**Department of Food Science**

**식품과학과**

**1.Department Introduction**

After the first establishment of Department of Livestock & Food Processing in 1969, the department had changed its name to Department of Food Science & Technology in 1972 to deal with wide areas of Food Science and Technology. Department of Food Science & Technology started to accept students for master's degree in 1978 and students for doctor's degree in 1981. The Department added another major, Food Service & Industry, in 2004. Two majors, Food Science & Technology and Restaurant & Culinary Management, are currently operated under the graduate school program.

**2.List of Faculty Members**

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| --- | --- | --- | --- | --- |
| Position | Name | Last School Graduated | Degree | Major |
| Associate Professor | Gi Dong Han | Niigata University | Ph. D. | Molecular Food Science and Technology |
| Associate Professor | Myunghee Kim | Cornell University | Ph. D. | Food Safety/Food Microbiology |
| Associate Professor | Gwang In Byun | Kyunghee University | Ph. D. | Tourism Management / Food Service Management |
| Associate Professor | Dong-Jin Kim | Oklahoma State University | Ph. D. | Hospitality Management |
| Associate  Professor | Eun-Jung Kwak | Ochanomizu University | Ph. D. | Food and Cookery Science |
| Assistant  Professor | Young-Jung Wee | Chonnam National University | Ph. D. | Food Bioengineering |

**3.Course Description**

■ 기초공통(Basic Major Courses)

고급기능성식품학(1) 3 credit

(ADVANCED FUNCTIONAL FOODS Ⅰ)

Functional food is any fresh or processed food to have a health-promoting or disease-preventing, disease-recovering property beyond the basic function of supplying nutrients. In this lecture, we introduce the kinds of functional food and its role in our body.

고급식품생물공학 3 credit

(ADVANCED FOOD BIOENGINEERING)

To develop the food material through cultivation of microorganisms, animal cells, and plant cells, the concepts of bioengineering as well as the characteristics of biomolecules (carbohydrates, lipids, proteins, and nucleic acids) should be extensively understood. In this lecture, the recent advances in food bioengineering including bioreaction processes (batch, fed-batch, and continuous bioreactors), genetic manipulation technologies, recombinant microorganisms, plant cell cultures, and animal cell cultures will be studied and discussed.

고급식품생화학 및 면역학 3 credit

(ADVANCED FOOD BIOCHEMISTRY AND IMMUNOLOGY)

Biochemistry is the study of the chemical processes in living organisms. It deals with the structure and function of cellular components such as proteins, carbohydrates, lipids, nucleic acids and other biomolecules. Immune system in our body is a collection of mechanisms that protects host against infection by identifying and killing pathogens. Allergy and autoimmune disease are the negative results of immune defense. Immune system can be activated inappropriately and excessive activity causes disease. The original concept of allergy included all immune-mediated disease and the term allergy was interchangeable with the term "hypersensitivity." Substances that trigger allergic responses are antigens. These are often proteins that can be found in life-environmental condition and foods. Food proteins should be given priority consideration whenever immune-mediated disease appears, since this is the biggest chunk of the environment to get inside human bodies and to interact with immune networks. In this lecture, we study the biochemical understanding and abnormal responses and interactions between immune system and foods ingested to our body.

관능방법 3 credit

(SENSORY EVALUTIONS OF FOOD)

Students study the chemicophysical evaluation methods for food tastes, color, shape, and flavor components and sensory evaluation methods by the laboratory and consumers.

기초통계학 3 credit

(FUNDAMENTAL STATISTICS)

An introduction to the concepts of research design, methodology,

sampling techniques, reliability, internal and external validity and the scientific method

in foodservice problem solving. Critical analysis of research studies in the foodservice

Industry and the writing of proposals.

식품위생및법규(1) 3 credit

(FOOD HYGIENE & LAW Ⅰ)

This lecture covers how hazards are incorporated into foods throughout the food production, processing, and distribution and how to control the hazards.

식품학특론 3 credit

(ADVANCED FOOD SCIENCE)

Students study the physiochemical changes during cooking and food processing, and discuss the current research trends and techniques for foods.

양조학총론 3 credit

(GENERAL BREWING AND DISTILLING)

To understand a wide range of fermented alcoholic beverages, deal with wine, which is made from fruits, and beer and oriental liquor, which is saccharified and fermented from grains. All categories of spirits such as whisky and soju are studied to get a general background on the distilled alcoholic liquor.

외식경영세미나 3 credit

(FOODSERVICE MANAGEMENT SEMINAR)

In-depth study of foodservice management including theory, research, operations and practical experience with emphasis commercial food service systems. Analysis and synthesis of a comprehensive management philosophy consistent with theory.

외식경영연구데이타분석론 3 credit

(ADVANCED STUDIES OF FOODSERVICE DATA ANALYSIS)

Students study the theoretical grounds for the research of food service management under the scientific analysis system and learn relevant statistical techniques.

■ 전공(Major Courses)

개별연구(1) 3 credit

(INDEPENDENT STUDY (1))

개별연구(2) 3 credit

(INDEPENDENT STUDY (2))

식품가공학과세미나 1 credit

(SEMINAR IN FOOD SCIENCE AND TECHNOLOGY)

특수문제연구(1) 3 credit

(SPECIAL STUDY(1))

■ 식품가공학전공(FOOD SCIENCE AND TECHNOLOGY)

고급곡물주제조기술 3 credit

(ADVANCED BEER AND ORIENTAL LIQUOR MAKING TECHNOLOGY)

The advanced technologies of malting, mashing, fermenting are studied. Traditional oriental liquors from Korea, China and Japan are studied as scientific angle. Improvement of organoletic characteristics of them, product developing technology are studied.

고급기능성식품학(2) 3 credit

(ADVANCED FUNCTIONAL FOODS Ⅱ)

Functional food is any fresh or processed food to have a health-promoting or disease-

preventing, disease-recovering property beyond the basic function of supplying nutrients. In this lecture, we study the bioactive molecules in natural materials and its function in our body. It includes processed food or foods fortified with health-promoting additives, like "vitamin-

enriched" products and fermented foods.

고급발효공학 3 credit

(ADVANCED FERMENTATION TECHNOLOGY)

This lecture is based on isolation of industrial microorganisms, storage and improvement methods, development of seed culture for industrial fermentations, separation and purification of fermentation products, economic feasibility of fermentation, immobilized enzyme chemistry, diffusion and kinetics of immobilized enzymes, design and analysis of immobilized enzyme reactors, industrial application of immobilized enzymes and immobilized microorganisms, production and isolation of intracellular and extracellular enzymes, and separation and purification of enzymes.

고급산업미생물학 3 credit

(ADVANCED INDUSTRIAL MICROBIOLOGY)

This lecture covers biological principles and biotechniques of alcohol fermentation and Korean traditional fermentation foods.

고급식품가공학 I 3 credit

(ADVANCED FOOD PROCESSING TECHNOLOGYⅠ)

Food processing is the set of methods and techniques used to transform raw ingredients into food or to transform food into other forms for consumption by humans or animals either in the home or by the food processing industry. Food processing typically takes clean, harvested crops or slaughtered and butchered animal products and uses these to produce attractive, marketable and often long shelf-life food products. Similar process are used to produce animal feed. In this lecture, we study the food processing technology using vegetable products.

고급식품가공학II 3 credit

(ADVANCED FOOD PROCESSING TECHNOLOGY II )

Food processing is the set of methods and techniques used to transform raw ingredients into food or to transform food into other forms for consumption by humans or animals either in the home or by the food processing industry. Food processing typically takes clean, harvested crops or slaughtered and butchered animal products and uses these to produce attractive, marketable and often long shelf-life food products. Similar process are used to produce animal feed. In this lecture, we study the food processing technology using livestock products.

고급식품공학 3 credit

(ADVANCED FOOD ENGINEERING)

To introduce the students to the advanced knowledges in recent developments in the field of food science and technology, this course will contain a considerable amount of discussions on recent literatures. In addition, engineering principles of food technology including material and energy balances, thermodynamics, fluid mechanics, refrigeration, drying, heat sterilization, evaporation, and distillation will be lectured and discussed.

고급식품미생물학(1) 3 credit

(ADVANCED FOOD MICROBIOLOGY Ⅰ)

Students study and discuss the existence and role of microorganisms in the food, classificatory position, shape and microstructure of food microorganisms, methods to prepare, sterilize and culturemicroorganism media for isolation, macroscopic observation methods, staining methods, microscopy and strain identification methods.

고급식품미생물학(2) 3 credit

(ADVANCED FOOD MICROBIOLOGY Ⅱ)

The role of microorganisms in foods, physiology, biochemistry, and culturing methods is reviewed in this lecture.

고급식품생물공학 3 credit

(ADVANCED FOOD BIOENGINEERING)

To develop the food material through cultivation of microorganisms, animal cells, and plant cells, the concepts of bioengineering as well as the characteristics of biomolecules (carbohydrates, lipids, proteins, and nucleic acids) should be extensively understood. In this lecture, the recent advances in food bioengineering including bioreaction processes (batch, fed-batch, and continuous bioreactors), genetic manipulation technologies, recombinant microorganisms, plant cell cultures, and animal cell cultures will be studied and discussed.

고급식품위생학(2) 3 credit

(ADVANCED FOOD HYGIENE Ⅱ)

Transmissible disease, food poisoning, food additives, agrochemical residues, and environmental pollutants are reviewed.

고급와인제조기술 3 credit

(ADVANCED WINE MAKING TECHNOLOGY)

To get a deep understanding of raw material of wine, this subject deal with the variety of fruits and selection criteria and analysing technique. Selection of yeast, proper treatment of raw material, fermentation and maturation technology, and organoleptic evaluation skill are studied and practiced.

고급증류주제조기술 3 credit

(ADVANCED TECHNOLOGY OF DISTILLED ALCOHOLIC BEVERAGE)

Distilling principles of whisky, brandy, liqueur, soju etc. are studied. Maturation mechanisms and blending skills are studied and practiced. Evaluation of quality and cost is included. Alcohol production by continuous still as an alternative energy source is included.

고급효소공학 3 credit

(ADVANCED ENZYME TECHNOLOGY)

This lecture deals with the fundamentals principles of enzyme science and technology. The selected topics on classification of enzymes, isolation and purification of enzymes, characterization of enzymes, enzyme kinetics, enzyme immobilization, biocatalytic reactor design, and industrial biocatalytic processes will be lectured and discussed.

곡물이용학 3 credit

(CEREAL TECHNOLOGY)

This lecture covers current status of cereal processing and technology.

균류자원학 3 credit

(FUNGAL RESOURCES)

This lecture focuses on fungi as a valuable resource for industry. Penicillin production by Penicillium spp. is a representative example of fungal resources.

기능성식품학과제연구 3 credit

(RESEARCH IN FUNCTIONAL FOODS)

In order to increase the knowledge informations of functional foods, we research the new natural material supposed to have bioactivities and various topics in the functional foods will be reviewed and discussed in depth among students and lecturer.

담자균학 3 credit

(SURVEY OF BASIDIOMYCETES)

This lecture deals with life cycle of basidomycetes, nutritional requirements, physiology, and industrial applications.

식품가공연습 I 3 credit

(CURRENT TOPICS IN VEGETABLE FOOD PROCESSING TECHNOLOGY)

Various new topics in kinds of journal of the food science and technology will be reviewed and discussed in depth among students and lecturer. In this lecture, we focused on food processing with vegetable products.

식품가공연습 II 3 credit

(CURRENT TOPIC IN ANIMAL FOOD PROCESSING)

Various new topics in kinds of journal of the food science and technology will be reviewed and discussed in depth among students and lecturer. In this lecture, we focused on food processing with livestock products.

식품나노과학 3 credit

(FOOD NANOTECHNOLOGY)

Food Nanotechnology is focused on the applications of nanotechnology in food to be used in raw materials, cultivation, processing, or packaging. This area of science is relatively new, however, it has broad applications as future technology. Those examples are developing nanocapsules for delivery of pesticides, fertilizers and other agrichemicals more efficiently, improving bioavailability of neutraceuticals, developing detection method for chemicals and foodborne pathogens by nanoparticles, and increasing absorption of nutrients using nanosize powders. These kinds of technology will be dealt in this lecture.

식품면역학및분자생물학과제연구 3 credit

(RESEARCH IN FOOD ALLERGY AND MOLECULAR BIOLOGY)

In this lecture, gives students exposure to recent research topics in food allergy, food intolerance and molecular biology that is essential field to study bioactive molecular using internet search site including pubmed. Students prepare for the weekly presentation through readings of the searched topics and discussion with presentation speakers. These presentation and discussions help students to prepare their experimental schedule.

식품분리정제기술 3 credit

(FOOD SEPARATION AND PURIFICATION TECHNOLOGY)

The separation and purification of biomaterials during various stages of manufacturing is an important industrial operation, and bioseparations become even more critical in the food science and technology. In this lecture, the selected topics on fundamentals of bioseparations, extraction, precipitation, chromatography, electrophoresis, membrane separations, filtration, crystallization, and applications in the food industry will be studied, and the recent trends in food manufacturing and new developments in biotechnology will be discussed.

식품생물공학과제연구 3 credit

(RESEARCH IN FOOD BIOENGINEERING)

The recent research trends in the field of food bioengineering will be analyzed and organized, and an interesting research topic will be selected among the related subjects including pharmaceuticals, foods, natural resources, and bioprocesses. Graduate students will design a research project, investigate the project, analyze the project, and present the results, which enable the students to understand current developments in the food bioengineering and to apply to their next research.

식품진균학 3 credit

(FOOD MYCOLOGY)

This class highlights yeasts, filamentous fungi, and fungi involved in food spoilage, food safety, and food production.

식품화학과제연구(1) 3 credit

(RESEARCH IN FOOD CHEMISTRY Ⅰ)

Students will review the current food chemistry areas and make a research plan for a specific topic.

주류제품개발과제연구 3 credit

(DEVELOPMENT OF ALCOHOLIC BEVERAGE PRODUCT)

Each step of product developments -from market research to the design of dry goods and wet goods- is studied. Current technologies of multi functional bottling and packaging are studied. Organoletic evaluation methods of liquid development and quality control procedures of manufacturing and delivering stage are included.

■ 외식산업학전공

(RESTAURANT AND CULINARY MANAGEMENT)

경영자리더십특강 3 credit

(CONTEMPORARY ISSUES IN LEADERSHIP)

Explore current issues in the study of leadership. Themes based on current leadership research and writings that reveal new understandings of the leader's role as a servant, facilitator, and collaborator with emphasis on the de­velopment of leadership abilities in the individual for different group situations.

고객관리세미나 3 credit

(CUSTOMER DEVELOPMENT & RELATIONSHIP MANAGEMENT SEMINAR)

Study of the latest developments in customer development and customer relationship

management in the foodservice industry. The concepts and strategies of foodservice

marketing, customer development, and customer relationship management.

고객만족경영 3 credit

(CUSTOMER SATISFACTION MANAGEMENT)

Study of contemporary customer satisfaction management principles in the foodservice industry. Service improvement and customer satisfaction in the foodservice industry through the use of total quality management. Applications are used to achieve long-term profits through

customer satisfaction.

고급실무통계학 3 credit

(ADVANCED PRACTICAL RESEARCH METHODOLOGY)

Advanced research methodologies in the foodservice research. Examination of multivariate

data analysis including factor analysis, regression analysis, multivariate analysis of variance, cluster analysis, and multidimensional scaling. Development of individual research projects.

관광산업마케팅전략 3 credit

(TOURISM MARKETING)

Examination of a broad range of tourism market­ing management topics from

a strategic perspective. Understanding of content, theory and research methods involved

in the development of strategic marketing knowledge.

관광연구방법론 3 credit

(RESEARCH METHODOLOGY IN TOURISM) Scientific research methodologies as applied to problems in tourism and foodservice management. Essential concepts in contemporary re­search, data analysis techniques in tourism and foodservice research. Development of individual research projects.

단체급식관리론 3 credit

(Food service management)

Students study the current state and prospect of food service market. And students discuss the details for the development of new concepts, develop the specific food service management capacity, and acquire the knowledge for the cultivation of food service management specialists.

레스토랑시설및구조연구 3 credit

(RESTAURANT FACILITIES & LAYOUT )

Students will have a chance to understand the importance of facilities and utilities as well as design and learn the efficient management technique of the kitchen to become the experts in hotel kitchen management.

메뉴상품기획론 3 credit

(MENU PLANNING & DEVELOPMENT)

Understanding of the science of menu planning and development. Analysis of the effectiveness of a menu as a selling tool in terms of profitability. Specialty menus such as ethnic, fast food, catering and various situations are included.

사찰음식연구 3 credit

(TEMPLE FOOD STUDY)

Temple food is the food that is invented in Buddhist temples and has a long history. In this lecture, the characteristics, ingredients and medical action of temple food are studied and practiced.

식음료상품경영론 3 credit

(FOOD & BEVERAGE MANAGEMENT)

Overview of the products, production techniques, presentation, and service styles of

food and beverage operations. Planning, producing, and marketing food and beverage

services. Examination of cost control techniques for food, beverage, labor, and supplies.

식품품질평가론 3 credit

(EVALUATION OF FOOD QUALITY)

Students study the methods of physiochemical and sensory evaluation of foods, and understand the characteristics and evaluation methods for each food during evaluating the food quality.

실험조리연구방법론

(Research Methodology of Experimental Cooking)

Students read research papers regarding the cooking science and learn research methods in the field of cooking science. And, students will understand the actual application process of various theories in the cooking science through experiments and exercises.

약선조리연구 3 credit

(EXPERIMENTAL COOKING APPLYING MEDICINAL HERB)

Students investigate the cooking methods to increase bioactivities, practice cooking applying medicinal herb and natural resources, and understand the development process of new menu.

외식경영사례분석 3 credit

(CASE STUDIES IN FOODSERVICE MANAGEMENT)

Professional workshops of various topics related to foodservice management. Integration of skills obtained in other courses and work experiences in the foodservice and related organizations.

외식산업마케팅론 3 credit

(FOODSERVICE MARKETING)

Students study the service marketing strategies for consumers which can be applied to the food service industry as the new industry.

외식사업인적자원관리론 3 credit

(FOODSERVICE HUMAN RESOURCE MANAGEMENT)

The concepts of management of people for effective operations in the foodservice enterprise. The theory, practice, and research related to human resource management in the foodservice and related service industries. Topics include job analysis, human resource development, training, compensation, and labor relations.

외식사업재무관리특론 3 credit

(ADVANCED FOODSERVICE FINANCE)

In-depth study of the theory and practice of operational and strategic financial policy and problems in the foodservice industry. Financial information systems, fund al­location, asset management, financial structure, and analysis of the financial environment.

외식사업포지셔닝론 3 credit

(FOODSERVICE POSITIONING STRATEGY)

Principles and techniques for foodservice positioning. Planning and evaluating foodservice organizations’ positions and brand management strategies. Consists of lectures, discussions, and case studies.

외식사업프로젝트 3 credit

(CAPSTONE PROJECT TO THE FOODSERVICE OPERATION)

Integration of previous classroom, laboratory, and practical experiences through development of a comprehensive project. Organization, design, and management of the different styles of restaurant operations. Interaction with industry professionals in the foodservice industry.

외식재무관리 3 credit

Un­derstanding the role of the financial function in foodservice organizations. Learn how to use analytic concepts as managerial tools to examine the profit­ability of foodservice firms and to make superior capital investment decisions.

외식창업세미나 3 credit

(FOODSERVICE PROJECT SEMINAR)

Students will have a chance to prepare a draft plan and a business plan for food service project, analyze feasibility, and discuss based on the experiences of entrepreneurs.

음식문화사연구3 credit

(Research of Food and culture)

Students study various food cultures in the world and learn the relations between food, culture, and history. And, students improve their understanding in various cultures and histories to cultivate experts in the food service for the globalization era.

전통주연구 3 credit

(STUDY OF KOREAN TRADITIONAL ALCOHOLIC BEVERAGE)

The history, type and method used to prepare Korean traditional alcoholic beverages are discussed. In addition, the *nuruk* (Korean traditional starter) and fermentation characteristics are studied. Also, students practice preparing *nuruk*, *macgulli*, *yakju* and *soju* using a recipe from an old cook book.

조리과학연구 3 credit

(FOOD SCIENCE)

Students study fundamental principles of food preparation and recent advances in food science. And chemical and physical composition of foods and their physicochemical changes during processing, storage and preparation are discussed. Topics also cover human nutrition and food system management.

향토음식연구 3 credit

(LOCAL DISH STUDY)

Local dish is the traditional cuisine made using food produced in each province and unique cooking method. In this lecture, the kind, characteristics and history of local dish made in all parts of the country are discussed and practiced. In addition, by better understanding local dish in Korean traditional cuisine, we may be able to increase the use of local dish in the food service industry.