

CORSO DI LAUREA IN SCIENZE ENOGASTRONOMICHE DI MONTAGNA
BACHELOR IN GASTRONOMIE UND ÖNOLOGIE IN BERGREGIONEN

Contenuto degli insegnamenti
Inhalt der Lehrveranstaltungen

Primo anno / Erstes Jahr

Principles of mathematics for food and wine sciences

- *Elementi di aritmetica e di algebra* (algebra delle frazioni, potenze con esponente intero e razionale, studio di semplici equazioni algebriche)
- *Elementi di geometria euclidea del piano e dello spazio* (aree, volumi, piano cartesiano)
- *Elementi di probabilità e statistica* (in particolare, concetto di popolazione, campione, distribuzioni discrete, media, moda, mediana)
- *Cenni di analisi reale* (funzioni elementari, logaritmiche, esponenziali, limiti e derivate e loro significato)
- *Semplici modelli matematici* (ad es., relativi a meccanismi riproduttivi dei batteri o a reazioni chimiche)
- - Elements of arithmetic and algebra (algebra of fractions, powers with integer and rational exponent, study of simple algebraic equations)
- - Elements of Euclidean geometry of plane and space (areas, volumes, Cartesian plane)
- - Elements of probability and statistics (in particular, the concept of population, sample, discrete distributions, mean, mode, median)
- - Hints of real analysis (elementary, logarithmic, exponential functions, limits and derivatives and their meaning)
- - Simple mathematical models (e.g. related to reproductive mechanisms of bacteria or chemical reactions)

Plant biodiversity and environmental impact assessment

The course gives a general overview of scientific contents and its educational objectives are:

- Acquisition of basic knowledge of biodiversity, and agrobiodiversity, with particular regard to unseeded plants, vegetation, ecosystems, land-use systems, and landscapes
- Overview on concepts, methods, and approaches of biodiversity assessment
- Overview on edible plants of mountain areas with examples, referring to their ecology
- Traditional ecological knowledge (TEK) on edible plants and their use
- Sustainable foraging and wild edible plants
- Ecosystem restoration for useful plants
- Relation of plants, environment, and human health
- Wild plant identification in the lab and in the field

Animal biodiversity and environmental impact assessment

- The module covers the basics of agricultural sustainability and animal science. This includes the areas of animal breeding, animal husbandry and animal nutrition, plant production and plant protection in the development of the necessary professional skills. The course explains the correlation with sustainability.

Elements of chemistry and biochemistry applied to food and wine sciences

- The course contents are crucial for acquiring the scientific background and professional skills regarding the basis of chemistry and biochemistry applied to food and wine sciences (The atom; ; Chemical bonds; Chemical formulas and equations; States of matter; Acid-Base reactions; Redox reactions; Carbohydrates; Amino acids and proteins; Lipids; Volatile and aroma compounds; The enzyme kinetics and modulation of enzyme activity, inhibition, membranes and solutes' transport.)

Mountain agriculture: typical mountain products based on sustainable farming and breeding methods

- The course is classified as "caratterizzante" and belongs to the scientific area of primary production. It provides a general overview about the sustainable farming methods for food production and is subdivided into two modules: Sustainable cultivation methods for quality production and Sustainable animal husbandry systems for quality production, as detailed below.

Module 1: Sustainable cultivation methods for quality production

- The educational objectives of the module "Sustainable cultivation methods for quality production" are to provide students with scientific and technical knowledge on the main principles of primary production. In detail, sustainable cultivation methods of production will be considered especially under the framework of the mountain environment. Students will be provided with an overview on the main aspects of products' quality and technologies to maintain quality of agricultural products.

Module 2: Sustainable animal husbandry systems for quality production

- The module covers the basics of animal science. This includes the areas of animal breeding, animal husbandry and animal nutrition incl. feed science in the development of the necessary professional skills. The course explains the correlation with product quality.

Food Anthropology

- The course offers a general overview of sociocultural anthropology with regard to the study of food and foodways. It will introduce students to the basic concepts and major issues that have contributed to the anthropology of food and foodways. The course aims to develop students' acquaintance with topics within food anthropology, including: anthropological categories of subsistence systems; symbolic dimensions of food; food and religion; food, embodiment and gender; food and identity; food, power, social status, and social hierarchy; globalization, food activism and cultural change in food and foodways; anthropological research methods for the study of food and foodways. The course will analyze specific examples and case studies, especially from within anthropology's unique cross-cultural perspective, fostering a critical approach to describing and analyzing food and foodways in our contemporary globalized society. Through the exercise portion, it will also give students the opportunity to apply the theoretical part to the concrete analysis of local Alpine context.

Applied Informatics

- Computer fundamentals (how a computer works)
- Programming (how a computer can be programmed)
- Networking (how internet works)

Restaurant marketing and food law

- The general objective of the course is to provide students with a basic knowledge of the marketing concept and strategies and agri-food law linked to market research methods and consumer analysis.
- The first disciplinary objective of the course is to understand the basic notions for analysing the agri-food system through the study of its evolutionary phases, the dynamics of consumption and the processes of food product valorisation. The second objective will focus on the main marketing methods and analysis strategies for market research considering the main features of food consumption. The third objective aims at understanding the latest developments and trends in marketing as well as new food consumption patterns.
- The Food Law programme is devoted to the main national and European regulatory aspects of the agri-food sector. Issues related to agricultural and industrial production, distribution and international trade, quality and safety controls, consumer and health protection, scientific research and technological developments, environmental protection and bio-production will be addressed.
- At the end of the course, students will understand and evaluate the dynamics of the agri-food market and the agri-food system, apply simple marketing strategies, and critically analyse the most recent developments and models of food consumption.
- As for the Food law, students will be able to recognise the mechanisms set up at the national and European level to guarantee food safety and the management of emergencies, the discipline of food quality and its labelling, and learn about the link between agri-food production and environmental consequences.

Secondo anno / Zweites Jahr

Sustainable development in food and wine

- Estimates suggest that globally 21-37 % of greenhouse gas emissions are caused by the food system (Herren et al. 2020, p. 152). It is interesting to note that only about 43 % of global cereal production is used as food for human consumption (Herren et al. 2020, p. 36). "Global agriculture and the food system pose the greatest threat to the world's climate" being the single biggest contributor to climate warming. New solutions are necessary to reduce negative effects of our consumption pattern. Sustainable agro-food systems and socio-ecological approaches such as circular may contribute to reduce CO₂-emissions and food waste.
- Starting from an overview on current practices of land use and the consequences of land use changes, the programme will first provide an agricultural geography perspective. This serves for a better understanding of the complex interrelationships between actors along the agro-food value chain and the causes for not sustainable practices. As greatest social challenge, land-use relevant causes (farming practices, agricultural policies etc.) and effects of climate change will play a major role. For this scope, the programme will address topics such as land grabbing, land use conflicts, food security/sovereignty and adaptation measures to climate change such as Agroecology and Permaculture.
- In the second part, the programme will present the results of applied research projects which aim at increasing the share of regional, organic and fair food in South Tyrolean gastronomy through a regional circular approach. For this purpose, we developed implementation-oriented measures in coordination with the relevant actors. These include recommendations for action at the legal, logistical, and administrative levels. The NEST-project (Sustainable Food System South Tyrol) for example explored in a practical and application-oriented way the entire value-added cycle from the field to the plate of South Tyrol's restaurants. To keep the ecological footprint as small as possible, we design accompanying concepts to counteract the loss and waste of food, or to reuse food leftovers.

Food microbiology and principles of hygiene

The course aims to provide the basic elements for the assessment of safety and microbiological quality in foods. In details, the course provides the basic concepts of hygiene and epidemiology to safeguard the public health, knowledge of the factors affecting the microbial growth in food, and methods for the quantification of the main microbial groups and of some pathogens and spoilage.

Food and wine science and technology and recovery methods of agro-food by-products

The course can be subdivided into two parts. The "Food technology and recovery methods of agro-food by-products" part aims at providing concepts related to the phenomenological understanding of the main processes of the food industry. It is mainly focused on the description of the operating principles of the equipment used in the processing of foods. The analysis of the processes provides the basic background to understand their impact on the product quality.

The "Wine science and technology" part is designed to acquire professional skills and knowledge (a) to develop projects related to the production and quality evaluation of various types of wines and other winery products, taking into account traditional and innovative technologies; (b) to provide adequate knowledge of technical aspects related to official wine regulations.

Business organization in enogastronomy

The course provides a general overview of the topics of Organization and Human Resource Management. The first part of the course will focus on the topics of Organization, the second part on the topics of Human Resource Management. Both topics are related to the praxis. Exercises, case studies, and student presentations enhance the learning of the topics.

Management of supplying, working and maintenance processes of catering companies

The course aims to provide knowledge on the sizing criteria of facilities and equipment for collective catering and skills on the main regulations on the safety of facilities and equipment. It also aims to analyse the main logistical models used in the catering sector and to understand the principles governing sustainable development and sustainability along the food chain.

Students will have the ability to: recognise the different types of catering facilities; size the spaces, facilities and equipment needed to organise a catering premises; assess the safety status of the equipment and the level of logistics present. They will also have skills to deal with issues related to waste reduction/management and to assess the sustainability of raw materials and menu formulations. Finally, they will be able to assess economic management, with reference to energy, facilities and operator safety, user welfare and environmental impact.

Information systems for the food and wine sector

The course aims to provide students with the fundamental notions of devices (i.e., sensors) and systems used in the food and wine sectors. The topic discussed in the course will be related to the working functioning and the employment of sensors for food quality control, the use of domotic systems in restaurants and food industries. It will also provide the instruments and knowledge related to occupational safety in the employment of the information systems for the food and wine sector.

Seminar: Cook the Mountain

- seasonal programming of kitchen processes
- suppliers and products, a relationship to be built
- organisation of time and resources
- how to deal with food (vegetables, wild herbs, meat, cheese, cereals...)
- cutting techniques
- preservation methods (fermentation, drying, maturing...)
- cooking techniques (smoking, low temperatures...)
- use of tools
- case studies in sensory food analysis
- case studies of food chemistry and physics

The values guiding the entire course are:

- To create a transversal research laboratory on gastronomy which investigates the values which, at a global level, unite culturally and socially the people who live the mountains as a resource, passion, challenge and heritage to be protected.
- To promote a new way of experiencing the relationship between cuisine and the mountains (on an international level) based on ethics and conviviality, environmental sustainability and territorial development.
- Promote mountain cuisine as a "catalyst for cultural processes", for the diffusion of a new model of sustainable development.

Terzo anno / Drittes Jahr

Sensory analysis and tasting techniques

- The course gives a general overview of scientific contents and is designed for acquiring professional skills and knowledge to develop projects related to sensory analysis and tasting of enogastronomy products. The list of topics include: fundamentals of sensory analysis. Physiology of human senses; descriptive analysis; effects of processing on the sensory properties of enogastronomy products (food and wine). Development of procedures for defining a sensory profile. Construction of a profile sheet, theory and practical tests. Principles of selection and training of tasters, physiological and psychological errors. Role and

Microbial fermentations in gastronomy and methods of recovery of agro-food by-products

The course aims to provide knowledges on the role of microbial fermentation in the production of the main typical and traditional fermented foods and how tailored fermentations can give distinctive features and flavors. Moreover, the course aims to provide the basic concepts on the exploitation agro-food by-products through biotechnological processes including the fermentation and use of food-grade enzymes. The criteria for selection of microorganisms and the optimization of their performances in relation to the properties of by-products and the target food are provided. The role of selected microorganisms in the development of distinctive flavor traits for fermented foods, and the use of agro-food by-products as alternative source for the development of food ingredients and their use in food application will be provided also by specific cases of study.

Food design and immersive food related experiences

- Not only the food, but also the way in which it is consumed can be designed. The ingredients of a dish go far beyond its food content and extend to tradition, communication and culture. In "Food Design and immersive food related experience" the idea of food preparation will be broadened and the creation of a dish will be considered as a synesthetic project that includes all the phases from preparation to tasting, including also spaces and environments dedicated to them (from the tools to prepare or eat a food to the atmosphere of the places where it is consumed).

Dietetics, food allergies and intolerances

- The course will provide knowledge on the anatomy and physiology of the digestive tract, on the principles at the basis of the digestion and absorption of macronutrients and will discuss the function and quality of macro- and micronutrients, water, and alcohol. The course will also provide the basics of the nutritional quality of foods and define and provide insights on the concept of "food group". The "dietetics" part of the course will provide knowledge on energy requirements and energy balance between daily intake and energy expenditure. The program will then discuss the energy and nutrient needs of the population and scientific basis to estimate nutrient requirements and the recommended dietary allowances for the Italian population (LARN), the national Dietary Guidelines for the Italian population. Additional topics will be: food labelling, healthy dietary patterns, healthy and sustainable diet. A final focus will then be on the concepts of food allergy and food intolerance, with a basic explanation of the mechanisms underlying these phenomena and effective ways to face them from a nutritional standpoint.

