



## ***Curriculum of the Master Degree Programme***

**“Food Science and Technology”**

**Code: 066 417**

**University of Natural Resources  
and Life Sciences, Vienna**

**Center for International Relations**

For legal purposes, only the version of the curriculum that has been published in the official journal (Mitteilungsblatt) is binding and valid - this English translation is for information purposes only.

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## **§ 1    Description of Qualification**

The focal points of an academic education in the area of Food Science and Technology are the manufacture, processing and preparation of plant and animal raw materials using biological and engineering principles and methods to produce foodstuffs. In addition, particular attention is paid to the food quality, primarily with respect to health and nutrition.

In accordance with the internationally prevailing three-level university system, the general educational aim of the Master degree programme is to communicate a higher scientific and process technological competence, the central component of which is the constant interaction between research and teaching. To the same extent, equivalent importance is also given to personality development, as part of which guidance in independent, critical and logical thinking and planning, the ability to work abstractly, the ability to communicate and work within a team, as well as acting ethically responsibly, are promoted. Graduates should also be able to comprehend the continual changes in scientific advances and to realistically assess their own strengths and weaknesses. The course should also provide a foundation for graduates' willingness to continue learning throughout their careers.

The specific educational aim of the Master degree in Food Science and Technology is the combination of sciences (biology, chemistry, physics, mathematics) and process technology at a high scientific level. The employment opportunities are diverse, from occupations in scientific research and development, in planning and the application of processes and facilities, to the production and control of foodstuffs. Opportunities for specialisation exist in the following fields of employment: process and product design, food production, food supply chain management, food safety, nutrition, catering/convenience products, management and marketing, quality management, food controls.

Within the degree programme, it is also possible to attain the majority of the additional qualification: “Academically-examined, quality representative for food science and biotechnology of the BOKU - University of Natural Resources and Life Sciences, Vienna” (“Akademisch geprüften Qualitätsbeauftragten für Lebensmittel- und Biotechnologie der Universität für Bodenkultur Wien”).

In addition, the curriculum also allows students to become competent in the areas of economics and management. International relations are promoted through numerous exchange programmes, international co-operation and foreign language modules.

An industrial work placement of two months duration supports the vocational education.

## **§ 2    Format of the Master Degree Programme**

The Master degree in Food Science and Technology comprises four semesters and is made up of 63 credits (also known as “semester hours”, *Semesterstunden*, SST), or 120 ECTS points; of which 47 SST are compulsory modules, 6 SST are free optional modules (to be made at every Austrian or foreign university), and 10 SST are modules chosen from an approved list provided by the university.

### **§ 3 Admission to the Master Degree**

Graduates of the Bachelor degree in Food Science and Biotechnology of the Boku – University of Natural Resources and Life Sciences, Vienna, will be admitted to the Master degree programme.

In addition, according to §35(4), graduates of acceptable Bachelor degrees or an equivalent degree programme will be admitted to the Master degree programme.

It should, however, be pointed out that graduates of other Bachelor degrees who wish to take the Master degree in Food Science and Technology must be able to demonstrate a fundamental, equivalent knowledge of the central subjects taught within the Bachelor degree in Food Science and Biotechnology. This concerns the following individual subjects: chemistry, biology, biochemistry, microbiology, genetics, process technology, mathematics, statistics, physics, management, and law; as well as modules in general food science and general biotechnology.

### **§ 4 Academic Qualification**

In accordance with the classification of engineering degrees, graduates of the Master degree will be awarded the academic qualification “Graduate Engineer” (“Diplom-Ingenieur(in)”), shortened to “Dipl.-Ing.” or “DI”.

### **§ 5 Types of Courses**

Courses within the meaning of this degree are:

#### **Lectures (VO):**

Courses in which portions of an academic discipline and the methods involved are didactically presented;

#### **Lectures with Exercises (VU):**

Courses in which opportunities are provided for carrying out independent, practical work in addition to the didactic presentation of portions of an academic discipline;

#### **Lectures and Seminars (VS):**

Lectures which are given in part within the framework of a seminar;

#### **Practical Exercises (UE):**

Courses associated with specific lectures, which serve to develop the ability to carry out specific practical techniques. Such exercises may also take place away from the usual place of instruction;

#### **Practical Training (PR):**

Courses dedicated primarily to professional scientific education;

## Seminars (SE):

Courses dedicated to scientific tasks and discussion, whereby a verbal presentation and/or written work is required, normally in a representative language of the scientific literature.

## § 6 Timetable of Courses<sup>1</sup>

### Used Abbreviations:

SST = Weekly Semester Hours

ECTS = European Credit Transfer System points

WS = Winter Semester

SS = Summer Semester

T2 = 2-year rotation 2 = Courses which take place on even academic years (every two years), for example 2008/09 and 2010/11.

T1 = 2-year rotation 1 = Courses which take place on uneven academic years (every two years), for example 2009 and 2011.

### (1) Compulsory Courses

<i>Number</i>	<i>Type</i>	<i>Name</i>	<i>Semester</i>	<i>SST</i>	<i>ECTS</i>
<b>1 Basics in Food Sciences</b>					
755.300	VO	Food Chemistry	WS	4.0	6.0
755.301	UE	Food Chemistry Practical Course	WS or SS	4.0	6.0
754.303	VO	Food Microbiology	WS	3.0	4.5
754.304	UE	Practical Training in Food Microbiology	WS or SS	2.0	3.0
751.300	VO	Human Nutrition	WS	2.0	3.0
756.304	VU	Food Physics	WS	2.0	3.0
754.306	VO	Food Toxicology	SS	2.0	3.0
756.301	VU	Sensory Evaluation of Food	SS	2.0	3.0
<b>2 Food Technology</b>					
752.302	VO	Food Technology	WS and SS	5.0	7.5
752.303	EX	Practical Course in Food Technology	WS or SS	3.0	4.5
753.304	VO	Food Biotechnology	WS and SS	4.0	6.0
756.305	UE	Applied Quality Management Exercises	WS or SS	5.0	7.5
752.306	VU	Packaging of Foodstuffs	SS	2.0	3.0
893.300	VU	Mechanical and Thermal Process Technology II	WS	3.0	4.5

<sup>1</sup> A more detailed description of all courses, including objective of the course, course contents, name of lecturer, prerequisites, recommended reading, teaching methods, assessment methods and language of instruction, is found in the BOKUonline: <https://online.boku.ac.at/>

**3 Management/Law**

731.301	VO	Particular Food Law	SS	2.0	3.0
735.301	VO	Marketing	SS	2.0	3.0

**(2) Elective Courses**

<i>Number</i>	<i>Type</i>	<i>Name</i>	<i>Semester</i>	<i>SST</i>	<i>ECTS</i>
<b>1 Production and Particular Food Technology</b>					
752.307	VO	Principles of Cereal Technology	WS	2.0	3.0
751.302	VO	Technology of Meat Production	SS	3.0	4.5
752.118	VO	Brewery Technology	WS	3.0	4.5
751.305	VO	Milk Technology	WS	3.0	4.5
752.122	VO	Fruit and Vegetable Processing Technology	WS	2.0	3.0
752.117	VO	Wine Technology (Enology)	SS	2.0	3.0
752.123	VO	Technology of Spirits and Alcohol-free Beverages	SS	2.0	3.0
752.124	VO	Fish Processing Technology	WS	1.0	1.5
752.125	VO	Technology of Fats and Oils	SS	2.0	3.0
753.316	VU	Protein Engineering	SS	3.0	4.5
752.127	VO	Technology of Chocolate and Confectionary	SS	2.0	3.0
752.128	VO	Sugar Technology	SS	2.0	3.0
951.300	VO	Plant Production	SS	2.0	3.0
751.301	VO	Production of Primary Food of Animal Origin	SS	2.0	3.0
753.129	VO	Fungal Molecular Biotechnology	SS	2.0	3.0
<b>2 Process Engineering and Environmental Technology</b>					
893.116	VO	Material Handling and Conveying	WS	3.0	4.5
893.109	VO	Refrigeration Engineering	WS	3.0	4.5
893.308	VU	Metrology II	WS	2.0	3.0
893.301	VU	Process Simulation	SS	2.0	3.0
771.117	VO	Environmental Analysis	SS	2.0	3.0
753.112	VO	Enzyme Technology	WS	2.0	3.0
791.123	VO	Environmental Biotechnology	WS	3.0	4.5
811.100	VO	Environmental Health	SS	2.0	3.0
811.101	VU	Procedures for the Evaluation of Waste and Wastewater	SS	2.0	3.0
893.113	VU	Molecular Basics of Chemical Engineering	WS	3.0	4.5
893.110	VO	Energy Economics	WS	3.0	4.5
753.309	VO	Membrane Separation Processes	WS	2.0	3.0

756.335	VU	Automatic Identification Technology in Food Industry	SS	2.0	3.0
753.311	VO	Biochemical Reaction Engineering	WS	2.0	3.0

### 3 Chemistry / Hygiene

771.314	VU	Instrumental Analytical Chemistry for Master Students	SS	3.0	4.5
954.103	VU	Molecular Biological Methods in Food Analysis	WS or SS	2.0	3.0
755.309	VO	Authenticity of Foods	SS	2.0	3.0
773.318	VO	Chemistry and Analysis of Nutrition Additives Chemistry and Analysis of Nutrition Additives	SS	2.0	3.0
755.310	VO	Aroma of Foods	SS	2.0	3.0
811.302	VO	Water Hygiene	SS	2.0	3.0
772.321	VU	Biochemical and Biotechnological Methods	WS	3.0	4.5
773.310	VO	Biorganic Chemistry	T2, SS	2.0	3.0
772.309	VO	Biochemistry of Trace Elements	WS	2.0	3.0
772.311	VU	Kinetics of Biochemical Reactions	SS	2.0	3.0
954.316	VU	Computer-assisted Data Analysis in Molecular Biology	WS or SS	2.0	3.0
755.313	UE	Food Authenticity Practical Course	WS or SS	2.0	3.0
755.302	VU	Milk Analysis	SS	1.0	1.5
753.312	VU	From Sequence to Structure: Prediction, Modelling and Molecular Dynamics of Protein Structures	SS	2.0	3.0
772.310	VO	Biomolecular Spectroscopy	SS	3.0	4.5
773.311	VO	Introduction into Crystallography and NMR Spectroscopy of Proteins	SS	2.0	3.0

### 4 Nutrition Science

752.310	VO	Large-Scale Catering and Communal Feeding	WS	2.0	3.0
751.311	VO	Nutrition Physiology	SS	2.0	3.0
756.313	VO	Psychology of Nutrition	WS	2.0	3.0
791.333	VS	Biology of Aging	SS	2.0	3.0

### 5 Management/Law

756.322	VO	Food Supply Chain Management	SS	2.0	3.0
756.303	VS	New Product Development	WS	2.0	3.0
754.314	VS	Food Safety and Risk Management	WS	2.0	3.0
791.126	VO	Innovation Management	SS	2.0	3.0
731.302	VO	Patent Law	SS	2.0	3.0
731.380	VO	Sustainable Development I	WS	2.0	3.0
752.121	VU	Brewery Operational Control	WS	2.0	3.0

**6 Practical Courses**

755.311	PR	Practical Course in Dairy Technology	SS	3.0	4.5
893.306	PR	Energy Engineering Practical Course	WS	3.0	4.5
753.310	PR	Laboratory Course in Enzyme Technology	WS or SS	3.0	4.5
893.302	PR	Metrology Practical Course	SS	3.0	4.5

**7 Seminars**

753.314	SE	Food Technology Seminar	T2, WS	2.0	3.0
753.315	SE	Seminar of Enzyme Technology	SS	2.0	3.0
755.312	SE	Seminar on Dairy Science	WS and SS	1.0	3.0

**§ 7 Thesis for the Master Degree**

The thesis represents an integral part of the Master degree programme and is worth 30 ECTS points.

The topic of the thesis is to be drawn from one of the disciplines included in the field of the Master degree programme.

The university instructor who has proposed the topic adopted for the thesis is to be responsible for providing the necessary guidance to the diploma candidate concerned.

The thesis is to be submitted to the Dean of Education.

**§ 8 Required Practical Experience**

Proof of having gained two months of relevant practical experience is required to absolve the Master degree programme in Food Science and Technology. This practical experience is to be obtained in relevant industrial enterprises and must be confirmed by the Chairperson of the Education Commission.

If there is no possibility of obtaining the relevant experience in an industrial organization, this requirement can be met by means of unpaid work performed for periods of one month each on industrial projects at institutes in the discipline concerned, provided that evidence is given of five negative responses having been received from industrial enterprises contacted.

**§ 9 Courses in Foreign Languages**

Students are also required to complete courses in foreign languages equivalent to 4 hours teaching a week. If the student spends time in a non-German speaking country for degree-related reasons (student exchange / placement compulsory work experience) or writes his thesis in a discipline concerned language then this requirement is automatically fulfilled.

## **§ 10 Graduation Requirements**

- (1) The Master examinations consist of two parts.
- (2) The first part comprises the courses stated in § 6 (1) and (2) to an extent of 63 semester hours, consisting of compulsory courses to an extent of 47 semester hours, elective courses taken from the curriculum to an extent of 10 semester hours, whereby 3 semester hours have to be taken from the field of practical experience, 2 semester hours have to be taken from the pool of seminars and 6 semester hours from the field of free elective courses according to § 4 (25) UniStG. This first part is completed upon the successful completion of all these courses. Successfully completed courses from the elective course catalogue of the Bachelor studies Food Science and Biotechnology cannot be accredited for the Master study Biotechnology and Food Science and technology.
- (3) The second part of the Master examinations is oral and has to be completed as a commissioned examination and has to comprise the following: examination in the subject the Master degree thesis can be assigned to and one further subject which can be regarded as a major field of study. This second examination subject has to be determined in accordance with the dean and the student.

The registration for the second part of the Master examinations requires:

- The successful completion of the examinations stated in §(10)(2)
  - The positive evaluation of the Master degree thesis
  - Completion of a two-month Compulsory Practical Training.
- (4) Free elective courses according to § 4 (25) UniStG: 6 semester hours of free elective courses have to be completed successfully. These can be taken from the complete range of offered courses at all recognised national and international universities. It is recommended that the free elective courses according to § 4 (25) UniStG be taken from the study specific elective course catalogue.
  - (5) The course examinations may be oral and/or written, as defined by the lecturer. According to §53 (2) UniStG at least three course examination dates have to be offered per semester whereby blocked courses have to be kept in mind when fixing a date.
  - (6) The acknowledgement of courses is carried out according to the European system of accreditation of academic credentials (European Credit Transfer System – ECTS) according to § 13 Abs. 4 Z. 9 UniStG. Courses of other universities are acknowledged according to the ECTS regulations. If there is no identification according to ECTS regulations, it is referred to § 59 Abs. 1 UniStG.
  - (7) The requirement for the registration to courses Enzyme-Technological Practical Training is the successful completion of the course Laboratory Training Biochemical Exercises I.

## **§ 11 Transitional Regulations**

- (1) Regular students who are obliged to follow the curriculum that was released on the basis of UniStG from October 1, 1999 are authorized to continue their studies according to this curriculum.

From the date the study programs for the Bachelor and Master studies come into force these students are authorized to complete their study program within the legal study duration including one additional semester according to § 80 b (2) UniStG. If one study part is not completed within the legal duration, the student will be imputed to the curriculum of the Bachelor study program for

the rest of his study period. (An admission to the Master Study can only take place after the successful completion of a Bachelor study program, see also § (3).

- (2) For regular students who started their study program before the enforcement of the curriculum according to UniStG and who carry out their studies on the basis of the study regulations according to § 80 Abs. 2-4 UniStG there are no changes as far as the transitional regulations are concerned.
- (3) For students who continue their studies according to the valid curriculum a regulation (equivalence list) which was passed by the study commission is valid in which all the courses are listed which are equivalent to the Master curriculum. For students who impute to the new Bachelor and Master study program, already successfully completed examinations for courses of the old curriculum are acknowledge according to this equivalence list for the study program of this Master study curriculum.