2. Describe and compare both formal and informal systems and philosophies of land rights and land tenure.
3. Prepare, construct, implement and evaluate active, passive and responsible land-related policies
4. Formulate and assess land governance indicators
5. Design and construct adequate land information and land administration systems to execute transactions and mutations in land rights, land use, land access, land restrictions and land-related boundaries.
6. Prepare the execute land rights related interventions and land use plans
7. Assess potential of risks and conflicts related to land rights, land use and land access.
8. Recognise, evaluate and report land rights and land policy research related problems, and formulate sustainable and responsible solutions, where possible through the interaction with different stakeholders (public authorities, private developers, business owners, land owners, citizens).

3. Target groups

3.1. Type of potential students

The MSc Land Management and Land Tenure program addresses mid-career professionals from developing countries and countries in transition, as well as graduates from Northern countries with an ambition to work in international and multilateral organisations dealing with land policies.

Skilled professionals may include lecturers, researchers, capacity development trainers, administrators and decision makers in public and private institutions from developing countries. These target groups are both technical and non-technical professionals who have already obtained basic university degrees and adequate practical experiences in fields related to land management. Typically such professionals work in Ministries of lands, environment, spatial planning; private sector surveying and spatial consultancy companies; advisory and executive agencies for land management, land administration and spatial planning, Architecture bureaus, construction engineering. They are individuals who have potentials of attaining leading positions in the public and private sectors of their home countries. Such professionals should have a background in one of the following fields: Land management, land administration, geodesy, geoinformatics, urban/rural/spatial planning,

civil/environmental engineering, landscape architecture, quantity surveying/valuation, architecture/building informatics.

3.2 Required entry knowledge of applicants

The required academic background for applicants is a bachelor degree in one of the following fields: land administration, land use planning, urban and rural development, land surveying, geodesy, land valuation, land development, land economics.

The program is designed to empower as future decision makers who are capable of facing the complex problems usually encountered in land management. That is why the admission requirements for admission into the program require that the applicants should have work experience in a field related to land management, which is particularly important for applicants holding academic degrees that are not necessarily related to land management, such as architects, environmentalists, foresters, planners, lawyers and other social science related degrees. In addition, applicants should demonstrate good command of the English language.

3.3. Target number of students per year?

Despite the high need for the type of professionals which this program is generating, the ideal number of students is 15-30 per year. Though this seems on the low end, the course is highly intensive, and requires extensive management on the logistical and administrative side. Moreover, despite the enlarging network of alumni and global contacts, globally there are relatively few experts, with the combined skills to supervise the Master theses. Hence a maximum of 30 students per year is what can be handled currently.

According to calculations, a minimum of 12 students paying the 4000€ study fees are necessary to keep the programme on track, in order to cover the expenses of guest lecturers fees, travelling costs, materials, excursions and study trips expenses (no salaries nor infrastructures considered, because those are covered by TUM).

4. Needs analysis

Many of these more than 150 alumni are working in their home countries holding different important positions related to land management. These alumni and also future graduates have an important meaning as multipliers as future leaders in agencies or private companies. They are welcomed to use our internet alumni-network for staying informed about recent developments in the field of land management. This contributes to the demand of the TU München for e-learning, now fortunately aided. Also, this offer strengthens the connection of the alumni to the TUM and the notion to come back again, such as for the summer schools where they can refresh their personal contacts and knowledge. The full overview of all alumnae and alumni are

shown in the Figure in Annex Statistiken zu Bewerbten, Studierenden, Alumni, erfolgreichen Abschlüssen, Abbrüchen).

Until 2017 the Program had 136 graduates and 28 students. Together there are 164 graduates and students. Of these, Ghana (18), China (14) and Cambodia (12) have the highest involvement in the program in terms of countries. The rate of male enrolment is still higher than that of the female. However, the difference is gradually closing up. Out of the 164 overall enrolments, 100 are male and 64 are female. Although this gap comes directly from the number of applications (it is not related to the selection criteria), the program makes a significant effort to close the gap by introducing strategic events such as Mädchen machen Technik, emphasizing and researching the role of women in land matters, and paying specific attention to inviting female guest lecturers and experts.

From both alumni surveys and survey carried out during refresher and summer courses the career perspectives for LMLT graduates has emerged. The replies showed that they have achieved success at the top level in a variety of sectors. The survey found that the career destinations of the graduates to be in 7 major sectors which represent the main target groups for new candidates and thus were the demand for such a study program concentrates:

- Core land management related fields like land administration, land valuation, land acquisition and distribution, land surveying
- Education sector including teaching, research and program management
- Urban development and planning, civil engineering and architecture
- Environment, agriculture, rural development and forestry
- International organizations (e.g. GIZ, USAID, UN-Habitat, ADB)
- Others land related fields (e.g. GIS, LIS, real estate, etc.)
- Further studies (i.e. other MSc and doctoral research)

The responses from the alumni showed that:

- Approximately 30% of them are working in core land management fields and they are holding good positions in relevant ministries/agencies in respective countries.
- 15% are involved in education sector.
- There is also a high degree of professional employment in environment, agriculture, rural development and forestry sector and urban development and planning sector which accounts 12% and 10% respectively.
- For employed graduates for other land related fields the figure is over 11% with many of them working in the field of GIS and LIS.
- Presently 8% of the alumni are working in international organizations either in their home countries or in abroad.
- Finally, around 10% of the alumni are engaged in full time post-graduate academic programs. The percentage would be almost double if part time doctoral studies would be considered.

Close to 90% the alumni confirm that a connection is perceived between international experience and graduate employability. International experience provides the ability to operate in culturally diverse environments which is a critical component for jobs in international organizations. According to 36% of the alumni outcomes associated with building of alumni network has also contributed to career development.

There are clusters of alumni within certain countries (e.g. 13 TUM alumni in Ghana). This also provides a network which has remarkable contribution in finding career opportunities. Employability is a curriculum issue and there is a variety of ways curriculum can foster employability. The majority of the alumni confirm that the curriculum of the MSc program was a considerable contribution to their career. This fact is applicable to the alumni who had already a job in land related fields before they started their MSc study at TUM.

The survey results also support that higher education (i.e. TUM master's program) can create international job opportunities. The alumni confirmed during the interviews that international experience and network, TUM reputation, international standard of higher education and language skills are the favorable factors to get opportunities in international job markets. On the other hand, some of the alumni mentioned that applicants' performance in terms of high level of knowledge and analytical skills and relevant work experience are mostly important to get international jobs. However, the research finds that for 94% of the alumni TUM master's education paved the way to get a job abroad whereas only 6% disagrees. A further survey would be conducted by the end of the 2016-2018 batch in order to sharpen these data.

5. Market analysis

5.1. External market analysis

Within Germany there are few similar programs which combine the domain of land management or closely related fields (such as geodesy, civil engineering, spatial planning, and landscape architecture) to development. Internationally there are a number of Master programs which offer a similar combination of a focus on land and a focus on development. ANNEX 2 provides an overview of such programs, both in Germany and internationally.

Compared to other programs the LMLT is different in the sense that:

- There is similarity in the kinds of geospatial tools which are used in many of these programs, such as the use of GIS, however the specific focus is on using these tools to redistribute socio-legal aspects of land rights, land access and land use rather than physical aspects of those.
- Generally there is more attention for fit-for-purpose and adaptable technical-legal aspects of land rights, land registration and cadastral systems (more focus on informal systems than on formal systems)

- The relation of land use and land rights as part of development strategies is more prominent in LMLT as compared to other programs.

There is more specific attention for intangible land values (such as tenure security, role of women, customary rights systems) as compared to the economic and financial values which are in other programs.

- Other land management, land administration, land surveying, land use planning, spatial planning programs
- Core curriculum land administration

LMLT master's programme is unique in its holistic view of land management (addressing the urban/rural dichotomy through planning, land tenure and land economic systems, land rights, land administration, governance, land conflicts, environmental risks, technical skills –GIS, GPS, Remote Sensing, Photogrammetry, Cartography-, land information infrastructures), the structure of the programme in which there is a gradual evolution from theory to practice to application, the practical experience through the internship and, above all, the global trans-disciplinary scope utterly necessary due to the varied backgrounds and cultures of our target groups.

LMLT HAS A NUMBER OF UNIQUE SELLING POINTS:

- 1. THE INTERNATIONAL DEVELOPMENT SCOPE. THE PROGRAM IS BUILT ON A FUNDAMENTAL ASSUMPTION THAT MANAGING LAND AND LAND RELATED PROBLEMS DO NOT STOP AT THE BORDERS. KNOWLEDGE AND SKILLS NEED TO BE SHARED INTERNATIONALLY.**
- 2. THE INTERNATIONAL NETWORK OF GUEST LECTURES AND TEACHING APPROACHES. THE SELECTION OF LECTURERS IS BASED ON A LIMITED GROUP OF INTERNATIONALLY RECOGNIZED EXPERTS AND LEADERS IN THE KNOWLEDGE FIELD. IN ADDITION, THE MASTER'S PROGRAM ON LMLT HAS PROVEN IN ITS PAST AND IN RECENT PROJECTS THAT THE NETWORK GENERATED BY MORE THAN 15 YEARS OF INTERNATIONAL STUDENTS IS A GREAT BENEFIT AND WORKING WELL. ALL STUDENTS OF THE LMLT COURSE AT TUM ARE CONNECTED THROUGH THE ALUMNI-NETWORK AND DIFFERENT INTERNATIONAL ACTIVITIES. THIS IS VISIBLE THROUGH THE DIRECT INVOLVEMENT OF ALUMNI IN MASTER'S THESES TOPIC RECOGNITION AND SUPERVISION. USUALLY THESE RELATE TO URGENT PROBLEMS IN DEVELOPING COUNTRIES FROM THE ALUMNI.**
- 3. THE CHOICE OF LEARNING AND EXERCISING MATERIALS. THERE IS A FUNDAMENTAL CHOICE TO RELY ON INTERNATIONAL CASE STUDIES IN ALL MODULES.**
- 4. THE CROSS-CULTURAL INTERACTION BETWEEN INTERNATIONAL STUDENTS.**

5. **CAREER AND RESEARCH OPPORTUNITIES IN INTERNATIONAL ORGANIZATIONS. IN THE SAME WAY AS FOR THE TOPIC FORMULATION THE STUDENTS BENEFIT FROM THE ALUMNI-NETWORK THE CHAIR IS ALSO USING ESTABLISHED CONTACTS FOR ONGOING RESEARCH PROJECTS IN TARGET COUNTRIES FOR FIELD RESEARCH. BESIDES THAT, IN ORDER TO KEEP THE NETWORK ALIVE AND FULLY FUNCTIONING SUMMER SCHOOLS AND REFRESHER COURSES ARE ORGANIZED REGULARLY IN DIFFERENT LOCATIONS FOR OUR ALUMNI'S ALL OVER THE WORLD. (E.G. GHANA REFRESHER COURSE IN SUMMER 2017, CHINA SUMMER SCHOOL IN 2017, REFRESHER COURSE IN INDONESIA IN 2016).**
6. **THE DEVELOPMENT OF TECHNICAL SKILLS FOR WHICH TUM IS INTERNATIONALLY RECOGNIZED, APPLIED ON CHALLENGING CASE STUDIES ABROAD.**

5.2. Internal market analysis

Are there any similar programs at TUM?

There are 5 programs at TUM with which the LMLT program has a connection. These include:

- Master Geodesy and Geoinformation
- Bachelor Bodenordnung and Landentwicklung
- Civil Engineering
- Environmental Engineering
- Landscape Architecture

Compared to other courses at TUM, LMLT is specifically connected to land related problems in countries and regions in development and in transition. Such include informal (unrecorded), yet legitimate land rights, unplanned settlements and rapid urban growth, dynamic and disputed land use, multiple and conflicting claims on land. LMLT is transdisciplinary, in between BGU, Landscape Architecture, Governance and Politics, and Spatial Planning and Management.

The focus of LMLT is however different in multiple ways:

- First of all, the program is geared towards professionals in developing countries and countries in transition primarily. This implies that the specific contexts of these countries and the need for multicultural and cross-cultural learning are quite different. For example this becomes clear in the kinds of cases and case studies which are used as lecturing and exercise material. These are always from different countries.
- The contribution of participants (both lecturers and students) from developed countries is also relevant, because the focus of the programme is the

development of ground breaking tailor-made strategies for any given case study, rather than the mere technology transfer to developing countries. This scope is transcendent because once the students acquire the knowledge and skills, they go back to their home countries to implement them, usually to face the challenge of being set in a thoroughly different environment, with different resources, policies, administration, interaction and culture, thus instead of providing a guideline of how to deal with land related issues, we trigger creativity to develop innovative ideas.

6. Structure of the program

The content of the program relies on a number of international documents which shape the field of land management and land tenure:

1. The core functional concepts of responsible land management and responsible land administration, developed in (de Vries & Chigbu, 2017), (Zevenbergen, de Vries, & Bennett, 2015) and (BMZ-GIZ, 2016)
2. The land management and land administration paradigms, as presented in (Magel, Thiel, & Espinoza, 2016), (Williamson, Enemark, Wallace, & Rajabifard, 2010)
3. Four international documents: Voluntary guidelines of responsible land tenure (FAO, 2012), The Continuum of land rights (GLTN (Global Land Tool Network), 2015), The fit-for-purpose land administration (Enemark, Bell, Lemmen, & McLaren, 2014) and the land administration domain model (Lemmen, van Oosterom, & Bennett, 2015).

From these basic references the following comprehensive modules are derived:

	Title	Topics / content
1	Land management in theory and practice	Defining land management Defining land interventions Tools of land management Principles of Land administration Principles of spatial and territorial development Goals, tools, laws, processes of: Urban planning and development Rural planning and development Land consolidation Master planning Introduction to basic geospatial tools (RS, GIS) to visualise, plan and develop in rural and urban areas.
2	Land tenure systems and land economics	Formal and informal land rights Continuum of land rights Bundle of land rights Land restrictions Social tenure domain model

		<p>Introduction to social and technical tools for land information management</p> <p>Theories and methods of land economics</p> <p>Economic models and indicators of land development</p> <p>Principles of land and property valuation</p> <p>Land valuation systems</p>
3	Land administration	<ul style="list-style-type: none"> • Types of cadastral information systems (Land / parcel-based information systems, fiscal cadastres, Property / valuation information system, legal cadastres and land registries) • main principles of land registration including the mirror principle (the register reflects what is on the ground), the curtain principle (so that no other enquiries need to be made) and the insurance principle (so that the records are guaranteed). <p>Land administration domain model</p> <p>Cadastral information systems</p> <p>Land registers</p> <p>Property / valuation information system</p> <p>Parcel (re-)construction and mapping (Cadastral surveying, terrestrial measurements)</p> <p>Tenure (re-)construction and mapping (Airborne measurements, UAV measurements, photogrammetry)</p> <p>Measuring local and regional land tenure and development (Satellite-based measurements, remote sensing,)</p>
4	Internship	
5	Photogrammetry, Remote Sensing and Positioning	<p>Preparation for internship (rules of conduct, review of previous work, summary of previous intern reports)</p> <p>Agreement on content and objective of internship</p> <p>Execution of practical activities</p> <p>Summarizing practical activities in a concise report</p> <p>Discussion of report with host organisation</p> <p>Preparation of report, including reflection.</p>
6	Cartography, GIS and Land Information Infrastructure	<p>Geographic information system</p> <p>Land / parcel-based information systems</p> <p>Building information systems</p> <p>Visualisation tools and techniques of land rights and land dynamics</p>
7	Environmental risk management	<p>Models and theories of assessing of land related risks, hazards, conflicts</p> <p>Environmental impact assessment</p>
8	Land policy, land governance and land conflicts management	<p>Tools of land governance</p> <p>Voluntary guidelines of responsible land tenure</p> <p>Active / passive land policy</p> <p>Levels of land policy</p>

		Introduction to methodological tools for scenario development and comparison Conflict management Post-conflict land administration / management Indicators of land governance (LGOV)
9	Project management and preparation for Master's thesis	Land related research design Text-based methods (documentary analysis, discourses analysis, narrative analysis) Choice and preference-based methods (Q methodology, stated-choice) Information system design methods Spatial / location-based methods Case study methods
10	Master's thesis	Conduct of relevant and appropriate literature review related to research problem and research objective Choice of a suitable methodology for the research Prepare empirical data collection and analysis strategy, or design prototype Conduct empirical data collection and analysis during a fieldwork or documentary study Critical assessment of quality of acquired and derived data Presentation of intermediate and final results Formulation of conclusions and recommendations Critical reflection on the research process as a whole

The shape and sequence of the study program is built-up combining three logics:

1. TYPE OF CHALLENGES AND CONTENT: NEED TO COMBINE THREE TYPES KNOWLEDGE, SKILLS, COMPETENCIES THAT ANY GRADUATE SHOULD HAVE, PREFERABLY IN THE SEQUENCE AS PRESENTED: CONTEXTUAL KNOWLEDGE, TECHNICAL TOOLS, SYNTHETIC AND RESEARCH SKILLS.

THE SEQUENCE OF BLOOM'S TAXONOMY: KNOWLEDGE, COMPREHENSION, APPLICATION, ANALYSIS, SYNTHESIS, EVALUATION. THE FURTHER IN THE COURSE THE MORE EMPHASIS ON HIGHER LEVELS OF LEARNING.

The manner in which Blooms taxonomy re-emerges in the module descriptions is using the following key words systematically in providing the learning outcomes:

Bloom's taxonomy	Learning outcomes presented through verbs:
Knowledge	Record, examine, reproduce, arrange, define, outline, state, present, describe, identify, show, quote
Comprehension	Discuss, clarify, classify, explain, translate, extend, interpret, review, select, summarise, contrast, estimate

Application	Solve, examine, modify, apply, use, practice, illustrate, choose, relate, calculate, classify, demonstrate
Analysis	Differentiate, investigate, categorise, appraise, criticize, debate, compare, contrast, distinguish, solve, analyse, calculate
Synthesis	Assemble, organize, compose, propose, construct, design, create, formulate, integrate, modify, derive, develop
Evaluation	Judge, select, evaluate, choose, assess, compare, estimate, rate, measure, argue, defend, summarise

2. THE LEARNING AND TEACHING APPROACHES ARE PROGRESSIVELY FROM PREDOMINANTLY CLASSROOM TEACHING TO INDEPENDENT LEARNING. IN OTHER WORDS, THE FURTHER IN THE COURSE THE MORE EMPHASIS ON HIGHER LEVELS OF LEARNING.

The resulting structure is as follows:

1 st (Winter) Semester	2 nd (Summer) Semester	3 rd (Winter) Semester
1. Land management in theory and practice <i>12 credits</i>	5. Photogrammetry, Remote Sensing and Positioning <i>4 credits</i>	10. Master's thesis land management and land tenure <i>30 credits</i>
2. Land tenure systems and land economics <i>6 credits</i>	6. Cartography, GIS and Land Information Infrastructure <i>6 credits</i>	
3. Land administration <i>6 credits</i>	7. Environmental risk management <i>6 credits</i>	
4. Internship <i>6 credits</i>	8. Land policy, land governance and land conflicts management <i>8 credits</i>	
	9. Project management and preparation for Master's thesis <i>6 credits</i>	
<i>30 credits</i>	<i>30 credits</i>	<i>30 credits</i>
<i>90 credits</i>		

3. The design logics are coming back in the sequence and type of modules and in the teaching and learning approaches in the following manner:

Module	Title	Content	Primary emphasis according to Bloom	Independent learning
1	Land management in theory and practice	Contextual focus Socio-technical /institutional focus	Knowledge	Limited
2	Land tenure systems and land economics		Comprehension	
3	Land administration			
4	Internship			
5	Photogrammetry, Remote Sensing and Positioning	Technical, tools and methods focus	Application	Moderate
6	Cartography, GIS and Land Information Infrastructure		Analysis	
7	Environmental risk management			
8	Land policy, land governance and land conflicts management	Synthetic focus – reform and evaluation	Synthesis & evaluation	Significant
9	Project management and preparation for Master's thesis			
10	Master's thesis			

The structure of the program is relevant in relation to its goal of forming well-educated experts with a holistic view of land management, capable of recognising and assessing land related risks and issues, in the sense that it enhances the gradual transition from acquisition of knowledge, skills and tools towards the application of such in specific case studies.

The first semester focuses in obtaining the conceptual and theoretical background of land management, which is immediately exercised in formal praxis through the internship in real projects. The second semester focuses on the acquisition of the technical tools and methods that would enable to students to create and implement innovative solutions. Throughout the whole program, the complexity of land

management related problems is progressively escalated and matched to the obtained capabilities, which are finally put under strain with the master's thesis.

The master's thesis sums up the graduates' abilities to recognise a land management related issue, to analyse, evaluate and synthesise it making use of the methods and tools acquired through the program, in order formulate an innovative solution specifically traced for their case study.

Mobility is possible in various ways:

- 1) Through the internship period. Students are free to choose where an internship is executed.
- 2) Through the thesis period. Most students conduct their thesis fieldwork in their home country.
- 3) Through the option for external students to follow individual modules.

7. Organizational connection and responsibilities

The capacity to manage this program constitutes a 50% job position (TVL E13), which is provided to the chair Bodenordnung und Landentwicklung by the Department of Civil, Geo and Environmental Engineering. In this position (course coordinator) all organizational, content-related and social task are bundled. To this belongs the administration, management, marketing, conception, content-design and also technical and social supervision of the students.

The Professor of the chair is in charge of the content-design of the master course and makes contact with guest lecturers over his network. Further scientific staff members regularly or occasional take over tasks, for example the arrangement of internships, supervision of master theses or supervision of guest lecturers. In addition to this, the managing director of the chair takes over administrative tasks like accounting, financial management, exam management and updating the website. Furthermore, there are Tutors (student or scientific assistants) supporting the course coordinator in their daily work, in particular by helping the students in social and organizational questions and challenges, for example the search for accommodation, the organization of excursions and events, and the reception of new students in the airport. Several Professors and scientific staff members from our and from other TUM-departments give lectures, seminars and exercises in the master course. Details are in the resource plan in the Annex.

Besides the contributions of staff members of BoLe and other departments of TUM, a significant part of the lectures (circa 60%) are conducted by external teachers. These are renowned Professors from other Universities from Germany and abroad, freelancing lecturers or trainers (for example in conflict management) and (mainly graduated) practical experts. Internationally renowned lecturers are necessary for the professional quality of the master course and his reputation, while practical experts are essential for the practical orientation. Most of the tasks regarding the admission

and the exam administration are in the hands of the admission and examination office of TUM.

Day to day responsibilities are shared between program director and coordinator, hence most of the actions and decisions are consensually taken, ideally after consulting with other staff members and module coordinators in the regular meetings, since communication and transparency are key elements in responsibility positions. In case of disagreement about marks than the Prüfungsausschuss of the faculty BGU decides.

The LMLT course is part of the system accreditation process at the entire TUM. This means that the LMLT has to adhere to the standards of TUM education. This status has been achieved. Moreover, as part of this process there is a yearly quality management circle. Hereby student evaluations are carried out, and a yearly course improvement plan is made up.

A specific admission commission is formally responsible for the selection and admission. The day-to-day evaluation of applications is executed by the course coordinator. The applications are assessed based on a combination of TUM and DAAD criteria admission criteria. In summary, these criteria include language, experience, employability, personal motivation (usually related to working experience) and academic criterial. They include:

Academic Requirements: a Bachelor's degree with relevance to the field of Land Management

Professional Background: at least 2 years of practical experience in a field related to Land Management

English Requirements for non-native speakers:

TOEFL (Test of English as a Foreign Language)

Internet based Test (IbT): 79

Computer based Test (CbT): 213

Paper based Test (PbT): 550

IELTS (International English Language Testing System): 6.0

Cambridge Main Suite of English Examinations

Cambridge Certificate in Advanced English (CAE)

Cambridge Certificate of Proficiency in English (CPE)

With reference to the above list, proficiency test certificate of IELTS, TOEFL or Cambridge Main Suite of English Examination are required for non-native English speakers, unless they hold already an academic degree in which the medium of education has been English. Native English speakers or applicants who have completed an academic program (Bachelors or Master) in English, do not need to submit the results of an English proficiency test. Applicants who have completed a program in English must submit a certificate of medium of education (English) from the respective institution.

The procedure for enrolment involves candidates enrolling through TUM's online portal and making scholarship applications to DAAD (where such is the case). These applications are then assessed based on the quality of academic backgrounds,

professional experiences, technical skills and English Language skills. One by one oral interviews are conducted in person (in cases where candidates are willing to make themselves physically available) or by telephone (in cases where candidates are unable to be physically present). The results of preliminary assessments and interviews leads to the ranking of candidates to be presented to a selection committee. The selection committee consists of DAAD staffs, TUMs (from within and outside Land Management Chair) and external stakeholders (usually from land management professionals from GIZ) participate in the selection of candidates for DAAD scholarship awards. It is the committee that determines who is finally accepted or rejected for admission.

8. Resources

8.1. Personnel resources

Coordination and coordinator

The program coordinator of Dr. Pamela Durán Díaz, email pamela.duran@tum.de . The program coordinator is responsible for all daily coordination, and is the first person to contact for any questions related to:

- The execution of the day-to-day program
- Lectures, lecturers, internships, progress reports
- scheduling and rescheduling of the daily program
- notices of illness or problems
- admissions and completion of the degree
- exams management

Program Director

The Program Director is Prof. Dr. Ir. Walter T. de Vries, wt.de-vries@tum.de .

The role of the program director is:

- Assessing the academic contents of the programme
- Theses supervision
- Networking
- Linking the research topics along with the research lines of the chair
- Assigning Module coordinators

Module coordinator

Each of the modules is coordinated by a scientific staff member. She or he is responsible for ensuring the comprehensiveness of the entire module, the organisation and execution of the entire module, the day-to-day program, the contact with the guest lectures and preparation for the assessment.

Sem ester	Module	Title	Module coordinator
1	1	Land management in theory and practice	de Vries
	2	Land tenure systems and land economics	Chigbu
	3	Land administration	de Vries
	4	Internship	Duran

2	5	Photogrammetry, Remote Sensing and Positioning	Stilla
	6	Cartography, GIS and Land Information Infrastructure	Bendzko
	7	Environmental risk management	Wunderlich
	8	Land policy, land governance and land conflicts management	Chigbu
	9	Project management and preparation for Master's thesis	Chigbu
3	10	Master's thesis	Duran

The complete list of personnel resources is included in the Annex Ressourcenübersicht.

Supervisor

Supervisors are appointed for each of the internships and each of the individual MSc theses. Each MSc student will have at least one supervisor from TUM. Traditionally the program director is co-supervisor for all theses to ensure the comparative quality and grading of all theses. Other supervisors may be appointed by request or suggestion.

The role of the supervisor is to guide, stimulate and support the student during the individual MSc research phase. A supervisor is not responsible for the content and progress of the thesis work. This responsibility lies with the student.

Course secretary

The course secretary supports the program in all logistical, administrative and financial matters.

8.2 Logistical and financial resources

The following physical resources and facilities are available:

In Arcisstraße 21, 80290 Munich:

Seminar Room 0769 (56,17 m²) for daily lectures

Hörsaal 0790 (113,83 m²) for mid-term and final presentations

CIP-Pool K112 Computer Lab (66,48 m²) for Cartography and GIS lectures

Library of the Chair of Land Management for literature consultation and small meetings (up to 12 people)

In Lindenweg 15, 82223 Eichenau:

Max Kneißl Institut für Geodäsie for Global Navigation Satellite Systems lectures

Regarding finances, LMLT master's programme strongly relies on the funds provided by the Deutscher Akademischer Austauschdienst (German Academic Exchange Service, DAAD), which consists on sponsoring a varying number (from 6 to 12) of students per academic year. Such sponsorship implies covering their living expenses, the German language course, and their flight tickets from/to their home countries.

The programme receives an 80€ fee per DAAD student per month, which is strictly used for materials for lectures and up to two part-time assistants (Wissenschaftliche Hilfskräfte, HiWis) for the programme coordinator, which sums up to 18.000€ per year.

An additional DAAD grant called "Accompanying seminars for professionals and executives from developed and developing countries Type I-III (Begleitseminare für Fach- und Führungskräfte aus Entwicklungs- und Schwellenländern Typ I-III) for the Team Building activity is available upon application on the online portal. The grant could be used to cover daily allowances, part of the moderator's honorary (up to 250€/day), mobility and accommodation of the funded people, including coordinator, 1 or 2 moderators, and students. The covered sum in 2016 was 4.361,29€, which had to be justified with a report of activities and original invoices.

DAAD sponsorship for the Master's Programme does not cover the study fees of the funded students (4.000€), hence the Chair is obliged to find alternative sponsors to cover the study fees of the scholarship holders, such as Förderkreis. The calculation is provided in Annex Fee Calculation.

The salaries of TUM staff members (internal lectures, coordinator and programme director) are paid by TUM.

The physical materials available for the LMLT are:

- White board
- Blackboard
- Flip board
- Beamer

Plus, lecturers share their slides in Moodle and might distribute printed contents (such as the Open Title software manual, or FAO's publication on Voluntary Guidelines).

Along with TUM's matriculation fees, students must pay a 4.000€ fees for the whole programme.

The justification for raising the fees is as follows. The participation of international experts is key for the Master's programme, since its uniqueness relies on the international development scope and network. Hence, the 4.000€ fees are based on a strict calculation of the honorary (roughly 470 teaching hours, 50€ per hour), travelling and accommodation costs of the international experts and guest lecturers, as well as the Winter and Summer Excursions (including transportation, accommodation, daily allowances, and entrance fees of the students), which round up to 48.000€. Meaning that a minimum of 12 students per year is required.

We intend, however, to reduce the expenses to the minimum by travelling in economy class, eating at TUM's facilities, establishing agreements with accommodations, searching for group tickets. In order to avoid an increase of the fees, external supervisors perform the task on a voluntary basis.

München , den. 16.03.2018



Prof. Walter T. de Vries

Studiendekan der Ingenieurfacultät Bau, Geo, Umwelt

Prof. Christoh Gehlen

Dekan der Ingenieurfacultät Bau, Geo, Umwelt

9. Annexes

ANNEX Market analysis

Statistics on alumni and participants

Statistiken zu Bewerbungen, Studierenden, Alumni, erfolgreichen Abschlüssen, Abbrüchen

FIGURE 1: DETAILS OF CURRENT STUDENTS

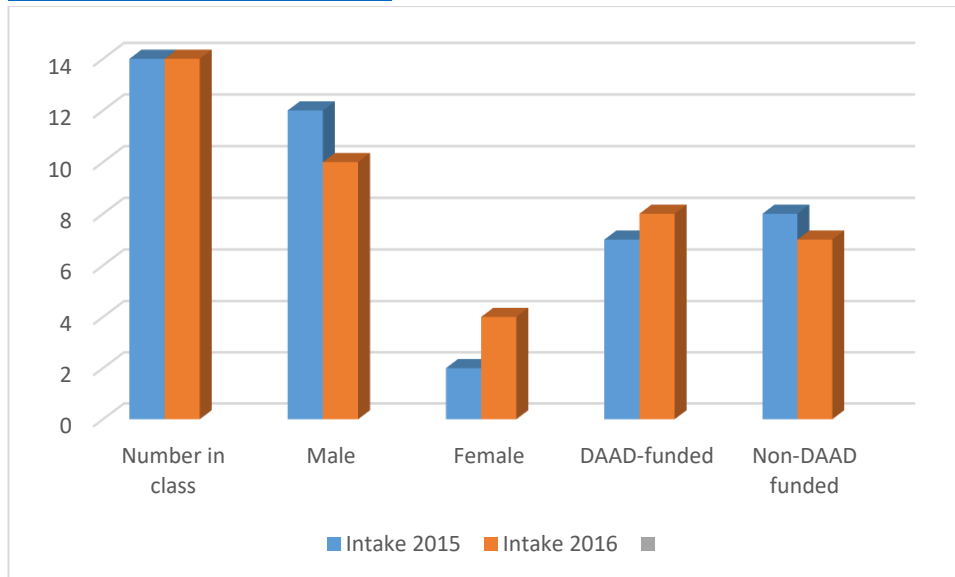


FIGURE 2: DETAILS OF CURRENT STUDENTS' ORIGINS

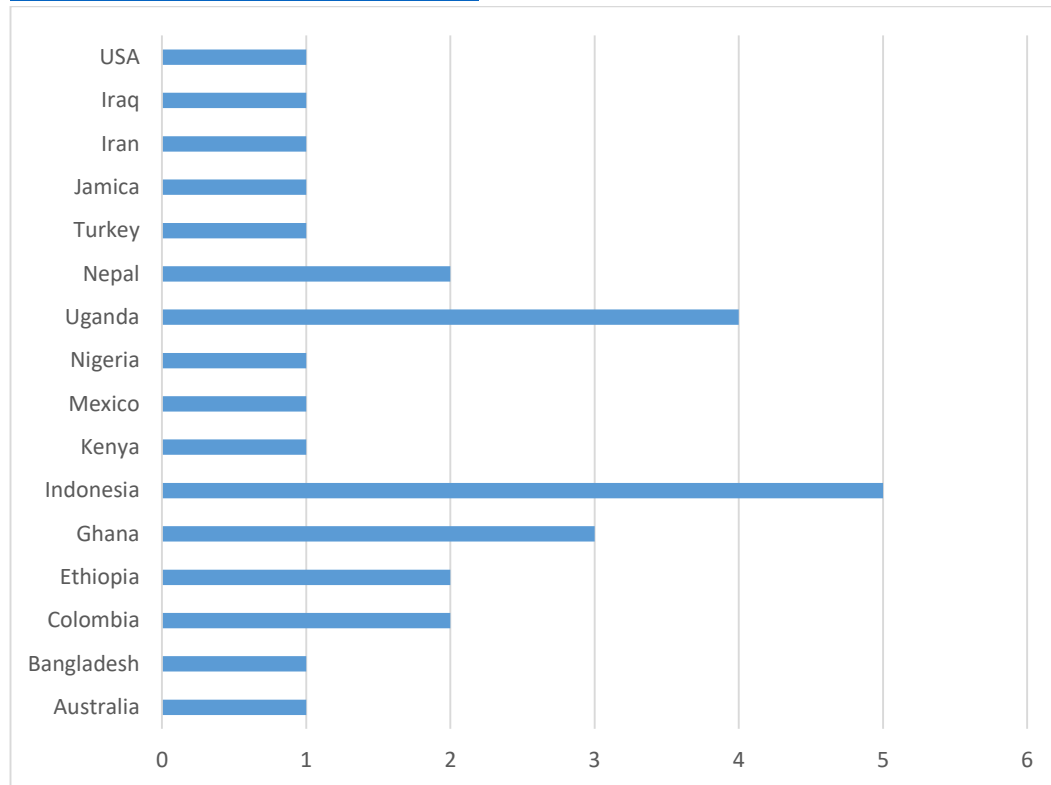
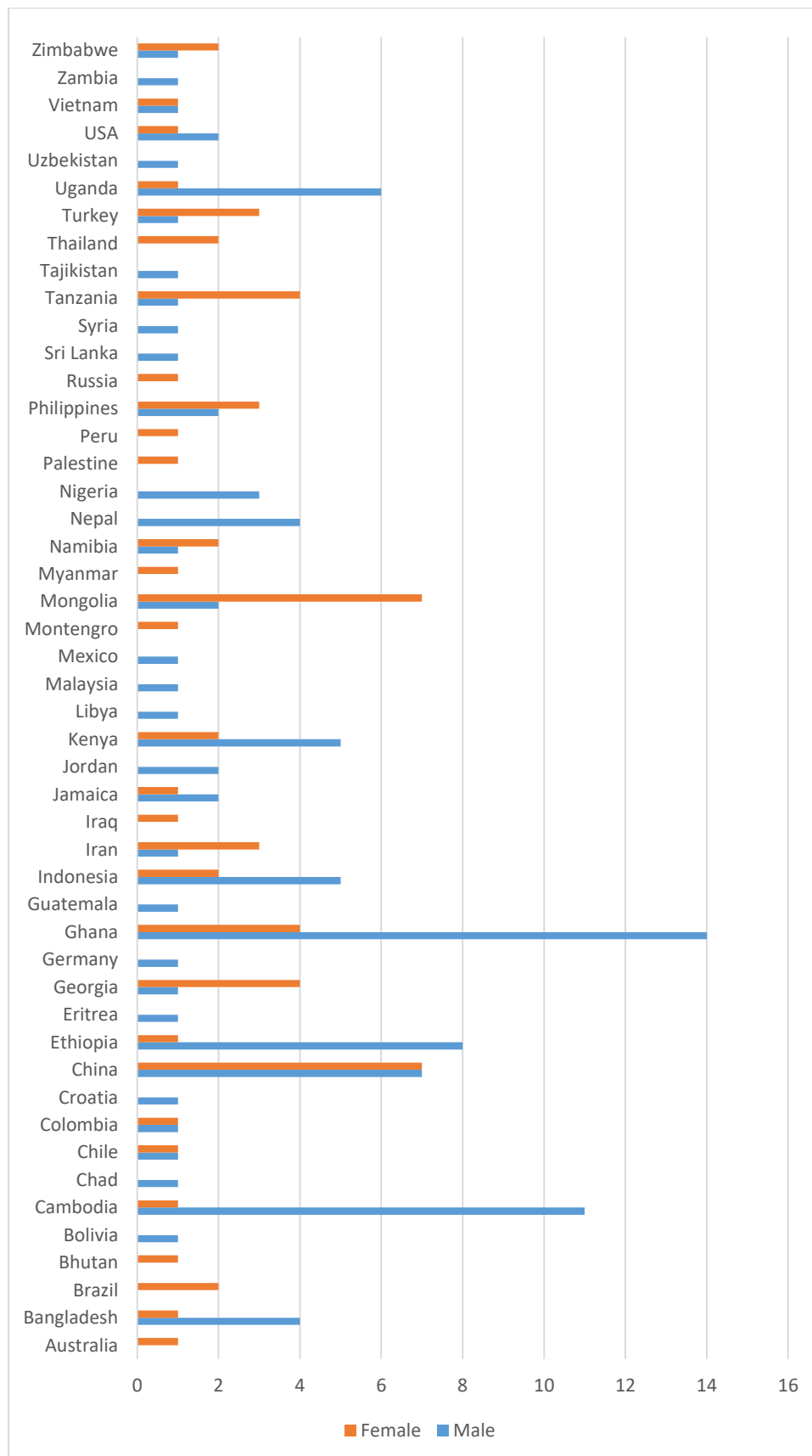


Figure 3: Overview of all alumni and students of the program





ANNEX Staff and guest lecturers

Ressourcenübersicht für den Studiengang Master's Programme Land Management and Land Tenure

IDEN TIK ATOR	MO DUL	MODUL_NAME	MO DUL _TYP	LVN R	LV_TITLE	LV _A RT	S W S	PERSON ALKATE GORIE	VOR NA ME	FAMI LIENN AME	FUN KTIO N	LEHRSTUHL
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000 272 5	Land Conflict and Conflict Management	VO	2	Prof.	Walt er Tim o	de Vries	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000 272 5	Land Conflict and Conflict Management	VO	2	WiMi	Pam ela	Duran Diaz	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000 272 5	Land Conflict and Conflict Management	VO	2	WiMi	Tobi as	Bendz ko	Leite rln	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000 272 5	Land Conflict and Conflict Management	VO	2	WiMi	Tobi as	Bendz ko	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000 272 6	Land Policy and Land Governance	VO	2	Prof.	Walt er Tim o	de Vries	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000 272 6	Land Policy and Land Governance	VO	2	WiMi	Pam ela	Duran Diaz	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000	Land Policy and Land Governance	VO	2	WiMi	Tobi as	Bendz ko	Leite rln	Professur für Bodenordnung und

IDEN TIK ATOR	MO DUL	MODUL_NAME	MO DUL _TYP	LVN R	LV_TITLE	LV _A RT	S W S	PERSON ALKATE GORIE	VOR NA ME	FAMI LIENN AME	FUN KTIO N	LEHRSTUHL
				272 6								Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 8	Bodenpolitik, Land Governance und Konfliktmanagement	Pflic htfa ch	000 000 272 6	Land Policy and Land Governance	VO	2	WiMi	Tobi as	Benz ko	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 9	Projektmanagement und Vorbereitung zur Masterthesis	Pflic htfa ch	000 000 274 2	Project Planning and Impact Monitoring	SE	2	Prof.	Walt er Tim o	de Vries	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 9	Projektmanagement und Vorbereitung zur Masterthesis	Pflic htfa ch	000 000 274 2	Project Planning and Impact Monitoring	SE	2	WiMi	Uch end u	Chigb u	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 9	Projektmanagement und Vorbereitung zur Masterthesis	Pflic htfa ch	000 000 274 2	Project Planning and Impact Monitoring	SE	2	WiMi	Uch end u	Chigb u	Leite rIn	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 9	Projektmanagement und Vorbereitung zur Masterthesis	Pflic htfa ch	000 000 274 3	Preparation for Master's Thesis	SE	2	Prof.	Walt er Tim o	de Vries	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 9	Projektmanagement und Vorbereitung zur Masterthesis	Pflic htfa ch	000 000 274 3	Preparation for Master's Thesis	SE	2	WiMi	Pam ela	Duran Diaz	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 9	Projektmanagement und Vorbereitung zur Masterthesis	Pflic htfa ch	000 000	Preparation for Master's Thesis	SE	2	WiMi	Uch end u	Chigb u	Leite rIn	Professur für Bodenordnung und

IDEN TIK ATOR	MO DUL	MODUL_NAME	MO DUL _TYP	LVN R	LV_TITLE	LV _A RT	S W S	PERSON ALKATE GORIE	VOR NA ME	FAMI LIENN AME	FUN KTIO N	LEHRSTUHL
				274 3								Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4002 9	Projektmanagement und Vorbereitung zur Masterthesis	Pflic htfa ch	000 000 274 3	Preparation for Master's Thesis	SE	2	WiMi	Uch end u	Chigb u	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 0T2	Kartographie, GIS und Geodateninfrastrukt ur	Pflic htfa ch	000 000 181 6	Visualization of geodata and cartography (for Landmanagement)	VI	1	WiMi	Chri stian	Murp hy	Votr agen de/r	Lehrstuhl für Kartographie (Prof. Meng)
1630 16 333	BGU 4003 0T2	Kartographie, GIS und Geodateninfrastrukt ur	Pflic htfa ch	000 000 181 6	Visualization of geodata and cartography (for Landmanagement)	VI	1	WiMi	Chri stian	Murp hy	Leite rln	Lehrstuhl für Kartographie (Prof. Meng)
1630 16 333	BGU 4003 0T2	Kartographie, GIS und Geodateninfrastrukt ur	Pflic htfa ch	000 000 181 6	Visualization of geodata and cartography (for Landmanagement)	VI	1	WiMi	Liqu u	Meng	Votr agen de/r	Lehrstuhl für Kartographie (Prof. Meng)
1630 16 333	BGU 4003 0T2	Kartographie, GIS und Geodateninfrastrukt ur	Pflic htfa ch	000 000 269 4	GIS for Land Management and Land Tenure	VO	1	WiMi	Tatj ana	Kutz ner	Votr agen de/r	Lehrstuhl für Geoinformatik (Prof.Kolbe)
1630 16 333	BGU 4003 0T2	Kartographie, GIS und Geodateninfrastrukt ur	Pflic htfa ch	000 000 274 4	Land Information Infrastructures	VO	6	Prof.	Walt er Tim o	de Vries	Leite rln	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 0T2	Kartographie, GIS und Geodateninfrastrukt ur	Pflic htfa ch	000 000	Land Information Infrastructures	VO	6	Prof.	Walt er	de Vries	Votr agen de/r	Professur für Bodenordnung und

IDEN TIK ATOR	MO DUL	MODUL_NAME	MO DUL _TYP	LVN R	LV_TITLE	LV _A RT	S W S	PERSON ALKATE GORIE	VOR NA ME	FAMI LIENN AME	FUN KTIO N	LEHRSTUHL
				274 4					Tim o			Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 0T2	Kartographie, GIS und Geodateninfrastrukt ur	Pflic htfa ch	000 000 274 4	Land Information Infrastructures	VO	6	WiMi	Pam ela	Duran Diaz	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 1T2	Photogrammetrie, Fernerkundung und Geolokalisation	Pflic htfa ch	820 700 256	Basic Elements of GPS	VO	0 , 1	WiMi	Chri stop h	Reith	Votr agen de/r	Lehrstuhl für Geodäsie (Prof. Wunderlich)
1630 16 333	BGU 4003 1T2	Photogrammetrie, Fernerkundung und Geolokalisation	Pflic htfa ch	820 700 256	Basic Elements of GPS	VO	0 , 1	WiMi	Pete r	Wasm eier	Votr agen de/r	Lehrstuhl für Geodäsie (Prof. Wunderlich)
1630 16 333	BGU 4003 1T2	Photogrammetrie, Fernerkundung und Geolokalisation	Pflic htfa ch	820 700 256	Basic Elements of GPS	VO	0 , 1	WiMi	Tho mas	Wund erlich	Votr agen de/r	Lehrstuhl für Geodäsie (Prof. Wunderlich)
1630 16 333	BGU 4003 6	Umweltrisikomanage ment	Pflic htfa ch	000 000 063 5	Land Management and Land Administration Issues in ERM	VO	1	Prof.	Walt er Tim o	de Vries	Leite rin	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanage ment	Pflic htfa ch	000 000 063 5	Land Management and Land Administration Issues in ERM	VO	1	Prof.	Walt er Tim o	de Vries	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanage ment	Pflic htfa ch	000 000 135 3	Landslides I - Introduction, Background and Overview	VO	1	WiMi	Kuro sch	Thuro	Votr agen de/r	Lehrstuhl für Ingenieurgeologie (Prof. Thuro)

IDEN TIFIK ATOR	MO DUL	MODUL_NAME	MO DUL _TYP	LVN R	LV_TITLE	LV _A RT	S W S	PERSON ALKATE GORIE	VOR NA ME	FAMI LIENN AME	FUN KTIO N	LEHRSTUHL
1630 16 333	BGU 4003 6	Umweltrisikomanagement	Pflic htfa ch	000 000 210 5	Introduction to Water Rescources Management for ERM	VO	1	Prof.	Walt er Tim o	de Vries	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanagement	Pflic htfa ch	000 000 210 5	Introduction to Water Rescources Management for ERM	VO	1	WiMi	Pam ela	Duran Diaz	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanagement	Pflic htfa ch	000 000 210 5	Introduction to Water Rescources Management for ERM	VO	1	WiMi	Tobi as	Benz ko	Leite rln	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanagement	Pflic htfa ch	000 000 210 5	Introduction to Water Rescources Management for ERM	VO	1	WiMi	Tobi as	Benz ko	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanagement	Pflic htfa ch	000 000 213 2	Geospatial Data Applications + ERM	VO	2 , 2 5	Prof.	Walt er Tim o	de Vries	Leite rln	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanagement	Pflic htfa ch	000 000 213 2	Geospatial Data Applications + ERM	VO	2 , 2 5	WiMi	Tobi as	Benz ko	Votr agen de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)
1630 16 333	BGU 4003 6	Umweltrisikomanagement	Pflic htfa ch	000 000 213 2	Geospatial Data Applications + ERM	VO	2 , 2 5	WiMi	Ger o	Suhne r	Mitw irken de/r	Professur für Bodenordnung und Landentwicklung (Prof. de Vries)

IDEN TIFIK ATOR	MO DUL	MODUL_NAME	MO DUL _TYP	LVN R	LV_TITLE	LV _A RT	S W S	PERSON ALKATE GORIE	VOR NA ME	FAMI LIENN AME	FUN KTIO N	LEHRSTUHL
1630 16 333	BGU 4003 6	Umweltrisikomanage ment	Pflic htfa ch	820 749 032	Geodetic Monotoring of Landslides	VO	1	WiMi	Chri stop h	Reith	Votr agen de/r	Lehrstuhl für Geodäsie (Prof. Wunderlich)
1630 16 333	BGU 4003 6	Umweltrisikomanage ment	Pflic htfa ch	820 749 032	Geodetic Monotoring of Landslides	VO	1	WiMi	Tho mas	Wund erlich	Votr agen de/r	Lehrstuhl für Geodäsie (Prof. Wunderlich)



Other program related to land management or similar at TUM or in Germany	Inclination towards	How LMLT differs and is complementary
Land Management – TUM Freising – Pauleit https://www.landschaftsentwicklung.wzw.tum.de	Landscape development	LMLT focuses more on land tenure, (regulatory and political) land use planning, and property formation modelling; can connect by jointly developing integrated land use planning methodologies
Terrestrial ecology – TUM Freising – Weisser http://www.toek.wzw.tum.de/index.php?id=2	Land use, biodiversity and ecosystem functioning	LMLT focuses more on land tenure, (regulatory and political) land use planning, and property formation modelling; can connect by jointly using GIS and RS
Universität Bundeswehr – Master Bauingenieurswesen und Umweltwissenschaften - LVs in Land Management (in German) https://www.unibw.de/bauv9/landmngmnt/lehre/lehrveranstaltungen	Land consolidation, land valuation, rural development,	LMLT is in English and has international focus. In addition, it includes the application of smart technologies, including GIS; there are similarities in the manner in which rural development and land consolidation methodologies are treated
University Bonn – Geodetic engineering - specialisation geo-information and spatial development https://www.ge.uni-bonn.de/profiles/profiles#Profile_GSD	Urban planning and real estate management	LMLT focuses more on connecting spatial planning to both rural and regional development, and provides a more international scope. There is overlap in the type of instruments offered, such as peri-urban / integrated regional planning methodologies
Land Management – Leibniz Uni Hannover – Voß - https://www.gih.uni-hannover.de/immomanagement.html	Land and property valuation, land market analysis	BoLe could develop more research on public spatial values (as opposed to private or economic, cost-based values). We could join in comparing outcomes in decisions when relying on public versus private values
Land Management – TU Dresden – Weitkamp https://tu-dresden.de/bu/umwelt/geo/gi/lm	Land valuation methods and behaviour / game theory of land management stakeholders	BoLe could develop more research on the role of perceptions values and beliefs as a basis for (discretionary) behaviour. We could join in comparing / connecting belief systems research to behaviour research.
Land Management – TU Darmstadt – Linke - http://www.geodesy.tu-darmstadt.de/landmanagemen	Urban & regional development. Use of GIS in planning systems.	

Other program related to land management or similar at TUM or in Germany	Inclination towards	How LMLT differs and is complementary
t/geodaesie_1/Startseite_Fachgebiet_Landmanagement.de.jsp	Property and land valuation.	

Other program related to land management or similar globally	Inclination towards	How LMLT differs and is complementary
University Twente – Land administration - https://www.itc.nl/land-administration	Land administration, land information systems, land informatics	LMLT has a more clear emphasis on land use management and land development rather than geospatial tools for land rights information systems. There is a similar target group
Erasmus University – Urban land governance - https://www.ihs.nl/prospective_students/ihs_programmes/msc_in_urban_management_development/urban_land_governance_ulg/	Urban planning and development, land policy, land governance	LMLT includes rural development and planning, and also deals more with technical-legal tools to prepare and implement land interventions
Math & geospatial sciences – RMIT – Melbourne – David Mitchell - http://www.rmit.edu.au/contact/staff-contacts/academic-staff/m/mitchell-associate-professor-david	Climate change, land use and land administration	BoLe places more emphasis on environmental mitigation / planning in land use planning rather than disaster / climate change mitigation / planning. We could join on research on land use planning.
Univ. Laval, Quebec, - Roy - http://www.crg.ulaval.ca/?portfolio=francis-roy	Cadastre, land registration, land information systems	BoLe reasons from German (and NL) systems of land administration as opposed to francophone systems and perceptions of land rights. We could join however on research on principles of land rights and land tenure systems.
Land management and geoinformatics – Aalborg - http://vbn.aau.dk/en/organizations/land-management--geoinformatics(65d7a0f9-15ab-43bc-a1d1-8ce124b30fbf).html	Land development and property law, spatial development and planning	The main difference is that Aalborg's is a 4 semester programme, in which the 3 rd semester is dedicated to an internship or an abroad research stay. Also, there is no focus on the international spectrum for application (regarding land laws, values, policies or administration systems) beyond Europe and there is no specific attention for land conflicts management.

Dep. Land management and landscape architecture - Univ. Agriculture - Krakow – Hernik		
BOKU Univ. Wien / Austria - Vienna – Mansberger - https://www.boku.ac.at/	Land information; Bodenordnung; Land administration	
Land administration Bahir Dar Univ. / Ethiopia - http://www.bdu.edu.et/ila	Land administration	
NUST / Namibia – Integrated Land Management Institute - http://ilmi.nust.na/	Tenure security, affordable land and housing, informal settlements management	Very similar program in objectives and execution, yet LMLT has a global focus and does not focus on Southern Africa only.

Fee calculation.

Kostenkalkulation für ein Studienjahr WS und SS	
Personalkosten	
a) Personalkosten - intern	
12 Unterrichtstage * W3 VK	€ 8.965,44
25 Unterrichtstage * E13 VK	€ 13.642,00
1/2 Stelle E13 VK	€ 57.299,50
Personalkosten – intern gesamt	€ 79.906,94
b) Personalkosten - extern	
15 Unterrichtstage à € 300,-	€ 4.500,00
c) Reisekosten	
14 * Reisekosten Inland (pauschal € 150,-)	€ 2.100,00
d) Übernachtungskosten	
15 Übernachtungen (à € 100)	€ 1.500,00
Personalkosten – extern gesamt	€ 8.100,00
Personalkosten gesamt	€ 88.006,94
Raumkosten 10 Monate (Okt. – Juli)	
Raummiete 56,17m ² *110d*1,8243€/d	€ 11.272,01
Raummiete 80,94m ² *5d*20,343€/d	€ 823,29
Raummiete 113,83m ² *4d*2,1243€/d	€ 967,25
Raummiete 66,48m ² *8d*1,8243€/d	€ 970,25
Raumnebenkosten	

€ 2,80 / m2 monatlich, 317,42m2	€ 8.887,76
Reinigungskosten € 0,07/m2*317,42m2 dreimal wöchentlich, 36W	€ 2.399,70
Raumkosten gesamt	€ 25.320,26
Sachkosten Technische Ausstattung (Computer, Drucker, Overheadprojektor, Laptop, Beamer, Flipchart, Tafel etc.)	€ 400,00
Englischsprachige Fachliteratur für Bibliothek	€ 100,00
Marketing Faltblatt, Anzeigen, Jahrbuch etc.	€ 500,00
Kopierkosten	€ 200,00
Verbrauchsgüter (Stifte, Flipchartbögen etc.)	€ 100,00
Sachkosten gesamt	€ 1.300,00
Exkursionen 5 Exkursionen à € 250,00	€ 1.250,00
Studentische Hilfskräfte (Betreuung, Tutoren) studentische Hilfskräfte à € 8,01 / h	€ 4.110,00
Ausgaben gesamt	€ 119.987,20
Studierende	30
Kosten je Studierender	€ 3.999,57

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