

Food Science (M.S. & Ph.D.)

Introduction

Kasetsart University offered courses in Food Science since 1964. It was the first academy to offer a Food Science degree program in Thailand. In 1980, the department evolved and was renamed the Department of Food Science and Technology. Since then, over 1,500 graduates have completed their studies from the Department and are serving in technical and administrative positions at food-related industries as well as leading academic and research institutions.

Doctoral Program

Plan 1.1

Total credits	minimum	52 credits
Curriculum structure		
a. Major courses	minimum	4 credits (audits)
- Seminar		4 credits (audits)
b. Thesis	minimum	52 credits
Course requirements		
a. Major courses	minimum	4 credits (audits)
- Seminar		4 credits (audits)
052697	Seminar	1, 1, 1, 1
b. Thesis	minimum	52 credits
052699	Thesis	1-52 credits

Plan 2.1

Total credits	minimum	52 credits
Curriculum structure		
a. Major courses	minimum	16 credits
- Seminar		4 credits
- Compulsory courses		3 credits
- Electives	minimum	9 credits
b. Thesis	minimum	36 credits

Course requirements

a. Major courses	minimum	16	credits
- Seminar	minimum	4	credits
052697 Seminar		1, 1, 1, 1	
- Compulsory courses	minimum	3	credits
052691 Advanced Research Methods in Food Science			3(2-3)
- Electives	minimum	9	credits

Master's Program

Plan A Type A 1**Total credits minimum 36 credits****Curriculum structure**

a. Major courses	minimum	2	credits
- Seminar		2	credits (audits)
b. Thesis	minimum	36	credits

Course requirements

a. Major courses	minimum	2	credits
- Seminar		2	credits (audits)
052597 Seminar		1, 1	(audits)
b. Thesis	minimum	36	credits
052599 Thesis		1-36	credits

Plan A Type A 2**Total credits minimum 36 credits****Curriculum structure**

a. Major courses	minimum	24	credits
- Seminar		2	credits
- Compulsory courses		5	credits
- Electives	minimum	17	credits
b. Thesis	minimum	12	credits

Course Description

- 052511 Cereal Chemistry 3(2-3)
The formation of cereal grains, chemical properties and analysis of chemical contents of various cereals and their products. Field trip required.
- 052512 Carbohydrate in Foods 3(2-3)
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.
- 052513 Lipid in Foods 3(2-3)
Property, composition, and function of lipids in various foods, lipid separation and modification, methods used for analysis of lipids, lipid deterioration during process and storage, Field trip required.
- 052514 Protein in Foods 3(2-3)
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.
- 052515 Enzyme in Foods 3(2-3)
Nature and role of natural enzymes occurring in food system, influence of industrial processing on enzymes in food, application of enzymes in food industry. Field trip required.
- 052516 Food Additives 3(2-3)
Types of food additives and their applications in food, effect of food additive on quality and food preservation. Field trip required.
- 052517 Advanced Food Science 3(3-0)
Advanced and new techniques in analysis and food science research.

- 052518 Chemistry of Food Flavor and Analysis 2(2-0)
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.
- 052519 Laboratory in Food Flavor Analysis 1(0-3)
Laboratory of 052518 Chemistry of Food Flavor and Analysis.
- 052521 Advanced Food Processing 3(2-3)
Advanced study of the new techniques used in food processing. Processing principles to the development of food industry. Field trip required
- 052522 Colloidal Systems in Foods 3(3-0)
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.
- 052523 Food Analysis 2(2-0)
Principles and applications of chemical, physical and sensory methods in food analysis.
- 052531 The Application of Physical Chemistry to Food Science 2(2-0)
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.
- 052541 Food Toxicology 3(2-3)
Occurrence of toxin in raw materials and products; prevention, elimination and analyses of toxic substances from microorganism and chemical substances in food. Field trip required.

- 052542 Hygienic Problems of Foods 3(2-3)
Hygienic specification of foods, microorganism and injured cell caused hygienic problems of foods, case study on hygienic of food plant and exported food products, enumeration of microorganism using the modern method and quality assurance of food industry. Field trip required.
- 052543 Nutrition in Food Science 2(2-0)
Recently nutrition situation, relationship and importance of nutrition related to food science in order to improve life quality, social and responsibility of producers to consumers.
- 052544 Nutrition in Food Processing 2(2-0)
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.
- 052545 Quality Management in Food Industry 2(2-0)
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.
- 052591 Research Methods in Food Science 2(1-3)
Research methodology in food science. Planning, proposal writing, report writing, and using of instrumentation in food science research. Principle of good laboratory practices. Application of software in instrumental control and data analysis.
- 052596 Selected Topics in Food Science 1-3
Study on selected topics in food science at the master's degree level. Topics are subject to changed each semester.

- 052597 Seminar 1
Presentation and discussion on current interesting topics in food science and technology at the master's degree level.
- 052598 Special Problems 1-3
Study and research in food science at the master's degree level and compile into a written report.
- 052599 Thesis 1-36
Research at the master's degree level and compile into a thesis.
- 052611 Advanced Food Analysis 3(2-3)
Modern methods, techniques, and progress in food analyses. Development of appropriate methods for specific situation. Field trip required.
- 052612 Advanced Food Additives 3(2-3)
Current research on different aspects of food additives. New food additives. Toxicological significance and use of food additives. Modern techniques to determination of food additives.
- 052621 Advanced Dairy Technology 3(2-3)
Progress and problems in dairy products; caseinate, lactalbumin and cheese production. Changes of dairy products during processing and storage. Utilization of waste products, whey from dairy industry. Field trip required.
- 052631 Physical and Engineering Properties of Biomaterials 3(3-0)
Structure of solid biomaterials. Physical and engineering properties of biomaterials; mechanical, surface, thermal and electrical. Changes of properties and testing. Phase transition of biomaterials. Case study.

- 052661 Advanced Food Microbiology 3(2-3)
Quantitative evaluation of microorganisms in food by modern, rapid and automatic techniques. Microbiological quality assurance of food. Relationship between starter culture and quality of fermented food products. Production and storage of starter culture for food industry. Field trip required.
- 052691 Advanced Research Methods in Food Science 3(2-3)
Advanced research methods in Food Science, preparation of research proposal, application of computer and information technology for data retrieval and data analysis. Data collection and manuscript preparation for technical presentation and group discussion with academic and food industry, technical report writing for publication in accredited journals in the Food Science area or for technical report in food industry.
- 052696 Selected Topic in Food Science 1-3
Selected topics in food science at the doctoral degree level. Topics are subjected to be changed each semester.
- 052697 Seminar 1
Presentation and discussion on interesting topics in food science at doctoral degree level.
- 052698 Special Problems 1-3
Study and research in food science at the doctoral degree level and compile into a report.
- 052699 Thesis 1-52
Research study at the doctoral degree level and writing thesis.