

Department of Food Science and Technology

Master of Science Program in Food Science (International Program)

M.S. (Food Science)

Plan A Option 1:

Total credits required: minimum 36 credits

(1) Major courses: minimum 2 credits (audit)

- Seminar: 2 credits

01052597	Seminar	1,1
----------	---------	-----

(2) Thesis: minimum 36 credits

01052599	Thesis	1-36
----------	--------	------

Choose a research area for their thesis research from the list below:

- Food Processing
- Food Chemistry
- Food Microbiology
- Dairy Science and Technology
- Meat Science and Technology
- Fruit and Vegetable Technology
- Fishery Technology
- Fats and Oils Technology
- Cereal Science and Technology
- Postharvest Technology
- Confectionery Technology
- Fabricated Food
- Food Protein and Enzyme

Plan A Option 2:

Total credits required: minimum 36 credits

(1) Major courses: minimum 18 credits

- Seminar: 2 credits

010524597	Seminar	1,1
-----------	---------	-----

- Major requirements: 5 credits

01052517	Advanced Food Science	3(3-0-6)
----------	-----------------------	----------

01052591	Research Methods in Food Science	2(1-3-4)
----------	----------------------------------	----------

- Major electives: minimum 11 credits

Students are required to choose at least 8 credits of 500 level courses in the field of Food

Science from the list below

01052511	Cereal Chemistry	3(2-3-6)
----------	------------------	----------

01052512	Carbohydrate in Foods	3(2-3-6)
----------	-----------------------	----------

01052513	Lipid in Foods	2(2-0-4)
----------	----------------	----------

01052514	Protein in Food	3(2-3-6)
01052515	Enzyme in Foods	3(2-3-6)
01052516	Food Additives	3(2-3-6)
01052518	Chemistry of Food Flavor and Analysis	2(2-0-4)
01052521	Advanced Food Processing	2(2-0-4)
01052522	Colloidal Systems in Foods	3(3-0-6)
01052523	Food Analysis	2(2-0-4)
01052524	Biosensor Technology in Food Industry	2(2-0-4)
01052531	The Application of Physical Chemistry to Food Science	2(2-0-4)
01052541	Food Toxicology	2(2-0-4)
01052542	Hygienic Problems of Foods	2(2-0-4)
01052543	Nutrition in Food Science	2(2-0-4)
01052544	Nutrition in Food Processing	2(2-0-4)
01052545	Quality Management in Food Science	2(2-0-4)
01052546	Health Foods and Nutraceuticals	2(2-0-4)
01052592	Applied Statistic for Food Science Research	3(2-3-6)
01052596	Selected Topic in Food Science and Technology	1-3
01052598	Special Problems	1-3

In addition, students may choose at least 3 credits of 500 level courses in the field of Food Science or other related field. He/she must gain approval from advisory committee, Head of Department, and the Dean of the Graduate School.

(2) Thesis: minimum 18 credits

01052599	Thesis	1-18
----------	--------	------

Course Description

01052511	Cereal Chemistry The formation of cereal grains, chemical properties and analysis of chemical contents of various cereals and their products. Field trip required.	3(2-3-6)
01052512	Carbohydrate in Foods Types, properties and contents of carbohydrate in foods, sources of carbohydrates. Chemical and physical changes during processing and storage, modification of starch for industrial uses. Field trip required.	3(2-3-6)
01052513	Lipid in Foods Property, composition, and function of lipids in foods, methods used for analysis of lipid composition, lipid separation and modification, lipid deterioration during production process and storage.	2(2-0-4)
01052514	Protein in Food Chemical properties and structure of protein; changes during processing; important proteins of various food sources; functional properties and effects of modification; quality evaluation of protein. Field trip required.	3(2-3-6)
01052515	Enzyme in Foods Types and nature of enzyme. Factors affecting enzyme activity. Production	3(2-3-6)

	and purification of enzyme. Natural enzyme in foods. Relationship of enzyme and food quality changes. Effect of processing on enzyme activity. Application of enzyme in food industry. Advancement in topics related to enzyme in foods.	
01052516	Food Additives Types of food additives and their applications in food, effect of food additive on quality and food preservation. Field trip required.	3(2-3-6)
01052517	Advanced Food Science Advanced and new techniques in analysis and food science research.	3(3-0-6)
01052518	Chemistry of Food Flavor and Analysis Chemical and physical properties of flavoring agents. Flavor formation in foods. Extraction techniques of flavoring agents used in sample preparation for food research. Chemical analysis techniques for substance identification. Sensory techniques for investigation of food flavoring agents. Co-relationships between data obtained from instrument and sensory tests.	2(2-0-4)
01052521	Advanced Food Processing Advanced food processing by using the new principles and techniques in food industry. Field trip required.	2(2-0-4)
01052522	Colloidal Systems in Foods Classification of colloidal systems in foods. Mechanism of colloid formation. Colloid chemistry related to food structures and sensory qualities. Factor affecting colloidal stability. Interactions among food components-proteins, hydrocolloids, lipids and carbohydrates-and their roles in stabilizing colloidal systems. Chemical and physical evaluations for colloidal stabilization. Case Study.	3(3-0-6)
01052523	Food Analysis Principles and applications of chemical, physical and sensory methods in food analysis.	2(2-0-4)
01052524	Biosensor Technology in Food Industry Principles of biosensor monitoring, biosensor fabrication, immobilization of biological components, transducer types and transduction mechanism, flow injection analysis and on-line measurement, design of biosensor system in food industry.	2(2-0-4)
01052531	The Application of Physical Chemistry to Food Science Application of physical chemistry to food processing, storage, and changes in foods during processing and storage. Roles of water, phase relationships, emulsions and foams, rheological properties, and temperature to foods.	2(2-0-4)
01052541	Food Toxicology Naturally occurring food toxins from plant and animal, microbial toxins, environmental toxins, food processing-or packaging derived toxins. Food allergens, and food toxin, law and regulation related. Principles and analysis methods of food toxicants and allergens.	2(2-0-4)
01052542	Hygienic Problems of Foods Hygienic specification of foods, microorganism and injured cell caused hygienic problems of foods on hygienic of food plant and exported food products, enumeration of microorganism using the modern method and quality assurance of food industry. Case study. Field trip required.	2(2-0-4)

01052543	Nutrition in Food Science Impact of nutrients on food metabolism. Dietary consumption habit on consumer health and chronic noncommunicable diseases. Effects of over-consumption of natural foods or synthesized vitamins and minerals. Nutrition qualities of food products as affected by processing, light, heat and pressure.	2(2-0-4)
01052544	Nutrition in Food Processing Nutrition quality of products effected by method of processing, light, heat and pressure. Methods of prevention and preservation of nutrients in food products during processes.	2(2-0-4)
01052545	Quality Management in Food Science Quality system and principle of quality management in food industry. Authority and responsibility of personnels at each level in organization. Policy management. Standard of operation procedure. Use of quality control tools and statistics in decision making and problem solving. Production control in food industry.	2(2-0-4)
01052546	Health Foods and Nutraceuticals Classification of health foods and nutraceuticals, dietary fibers, antioxidants, prebiotics, probiotics, omega-3 fatty acids, and phenolic compounds, including their mechanisms of action, analytical methods, and current regulations.	2(2-0-4)
01052591	Research Methods in food Science Research methodology in food science. Planning, proposal writing, report writing, and using of instrumentation in food science research. Principle of good laboratory practices (GLP). Appliction of software in instrumental control and data analysis.	2(1-3-4)
01052592	Applied Statistic for Food Science Research Experimental design. Research hypothesis, measurement and hypothesis testing in food science research. Principle and application of statistical software package. Data collection. Type of data. Data input. Data analysis using multivariate statistical tools and data interpretation for food science research.	3(2-3-6)
01052596	Selected Topic in Food Science and Technology Study on selected topics in food science at the master's degree level. The topics are subject to changed each semester.	1-3
01052597	Seminar Presentation and discussion on current interesting topics in food science at the master's degree level.	1
01052598	Special Problems Study and research in food science at the master's degree level and compile into a written report.	1-3
01052599	Thesis Research at the master's degree level and compile into a thesis.	1-18