REPUBLIC OF UZBEKISTAN
MINISTRY OF HIGHER EDUCATION, SCIENCE AND INNOVATION

70720101 — *QUALIFICATION REQUIREMENTS FOR THE MASTER'S DEGREE PROGRAM IN FOOD TECHNOLOGY*

Tashkent-2024

DEVELOPED AND INTRODUCED BY:

Tashkent State Technical University named after Islam Karimov
Tashkent Institute of Chemical Technology

APPROVED AND IMPLEMENTED BY:

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These Qualification Requirements have been developed in accordance with the “State Educational Standard of Higher Education. General Provisions”, the “State Educational Standard of Higher Education. Classifier of Higher Education Fields and Specialties”, the National and Sectoral Qualification Frameworks of the Republic of Uzbekistan, professional standards, and the proposals of employers, and are considered an official normative-methodological document.

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1 1. General Description

70720101 – Master's Degree in Food Technology is implemented in the full-time form of study. The program is organized on the basis of a credit–module system. The normative duration of the Master's program is **2 years**.

Scope of Application

Applicability of Qualification Requirements

The qualification requirements define the set of standards for all higher education institutions offering training in the specialty **70720101 – Master's Degree in Food Technology**.

The main users of qualification requirements are:

The management staff of higher education institutions (rector, vice-rectors, heads of academic departments, deans, and heads of chairs) and professors–lecturers, who are responsible for developing and updating curricula and course syllabi in this specialty, as well as for ensuring the effective implementation of the educational process and guaranteeing the graduates' competence level within their authority.

Students of higher education institutions mastering the curriculum and course syllabi of this Master's specialty.

State Attestation Commissions assessing the graduates' level of preparedness.

Authorized state bodies responsible for the management of education.

Institutions providing financing for higher education institutions.

Authorized state bodies responsible for accreditation and quality assurance of the higher education system.

Employers and organizations ordering qualified specialists.

Bachelor's degree graduates and other interested stakeholders applying for admission to higher education institutions.

Description of Professional Activities

Fields of Professional Activity

The specialty **70720101 – Master's Degree in Food Safety** belongs to the field of *"Production and Processing"*. It covers the teaching of discipline-specific courses in all higher education institutions, as well as activities within the Academy of Sciences of the Republic of Uzbekistan and its branch research institutes, state and economic management

bodies, joint-stock companies, and production enterprises. This includes all industrial organizations engaged in food product technology.

Objects of Professional Activity

Pedagogical activity in higher education institutions, retraining and advanced training centers, and vocational education institutions.

Research activity in the Academy of Sciences, branch research institutes and centers, and higher education institutions.

State administration bodies and their regional divisions.

The State Unitary Enterprise “State Scientific Center for Veterinary Medicines, Feed Additives Quality and Safety Control.”

The Central Laboratory of Quality Control and Scientific Research of the *Uzbekistan Scientific Testing and Quality Control Center* (UzTEST).

The Service of Sanitary and Epidemiological Well-being and Public Health under the Ministry of Health of the Republic of Uzbekistan and its regional divisions.

Food production enterprises.

Restaurant, café, and tourism sectors.

Fast food services.

Food safety control in airports and railway stations.

State administration bodies (including the Presidential Administration, Customs Service, Prosecutor’s Office, National Security Service, National Guard, military units and departments, and tax authorities dealing with food safety).

Organizations under the Ministry of Agriculture.

Food safety and quality assessment laboratories and certification bodies of various forms of ownership.

Types of Professional Activity

Research activity

Pedagogical activity

Design and engineering activity

Analytical and control activity

Organizational and managerial activity

Production and service activity

Professional Duties

In accordance with the **Level 7 of the National Qualifications Framework** for the specialty **70720101 – Master's Degree in Food Technology**, and considering the fields, objects, and types of professional activity, a graduate of the Master's program should be able to perform the following professional duties:

In research and pedagogical activity:

Conduct scientific and applied research, analyze experimental results, and draw scientifically grounded conclusions, as well as make discoveries of scientific significance.

Prepare and edit scientific articles, reports, monographs, and educational materials; develop scientific reviews, abstracts, and bibliographies on the research topic.

Purposefully search for and identify the latest scientific, design, technological, and operational achievements in scientific literature and online resources.

Organize, conduct, and actively participate in scientific seminars, conferences, and symposia.

Develop scientific projects within the relevant specialty, creating conceptual and theoretical models for solving scientific problems and tasks.

Carry out pedagogical and methodological activities in higher education institutions, retraining and advanced training centers, and vocational education institutions within the specialty.

Organize educational and research processes; conduct teaching activities using modern information and pedagogical technologies and teaching aids.

Master electronic (e-learning), mobile (m-learning), distance learning technologies, and educational-methodological complexes.

Continuously improve pedagogical and scientific skills and professional qualifications.

In design and engineering activity:

Develop designs for equipment used in food production and processing industries.

Develop standard technological processes.

n Analytical and Control Activity:

Ensuring food safety, possessing knowledge of the laws and regulatory-legal documents of the Republic of Uzbekistan regarding food raw materials and products, and applying them in professional practice.

Developing conceptual and theoretical models of scientific problems and tasks related to ensuring the stable supply of essential food products (oil, sugar, flour, bread, meat, milk, and other products) for the population, and implementing recommendations and developments in practice based on research results.

Participating in measures aimed at the development of the food industry in the Republic, attracting investment in the sector, and supporting export activities.

Improving the quality of activities and developing approaches for the implementation of the national strategy on food safety and healthy nutrition in the Republic of Uzbekistan.

Analyzing and comparing the quality and safety indicators of locally produced and imported food products and their raw materials.

In Organizational and Managerial Activity:

Developing methods and mechanisms for monitoring production processes and evaluating quality by using modern information technology systems.

Organizing the work of a team of executors.

Preparing work plans, monitoring their implementation, planning necessary resources, and evaluating work results.

Monitoring compliance of production processes with environmental protection, fire safety, technical, and occupational safety requirements.

Adhering to professional ethics.

In Production and Service Activity:

Actively participating in the improvement of healthy nutrition systems in educational institutions, introducing modern methods of food service in compliance with established sanitary rules, standards, and hygienic norms.

Participating as a team member in the development of systems for food production and processing, technological processes, their components, and technological documentation.

Ensuring the nutritional and hygienic safety of food products and raw materials.

Developing technological solutions for the organization and improvement of production.

Conducting technical and economic analyses in the development of new food products.

Selecting and applying effective methods of organizing production.

Preparing analytical reviews on the development of new recipes and types of food products.

Participating as a member of expert groups in the examination of projects related to food production and processing.

Requirements for Professional Competencies

A graduate of the Master's program should:

Possess skills in conducting scientific and applied research, processing experimental results, drawing scientifically substantiated conclusions, preparing and editing scientific articles, organizing and holding scientific seminars, conferences, and symposia, as well as developing scientific projects.

Be proficient in using information and pedagogical technologies in teaching activities.

Be able to apply innovative approaches to improving the quality and effectiveness of education.

Have the ability to prepare projects for participation in state and international research programs based on the results of scientific activity.

Possess the competence to prepare projects for participation in programs announced by governmental, non-governmental, and non-profit organizations.

Have organizational and managerial skills in production.

Be able to work independently in positions requiring higher education qualifications in the specialty.

Possess knowledge in planning experiments in food production and processing, as well as in the deep analysis of raw materials and products.

Be proficient in systems of modeling and designing products, developments, and research; project management; and methods of physicochemical analysis of raw materials and products.

Be capable of conducting research activities as a doctoral student or independent researcher in higher education institutions, the Academy of Sciences of the Republic of Uzbekistan, and branch research institutes.

Possess skills in managing modern food production systems and ensuring product quality.

Be able to apply modern methods and equipment for physicochemical, organoleptic, microbiological, and analytical evaluation of food products, and work in scientific analytical laboratories.

Be competent in developing and implementing measures for the rational use of resources in the supply system of raw materials and auxiliary materials for industrial enterprises.

Requirements for Research Activity

Research activity should involve mastering research methodology, as well as carrying out scientific research and scientific-pedagogical work in the field of food technology at specialized scientific and educational institutions.

Requirements for research work and the preparation and defense of a Master's thesis:

Develop practical skills of independent research activity.

Be able to conduct scientific research using modern information technologies, analyze and present results, and prepare scientific articles.

Acquire the skills to work with information databases containing the latest achievements in science, engineering, and technology in the field, and apply them in completing the Master's thesis.

Scientific-pedagogical activity:

Develop pedagogical competence and skills using modern pedagogical and information technologies, as well as interactive teaching methods.

Acquire the skills and abilities to organize methodological and scientific support of the educational process.

Requirements for Scientific Practice (Internship)

Scientific practice within the Master's training program is conducted in the **4th semester**. The objectives of this practice are:

conducting research activities in the relevant field,

deepening theoretical and practical knowledge,

familiarizing students with modern equipment and technologies used in science, the industry, and related sectors,

developing practical, professional, and research competencies related to the specialty,

ensuring effective adaptation to the profession.

During the internship, Master's students assigned to scientific practice are expected to follow an **individual schedule** within the framework of the academic timetable.

5. Structure of the Course Catalogue

№	Code of the course	Names of courses, blocks, and types of activities	Total workload (hours)	Credits	Semester
1.01	ITM1106	Research methodology	180	6	1
1.02	**MFOM106**	Methods of teaching specialized subjects	180	6	1
1.03	**ER1106**	Experimental design	180	6	1
1.04	MLT1106	Modeling and design systems	180	6	1
1.05	ZFKTU1206	Modern physico-chemical analysis methods	180	6	2
1.06	STI1206	Industrial technologies and innovations	180	6	2
	Compulsory Courses in Fat and Oil Product Technology				
1.07	YRK M1106	Refining and catalytic modification of fats and oils	180	6	1
1.08	O'MICH TMB1306	Special sections in vegetable oil production technology	180	6	1
1.09	YMK1306	Chemistry of fats and oils	180	6	1
1.10	QYYVICH T1306	Technology of hard fats and detergent production	180	6	3
	Qualification: engineer-technologist, research-pedagogue				
	Compulsory Courses in Technology of Canned Food, Meat, Dairy, and Fish Products				
1.07	GSBKMT1306	Control and safety of meat, dairy, fish, and canned products	180	6	1
1.08	GSBKMT1306	Technology of meat, dairy, fish, and canned products	180	6	3
1.09	GSBKMQIIA306	Scientific principles of processing meat, dairy, fish, and canned products	180	6	3
1.10	GSBKMTQZU1306	Modern methods of analyzing meat, dairy, fish, and canned products	180	6	3
	Qualification: engineer-technologist, research-pedagogue				
	Compulsory Courses in Cereal Product Technology				
1.07	B1106	Cereal Biochemistry	180	6	1
1.08	JYT1A1306	Scientific Principles of Flour and Grain Technology	180	6	3
1.09	DQ1KJ1306	Equipment for Cereal Processing Enterprises	180	6	3
1.10	EQSDQ1306	Elevator and Grain Storage Industry, Grain Drying	180	6	3
	Qualification: Engineer-Technologist, Research-Pedagogue				
	Compulsory Courses in Wine and Spirit Technology				
1.07	VMT1106	Special Technology of Wines	180	6	1
1.08	VSB1306	Biochemistry of Wine and Spirits	180	6	3
1.09	VSM1306	Microbiology of Winemaking and Spirits	180	6	3
1.10	Slchzt1306	Modern Technology of Alcohol Production	180	6	3
	Qualification: Engineer-Technologist, Research-Pedagogue				
	Compulsory Courses in Malt, Beer, and Non-Alcoholic Beverage Technology				
1.07	SPT1106	Malt and Beer Technology	180	6	1
1.08	SPA1B1306	Biochemistry of Malt, Beer, and Non-Alcoholic Beverages	180	6	3
1.09	AIT1306	Technology of Non-Alcoholic Beverages	180	6	3

1.10	SPA1KJ1306	Equipment of Enterprises Producing Malt, Beer, and Non-Alcoholic Beverages	180	6	3
2.00	Elective Courses		360	12	2,3
	Total:		2160	72	1,2,3
3.00	Scientific Activities				
3.01	ITI13123424	Research Work	720	24	1,2,3,4
3.02	M1A3408	General Pedagogical Activity	240	8	4
3.03	1PF3408	General Pedagogical Activity – Scientific Practice / Internship	240	8	4
3.04	MDT340	Preparation of Master's Dissertation	240	8	4
	Qualification: Engineer-Technologist, Research-Pedagogue				
	TOTAL:		3600	120	1, 2, 3, 4

6. Blended learning is organized in production enterprises in order for trainees to acquire the necessary practical skills and competencies based on the demands of consumers of human resources. The learning process, including examinations, is carried out in both online and offline formats.

Bibliographic Information

Keywords:
Type of professional activity, competence, module, object of professional activity, field of professional activity, master's and bachelor's main curriculum and course program, law, regulation, resolution, higher education, educational process, master's program, consulting, design and survey, pedagogical, scientific-pedagogical work, professional internship, graduation qualification work, master's thesis, grain cracking, physicochemical properties of grain, hydrothermal processing, grain volume, bulk batch, self-sorting, technological processes, air separators, air-sieve separators, stone separators, concentrators, trieurs, entoleators, pearling machine, moistening and washing machines, evaluation, quality control, state attestation, independent learning, block of academic disciplines, content (table of contents), higher education institution, educational process, profile, object of practice, quality of personnel, workload, workload volume, scientific activity, internal control, final state examination, state-public control, external control, material and technical base, production, designing, scientific research process, methods of teaching specialized subjects, information and communication systems, modern research methods, information and modern pedagogical technologies, models and modeling, organization of scientific research, virtual electronic knowledge resources, didactics, theory.