Syllabus

Descrizione corso

Titolo insegnamento	Smart design and planning of mountain livestock and grassland management technologies
Codice insegnamento	47307
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	AGRI-04/B
Lingua	Inglese
Corso di Studio	Corso di laurea magistrale in Sistemi agricoli intelligenti e sostenibili in aree montane
Altri Corsi di Studio (mutuati)	
Docenti	prof. dr. Andreas Georg Gronauer, Andreas.Gronauer@unibz.it https://www.unibz.it/en/faculties/agricultural-environmental-food-sciences/academic-staff/person/37756
Assistente	
Semestre	Primo semestre
Anno/i di corso	1
CFU	6
Ore didattica frontale	36
Ore di laboratorio	24
Ore di studio individuale	90
Ore di ricevimento previste	9
Sintesi contenuti	Part 1 will cover the following topics: 1. Systematic of livestock farming systems; 2. Environmental requirements to livestock farming on grassland; 3. Conceptual farm building for livestock in mountain regions; 4. Smart technologies for livestock (grazing, fodder production, in the barn, livestock management systems, animal observation, animal welfare detection, production observation);

	5. smart waste management systems; 6. Renewable Energy supply for livestock farming; 7. LCA for system evaluation; Part 2 will cover the following topics: 1. definition, technology of grassland management; 2. complexity of an animal farm system - grazing and forage production; 3. requirements for grassland management; 4. process steps and machinery of grassland management; 5. tools/devices for smart farming technology (telemetry, telecommunication, sensors, data processing, GIS mapping, variable rate technology, evaluation); 6. farm management and information systems (FMIS); 7. Examples from Practice
Argomenti dell'insegnamento	La prima parte tratterà i seguenti argomenti: 1. Sistemi di allevamento sistematico del bestiame; 2. Requisiti ambientali per l'allevamento del bestiame sui pascoli; 3. Concetto di edificio agricolo per il bestiame nelle regioni montane; 4. Tecnologie intelligenti per il bestiame (pascolo, produzione di foraggio, stalla, sistemi di gestione del bestiame, osservazione degli animali, rilevamento del benessere degli animali, osservazione della produzione); 5. Sistemi intelligenti di gestione dei rifiuti; 6. Fornitura di energia rinnovabile per l'allevamento del bestiame; 7. LCA per la valutazione del sistema; La parte 2 tratterà i seguenti argomenti: 1. Definizione e tecnologia della gestione dei pascoli; 2. Complessità di un sistema di allevamento animale - pascolo e produzione di foraggio; 3. Requisiti per la gestione dei pascoli; 4. fasi del processo e macchinari per la gestione dei pascoli; 5. strumenti/dispositivi per la tecnologia agricola intelligente (telemetria, telecomunicazioni, sensori, elaborazione dei dati, mappatura GIS, tecnologia a tasso variabile, valutazione);

	6. sistemi di gestione e informazione delle aziende agricole (FMIS); 7. Esempi pratici.
Parole chiave	Precision agriculture; innovative technologies, animal husbandry systems in permanent grassland; mountain regions; grassland management;
Prerequisiti	
Insegnamenti propedeutici	No
Modalità di insegnamento	Lezioni, esercitazioni e escursione
Obbligo di frequenza	No
Obiettivi formativi specifici e risultati di apprendimento attesi	Knowledge and understanding --> - use the most modern and intelligent technologies and information systems for practical application and for the management and creation of business processes - actively participate in research projects in the field of mountain agriculture - applying technical and economic standards in the design and implementation of mechanisation systems and equipment for mountain farms - collaborating with other professionals in the fields of architecture, engineering and natural sciences - working in interdisciplinary, national and international teams Ability to apply knowledge and understanding --> Graduates of the Master SAM degree programme have a solid scientific and technical foundation that enables them to tackle and solve complex problems. Thanks to their scientific and technical training in the fields of agriculture, economics and management, graduates are able to develop analyses and plans for the development and management of farms in mountain regions, taking into account their specific characteristics and multifunctionality (ecosystem services). In these specialist areas, graduates are able to coordinate interdisciplinary teams in the agricultural sector. The ability to apply the specialist knowledge acquired is achieved through critical reflection on the teaching materials offered and classroom learning activities, supplemented by case study analysis and practical exercises by teachers. In addition, there are practical exercises in the laboratory, on the computer and in the field,

	excursions, bibliographic research, the development of individual and/or group projects and the preparation of the final thesis. The assessment of success (oral and written exams, seminar reports) and exercises are designed in such a way that graduates must demonstrate that they have mastered the tools of the trade, the methods learned and a critical and independent way of working. Autonomy of judgement --> - choosing the best production techniques, taking into account environmental protection; - analysing data and information to independently assess the quality and effectiveness of the results obtained in the design of strategies to control difficulties - making independent decisions on professional issues. These may relate in particular to the feasibility of projects in the field of agricultural activities - planning activities and strategies on the basis of predefined objectives, taking into account timescales and methods Communication skills --> Graduates will be able to work professionally in one or more foreign languages. Compulsory and elective courses are taught in English. In addition, some elective courses may be offered in Italian or German. In accordance with unibz's trilingual policy, the unibz Language Centre offers extracurricular courses (levels A1-C1) in Italian and German. Graduates will be able to communicate fluently with other professional groups with whom they work and will be able to participate in European projects with foreign partners thanks to the international orientation of the Master's programme. Written and oral communication skills are promoted in seminars, excursions, exercises and teaching activities, which include the preparation of reports and written documents and their oral presentation in English and, where applicable, in Italian and German in elective subjects. The acquisition and assessment/verification of the above communication skills also takes place through the writing of the final thesis and its discussion in English. The master's degree programme also promotes the acquisition of additional language skills in German and Italian. This should enable graduates to

	successfully enter the international job market (e.g. Austria-Switzerland-Italy-Germany). Learning skills --> Graduates will be able to manage complex projects thanks to the specialist knowledge acquired during their studies. They will be able to continuously expand the specialist knowledge acquired during their studies and keep it up to date. They will learn to use the most modern methods to be able to competently carry out analysis, project planning and management measures in their professional lives. Graduates will be able to use various IT systems to further their cultural and professional development. They will also be able to choose the methods and training paths best suited to their cultural and professional development. Graduates will be able to manage complex projects thanks to the specialist knowledge acquired during their studies. They will be able to continuously expand the specialist knowledge acquired during their studies and keep it up to date. They will learn to use the most modern methods to be able to competently carry out analysis, project planning and management measures in their professional lives. Graduates will be able to use various IT systems to further their cultural and professional development. They will also be able to choose the most suitable methods and training paths for their cultural and professional development. Learning skills are encouraged throughout the degree programme. Particular attention is paid to individual study, especially in the completion of group work on the proposed topics. These skills are enhanced during compulsory lessons, which include group work, and subsequently in the preparation of the final thesis. Learning progress is assessed regularly during the courses and during the writing of the final thesis. In particular, this practice-oriented training involves working in small groups (3-5 students) on a joint project (e.g. a plan for the development of farms in mountain areas) from the initial stages (development of objectives and measures, collection of available data) to cooperation with various stakeholders (e.g. public administration, mountain agriculture advisory centre, farmers' association), which also includes communication activities for agriculture and society. The projects are carried out under the supervision of two or more teachers, with an exchange between students and private companies and/or the

	public authorities concerned. Learning ability is assessed through continuous assessment during the learning units and in the preparation of the final thesis.
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	
Modalità di esame	Compiti scritti consegnati come requisito di ammissione all'esame; esame orale.
Criteri di valutazione	- Esercizi scritti superati con successo - Esame orale con chiave di valutazione: Punti Chiave di valutazione < 55% < 16 >54 -65 % >15,9 - 19 66 - 74% 19,1 - 22 66 - 74% 19,1 - 22 75 - 90 % 22,1 - 27 91 - 100 % 27,1 - 30
Bibliografia obbligatoria	• Advances in precision livestock farming, **DOI:** 10.19103/AS.2021.0090 • Advances in Agricultural Engineering Technologies and Application, Volume II, **DOI:** 10.3390/books978-3-0365-9377-7
Bibliografia facoltativa	• Technology for Environmentally Friendly Livestock Production, **DOI:** https://doi-org.libproxy.unibz.it/10.1007/978-3-031-19730-7
Altre informazioni	
Obiettivi di Sviluppo Sostenibile (SDGs)	Sconfiggere la povertà, Sconfiggere la fame, Utilizzo responsabile delle risorse, Innovazione e infrastrutture, Energia rinnovabile e accessibile