

Master of Science Program in Food Innovation, Safety and Quality Management

International Program

Department of Food Technology, Faculty of Technology, Khon Kaen University

Since 2013, Revised 2018

Master of Science Degree Program: A1 and A2

Curriculum		
Total credits		
Program A: A 1	36 Credits	
Program A: A 2	36 Credits	
Curriculum structure		
	Credits	
	Program A: A 1	Program A: A 2
Total credits	36	36
1) Compulsory subjects	2 (non credits)	11
2) Elective subjects	-	10
3) Thesis	36	15
Program A: A 1		
(1) Compulsory subjects (non credits)		
TE137 891	Food Innovation, Safety and Quality Management Seminar I	1(1-0-2)
TE137 892	Food Innovation, Safety and Quality Management Seminar II	1(1-0-2)
Note: Student must visit food industry companies (at least 2 companies) arranged by the department.		
(2) Thesis (36 Credits)		
TE137 899	Thesis (for Program A1)	36 Credits
Program A: A 2		
(3) Compulsory subjects (11 credits)		
TE137 510	Food Product Innovation, Market and Consumer Research	3(3-0-6)
TE137 610	Quality and Safety Management Systems in Food Industry	3(3-0-6)
TE137 710	Food Innovation, Safety and Quality Management Research Methodology	3(3-0-6)
TE137 891	Food Innovation, Safety and Quality Management Seminar I	1(1-0-2)

TE137 892	Food Innovation, Safety and Quality Management Seminar II	1(1-0-2)
TE137 722	Overview of Food Science and Technology	3(3-0-6)
TE137 752	Selected Topics in Food Science and Technology	3(3-0-6)

Note: Student must visit food industry companies (at least 2 companies) arranged by the department.

(4) Elective subjects: Students must register for these elective subjects at least 10 credits with regards to the consent of advisor or curriculum's committees

TE137 112	Safety Monitoring and Analytical Techniques in Foods	2(2-0-4)
TE137 113	Food Analytical Techniques in Safety and Quality Aspects	3(3-0-6)
TE137 122	Food Toxicology	3(3-0-6)
TE137 132	Functional Food Ingredients and Safety Aspects	3(3-0-6)
TE137 142	Advanced Food Chemistry	3(3-0-6)
TE137 212	Rapid Analytical Techniques in Food Microbiology	3(3-0-6)
TE137 222	Advanced Food Microbiology	3(3-0-6)
TE137 412	Process Development and Control	3(3-0-6)
TE137 522	Sensory Evaluation in Food Research	3(2-3-6)
TE137 622	Safety Aspects of Food Production	3(3-0-6)
TE137 632	Risk Analysis in Food Industry	3(3-0-6)
TE137 642	International Food Safety Policy and Regulations	2(2-0-4)
TE137 652	Quality Monitoring, Verification and Improvement in Food Industry	3(3-0-6)
TE137 732	Current Topics in Food Innovation, Food Safety and Quality Management	2(2-0-4)
TE137 742	Logistic and Food Supply Chain Management	3(3-0-6)
TE137 752	Selected Topics in Food Science and Technology	3(3-0-6)
TE137 762	Innovation in Food Technology	3(3-0-6)

(5) Thesis (15 Credits)

TE137 899	Thesis (for plan A 2)	15 Credits
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More information of application, tuition fee, and admission requirement is available at

<https://gs.kku.ac.th/home/index.php/main-english.html>

Study Program		
1 st Year, 1 st Term	Program A (Credits)	
	A1	A2
TE137 710 Food Innovation, Safety and Quality Management Research Methodology	-	3(3-0-6)
TE137 610 Quality and Safety Management Systems in Food Industry	-	3(3-0-6)
TE137 xxx Elective course	-	5 Credits
TE137 898 Thesis	9 Credits	-
Total Credits of this term	9	11
Total accumulated credits	9	11
1 st Year, 2 nd Term	Program A (Credits)	
	A1	A2
TE137 510 Food Product Innovation, Market and Consumer Research	-	3(3-0-6)
TE137 xxx Elective course	-	5 Credits
TE137 891 Food Innovation, Food Safety and Quality Management Seminar I	-	1(1-0-2)
TE137 898 Thesis	9 Credits	2 Credits
Total Credits of this term	9	11
Total accumulated credits	18	22

2 nd Year, 1 st Term	Program A (Credits)	
	A1	A2
TE137 xxx Elective course	-	-
TE137 898 Thesis	9 Credits	-
TE137 899 Thesis	-	7 Credits
Total Credits of this term	9	7
Total accumulated credits	27	29
2 nd Year, 2 nd Term	Program A (Credits)	
	A1	A2
TE137 892 Food Innovation, Safety and Quality Management Seminar 2	-	1(1-0-2)
TE137 898 Thesis	9 Credits	-
TE137 899 Thesis	-	6 Credits
Total Credits of this term	9	7
Total accumulated credits	36	36

Course Description

TE137 112	Safety Monitoring and Analytical Techniques in Foods	2(2-0-4)
	Prerequisite : none	
	Analytical techniques for food quality and safety monitoring, analytical methods for evaluating food authenticity and case studies	
TE137 113	Food Analytical Techniques in Safety and Quality Aspects	3(3-0-6)
	Prerequisite : none	
	Analytical techniques for food quality and safety monitoring, screening techniques, rapid test kits, methods of confirmation and analytical methods for evaluating food authenticity, genetically modified (GM) foods, and hazards in foods, analytical techniques for food traceability	
TE137 122	Food Toxicology	3(3-0-6)
	Prerequisite : none	
	Source and toxic levels of plants, animals, microorganisms, food additives, contaminants and food allergens, conventional and rapid qualitative and quantitative methods for determination of food toxicants	
TE137 132	Functional Food Ingredients and Safety Aspects	3(3-0-6)
	Prerequisite : none	
	Functional food ingredients, novel foods and bioactive properties, toxicology and methods for assessing risk in functional food ingredients and dietary supplements, regulations, food labelling, health claims for supplements and functional foods	
TE137 142	Advanced Food Chemistry	3(3-0-6)
	Prerequisite : none	
	Structures and crucial functions of principal food components, chemical reactions, functional roles, and changes during processing and storage of the principal food components in various food systems, modification methods of food proteins, carbohydrates, and lipids, utilization in food industry, chemistry and changes of colors and flavors in foods are discussed, chemistry of selected food additives, bioactive constituents of foods	
TE137 212	Rapid Analytical Techniques in Food Microbiology	3(3-0-6)
	Prerequisite : none	
	Rapid and automatic analyses in food microbiology including physical, chemical,	

molecular and immunological methods, rapid analytical methods in food microbiology in processing and manufacturing at food establishments

TE137 222 Advanced Food Microbiology 3(3-0-6)

Prerequisite : none

Conventional methods, rapid methods and automation in microbiological analysis, rapid methods in enumeration and identification of microorganisms, application of microbial metabolites for analysis, rapid analytical methods for high risk foods e.g. milk, seafood, meats, poultry and fish, rapid methods for food borne pathogen detection and significance in food safety, application of rapid microbiological methods in food industry, stress responses of food borne pathogens to minimal food processing, probiotics and prebiotics application in food industry

TE137 412 Process Development and Control 3(3-0-6)

Prerequisite : none

Importance of process development and control, process control, computer control in process, unit operation control, process modeling, process optimization, overall equipment effectiveness, costing and economic evaluation, new process development, case study in process development and process control for food industry, plant design

TE137 510 Food Product Innovation, Market and Consumer Research 3(3-0-6)

Prerequisite : none

Process and product development, including food product innovation, product idea testing, development of product formulation, and product feasibility study, data synthesis for product specifications, final product testing with target consumers, market development strategy

TE137 522 Sensory Evaluation in Food Research 3(2-3-6)

Prerequisite : none

Effective test for identifying food product sensory characteristics, affective test for evaluating consumer feeling toward food products, experimental design, data collection, univariate and multivariate sensory data analysis, food products sensory profiling and preference mapping

TE137 610 Quality and Safety Management Systems in Food Industry 3(3-0-6)

Prerequisite : none

Overview of food quality management systems, food standards for food quality and safety, systems for product certification, and standards, managing food safety system with HACCP, audit and inspection system, International Quality and Food Safety Management Systems and Standards (ISO), Quality and Food Safety Management Systems and Standards: industry standard, Global Food Safety Initiative (GFSI), warning systems for food safety, food safety and quality

management systems case studies

TE137 622 Safety Aspects of Food Production 3(3-0-6)

Prerequisite : none

Overview of food safety, supply chain food safety; Global Good Agricultural Practices (GAP) for safety of agricultural products/primary production, Global Good Manufacturing Practices (GMP) and Hazard Analysis Critical Control Point (HACCP) for processing of food products/intermediates, final products, and distribution of food products to consumers, hazard identification, food traceability, authenticity, currently emerging issues and solution on food safety

TE137 632 Risk Analysis in Food Industry 3(3-0-6)

Prerequisite : none

Food defense, risk analysis, **risk assessment, defined**, criteria based ranking tools and toolbox, probabilistic scenario and sensitivity analysis, **risk management, defined**, value and enter the process, model, options, and decision-making principles for risk prevention and control, **Risk Communication**, Internal and external risk communication.

TE137 642 International Food Safety Policy and Regulations 2(2-0-4)

Prerequisite : none

Policy of different countries, food laws, regulations, and international standards for food safety (Codex Alimentarius, US FDA, EU regulations), other quality and food safety management systems (Halal, Kosher, organic, GMO free foods, GFSI, and FSMA), impacts of food safety on global economics, food safety case studies

TE137 652 Quality Monitoring, Verification and Improvement in Food Industry 3(3-0-6)

Prerequisite : none

Quality monitoring, verification and improvement in food industry, principles of quality improvement; corrective and preventive actions, quality evaluation and improvement processes, auditing of food quality and food safety systems, quality improvement tools, problem solving, systems failure analysis, and statistical quality tools, inspection and analysis strategy in quality system, case studies in food quality and food safety evaluation and improvement

TE137 710 Food Innovation, Safety and Quality Management Research 3(3-0-6)

Methodology

Prerequisite : none

Overview of research and its methodologies, experimental design, the nature of data and their collection, instrumental data, application of statistical procedures for data manipulations and analysis, univariate research, multivariate applications

TE137 722 Overview of Food Science and Technology 3(3-0-6)

Prerequisite : none

Integrated knowledge of food science and technology, chemical and physical properties of foods, principles of food microbiology, principles of food processing, and measurement and analysis of food quality and safety, food, nutrition and health

TE137 732 Current Topics in Food Innovation, Safety and Quality Management Systems 2(2-0-4)

Prerequisite : none

Interesting current topics in food innovation, safety and quality management systems

TE137 742 Logistic and Food Supply Chain Management 3(3-0-6)

Prerequisite : none

Demand and supply chain, concept and principle of logistics and supply chains food safety, logistic and inventory management for packaging and food products, food supply chain information management, quality and traceability in food supply chain, globalization of the food supply chain, future of food supply chain management, and case studies

TE137 752 Selected Topics in Food Science and Technology 3(3-0-6)

Prerequisite : none

Literature reviews on basic selected knowledge of food science and technology: chemical or physical properties of foods or food microbiology or food processing or food sanitation and case studies

TE137 762 Innovation in Food Technology 3(3-0-6)

Prerequisite : none

Techniques and new technology for food processing in industrial production: advanced drying technology and encapsulation, high pressure, hurdle, ohmic, microwave technology, advanced and rapid analytical methods for hazards determination in high risk foods, sensory profiling and preference mapping for food product development

TE137 891	Seminar in Food Innovation, Safety and Quality Management I	1(1-0-2)
	Prerequisite : none	
	Information inquiring of food science and technology literature, analyzing, compiling, and writing an academic report, capable of effective presentation and discussion	
TE137 892	Seminar in Food Innovation, Safety and Quality Management II	1(1-0-2)
	Prerequisite : TE137 891	
	Presentation and discussion on progression of the student's thesis (at least 70%)	
TE137 898	Thesis	36 Credits
	Prerequisite : none	
	Process of research innovation and effective application of technology in food safety and quality management, thesis proposal writing, experiment conducting, data analysis, discussion and presentation of research experiment, thesis writing	
TE137 899	Thesis	15 Credits
	Prerequisite : none	
	Process of research innovation and effective application of technology in food safety and quality management, thesis proposal writing, experiment conducting, data analysis, discussion and presentation of research experiment, thesis writing	