

**ALANYA ALAADDİN KEYKUBAT ÜNİVERSİTESİ**  
**LİSANSÜSTÜ EĞİTİM ENSTİTÜSÜ**  
**GIDA MÜHENDİSLİĞİ ANA BİLİM DALI**  
**GIDA MÜHENDİSLİĞİ TEZLİ YÜKSEK LİSANS (%100 İNGİLİZCE) N.Ö. PROGRAMI**  
**DERS İÇERİKLERİ**

**I.YIL – I. YARIYIL**

DERS KODU	DERSİN ADI	DÖNEM	DERS SAATI			AKTS	İÇERİK
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LEE 572	MASTER FIELD OF SPECIALIZATION	FALL	4	0	0	8	It is a theoretical course that will be applied to transfer the knowledge, skills and experiences of the advisor in the scientific field in which the advisor is working, to give students the ability to follow and evaluate the scientific ethics and study discipline, to follow and evaluate the current literature, to create and conduct the scientific basis of thesis studies.
LEE 582	MASTER ADVISING	FALL	0	1	0	1	It is an application course that the thesis advisor will open with the master's field of specialization and the thesis study.
FDE 501	SCIENTIFIC RESEARCH METHODS AND ETHICS	FALL	3	0	0	6	Experience the preparation of scientific research proposals with concepts related to graduate, scientific research methods. It will be designed as a plan that can be applied and applied with appropriate research methods, and the findings and practices obtained with the application can be designed appropriately and ethically applied.
FDE 511	EXPERIMENTAL FOOD MICROBIOLOGY	FALL	2	2	0	5	Planning, sampling, enumeration methods, bacterial analyses, indicator yeast-mould analyses, isolation and identification methods, inoculation procedures
FDE 513	LACTIC ACID BACTERIA	FALL	2	2	0	5	Classification and properties of lactic acid bacteria, metabolism, antimicrobial compounds produced by lactic acid bacteria, isolation and identification of lactic acid bacteria, use of lactic acid bacteria in food industry, starter cultures and bacteriophages.
FDE 515	TRENDS in FOOD PACKAGING TECHNOLOGIES	FALL	3	0	0	5	Interactions between packaging and food spoilage, packaging applications in different food types, aseptic packaging, modified and controlled atmosphere packaging, active packaging, intelligent packaging, bioactive packaging, biodegradable packaging, migration issues in legislations.
FDE 515	TRENDS IN FOOD PACKAGING TECHNOLOGIES	FALL	3	0	0	5	Interactions between packaging and food spoilage, packaging applications in different food types, aseptic packaging, modified and controlled atmosphere packaging, active packaging, intelligent packaging, bioactive packaging, biodegradable packaging, migration issues in legislations.
FDE 517	PROBIOTICS	FALL	3	0	0	5	Probiotic microorganisms, general properties of probiotics, metabolites produced by probiotics, isolation, identification and preservation methods of probiotics, health benefits of probiotics, use of probiotics in food production, novel probiotic products.
FDE 521	ADVANCED FOOD CHEMISTRY	FALL	3	0	0	5	This course covers the chemical structures, characteristics, and functional properties of major essential dietary food components, including carbohydrates, proteins, lipids, vitamins, minerals, and water, by also detailing the physical and chemical changes that occur in these components during food processing. The course also focuses on the natural antioxidants in foods and the effects of food processing on these components. Food additives, including their classification and food applications, is another topic covered within this course
FDE 523	FUNCTIONAL FOODS AND NUTRACEUTICALS	FALL	3	0	0	5	This course focuses on foods and nutraceuticals with the potential of health promotion and disease prevention. Within this context, the major food bioactives/foods, including dietary fiber, probiotics and prebiotics, phytochemicals, and functional lipids, and their role and metabolic aspects in reducing risk for major chronic diseases will be detailed. Laws governing functional foods and the assessments for their safety and efficacy will also be discussed.
FDE 525E	ADVANCED INSTRUMENTAL TECHNIQUES FOR FOOD ANALYSIS	FALL	3	0	0	5	This course covers principles and food applications of spectroscopic (i.e., UV-Vis spectroscopy, Near Infrared spectroscopy, Fourier Transform Infrared spectroscopy, Nuclear Magnetic Resonance spectroscopy, Atomic Absorption spectroscopy), and chromatographic (high performance liquid chromatography, gas chromatography) methods, as well as mass spectrometry and appropriate sample preparation techniques (i.e, microwave-assisted processes, supercritical fluid extraction).
FDE 527	FOOD PROCESSING AND IMPACT ON NUTRITION	FALL	3	0	0	5	This course elucidates the relationship between food processing and nutrition, particularly, the properties of nutrients, effects of different processes, commodities, and the addition of nutrients. The general overview of the stability of the essential and some nonessential nutrients and the alterations that occur in these nutrients during fruit and vegetable processing, cereal processing, legume

							and oil seed processing, meat processing, and dairy processing will be covered. Techniques for improved nutritional quality of processed foods will also be discussed.
FDE 531	THERMAL PROCESS ENGINEERING	FALL	3	0	0	5	General principles of heat transfer. Conduction and thermal conductivity. Experimental methods for the determination of thermal conductivity, methods of analysis. Steady and unsteady state conduction. Analytical and numerical solutions. Thermal methods applied in food processing.
FDE 535	CEREAL PRODUCTS	FALL	3	0	0	5	Cereals and their storage. Cereal chemistry. Starch and starch-based products. Bread production. Baker's yeast and chemical leaveners. Production of biscuits, cookies, crackers and cakes. Hard wheat products: pasta and bulghur. Breakfast cereals and snack foods.
FDE 537	BASIC COOKING METHODS	FALL	3	0	0	5	Nutrition. Nutritional elements. Purpose of cooking. Heat transfer types. Classification of cooking methods: Moist, dry, and new cooking methods. Equipments. Effect of different cooking methods on health. Occupational health and safety.
FDE 541	SENSORY ANALYSIS	FALL	3	0	0	5	Sensory properties of foods; The properties of various products perceived by appearance, taste, smell and touch and the mechanisms that enable these qualities to be understood. Visual, olfactory, taste and tactile / kinesthetic senses. Psychophysical senses; rating, measurement, analysis and interpretation according to product features. Principles of odor and taste tests, physical methods of color and structural property measurements. Educational sensory panels, difference test, threshold and dilution tests, sequencing tests. Descriptive and proportional methods, hedonic tests
FDE 543	STORAGE METHODS OF FRUIT AND VEGETABLES	FALL	3	0	0	5	It is aimed to give information about the cooling and freezing techniques, which are among the basic processes applied in the fruit and vegetable industry, and to teach the application methods of these techniques. It is also aimed to introduce the cooling systems and freezing methods and equipment used within the scope of the course.
FDE 545	NANOTECHNICS AND NANO-APPLICATIONS IN FOODS	FALL	3	0	0	5	The aim of this course is to introduce the understanding of basics, principles and new developments of nanotechnology and applications in foods. Also, developments on nanotechnology in food industry and their effects on human health and environment will be explained.
FDE 547	COLLOIDAL PROPERTIES OF FOODS	FALL	3	0	0	5	The functions of colloid food systems and food constituents as emulsifier, stabilizer, tissue regulator, gel and foam maker. Thermodynamic, electrical, rheological and kinetic properties of colloid food systems. Importance, classification and measurement methods of porous structures.

### I.YIL – II. YARIYIL

DERS KODU	DERSİN ADI	DÖNEM	DERS SAATI			AKTS	İÇERİK
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LEE 572	MASTER FIELD OF SPECIALIZATION	SPRING	4	0	0	8	It is a theoretical course that will be applied to transfer the knowledge, skills and experiences of the advisor in the scientific field in which the advisor is working, to give students the ability to follow and evaluate the scientific ethics and study discipline, to follow and evaluate the current literature, to create and conduct the scientific basis of thesis studies.
LEE 582	MASTER ADVISING	SPRING	0	1	0	1	It is an application course that the thesis advisor will open with the master's field of specialization and the thesis study.
FDE 503	GRADUATE SEMINAR	SPRING	0	1	0	6	Providing students' presentations in class by making studies on the field they intend to research.
FDE 510	FOOD MYCOLOGY AND VIROLOGY	SPRING	3	0	0	5	Food spoilage moulds, industrial moulds, mycotoxigenic moulds, mycotoxins, detoxification methods, mycotoxin analyses, food virology, bacteriophages in dairy, use of bacteriophages in food safety
FDE 512	PREDICTIVE MICROBIOLOGY	SPRING	3	0	0	5	Growth models, describing inactivation kinetics by mathematical methods, using software programmes in food predictive microbiology
FDE 514	FERMENTED DAIRY PRODUCTS	SPRING	3	0	0	5	Basic processes applied in the production of fermented dairy products (yoghurt, kefir, koumiss, cheese), microbiology and biochemistry of fermented dairy products, starter cultures, nutritional value of fermented dairy products and their effects on human health, recent advances in fermented dairy products science and technology

FDE 516	<a href="#">QUALITY DEFECTS IN DAIRY PRODUCTS AND THEIR PREVENTION WAYS</a>	SPRING	3	0	0	5	<a href="#">Sensory, physical and compositional quality defects encountered in dairy products such as UHT and pasteurized milk, yoghurt, cheese, butter etc., their causes and prevention ways.</a>
FDE 520	<a href="#">FOOD TOXICOLOGY</a>	SPRING	3	0	0	5	<a href="#">This course covers the general principles of toxicology, including the classification of food toxicants, toxic dose, dose-response relationship, the mechanisms of toxicity, and the tests used for determining toxicity (acute, subacute, subchronic, and chronic toxicity tests). Within this context, the toxic effects of the most important food-borne toxicants, including natural food toxicants (endogenous plant and animal toxins), food contaminants (environmental pollutants, mycotoxins, pesticides, and veterinary drug residues), toxicants unintentionally entering foods during processing (i.e. PAHs, acrylamide, nitrosamines), and food additives, will be given in detail.</a>
FDE 522	<a href="#">ADVANCED HUMAN NUTRITION</a>	SPRING	3	0	0	5	<a href="#">This course covers an in-depth examination of the biochemical and physiological functions of nutrients by focusing on their potential to promote health and prevent/manage diseases. A review of cellular physiology and the digestive system will be covered as principle components of metabolic processes. Digestion, absorption, and transport of energy-yielding nutrients (including carbohydrates, proteins, and lipids) will be detailed in order to address the conversion of food into useful energy. The effects of integrated regulation of human metabolism -at physiological, cellular, and molecular levels- on energy expenditure and body composition will also be discussed.</a>
FDE 524	<a href="#">FOOD PROCESSING BY-PRODUCTS AND THEIR UTILIZATION</a>	SPRING	3	0	0	5	<a href="#">This course provides a comprehensive overview on food processing by-products and their utilization as source of novel functional ingredients. The topics covered within this context include: emerging technologies to extract valuable phytochemicals from food processing by-products; bioactive compounds and their health effects in by-products from fruit, vegetable, cereal, meat, dairy, winery, honey, etc. processing industries; prebiotics and dietary fibers from food processing by-products; the use of food industry by-products as nutrient replacements.</a>
FDE 530	<a href="#">NON-THERMAL PROCESSING TECHNOLOGY IN FOOD INDUSTRY</a>	SPRING	3	0	0	5	<a href="#">Principles of non-thermal processing foods. High hydrostatic pressure (HHP), Pulsed Electric Field (PEF), Pulsed Light and Ozone applications. The theory of engineering systems and effects on microbiological, structural and biochemical systems of foods. Quality and shelf-life evaluations</a>
FDE 532	<a href="#">CATERING TECHNOLOGY</a>	SPRING	3	0	0	5	<a href="#">Catering industry. Principles of nutrition. Menu and kitchen planning, equipment selection and settlement. Storage, hygiene and sanitation in catering systems. Food safety. Food preparation methods. Quality management in catering systems.</a>
FDE 540	<a href="#">PHYSICAL PROPERTIES OF FOODS</a>	SPRING	3	0	0	5	<a href="#">*Deformation, flow and textural properties of foodstuffs *Properties of powdered foods and flow of solid particles *Instrumental methods for the measurement of physical properties, quality and physical stability of foodstuffs</a>
FDE 542	<a href="#">RHEOLOGICAL AND TEXTURAL PROPERTIES OF FOODS</a>	SPRING	3	0	0	5	<a href="#">The theory of rheological testing and determination of rheological properties of foods from experimental data. Stress and strain. Solid and fluid behaviours. Tube and rotational viscometry. Extensional flow. Transient and oscillatory testing for viscoelasticity.</a>
FDE 544	<a href="#">FOOD PRODUCT DEVELOPMENT SKILLS</a>	SPRING	3	0	0	5	<a href="#">Selection of product and method of process by necessary market research within the fields of food engineering application. Selection of the place of production and determination of plant lay-out. Review of basic knowledge on material and energy balances and mass transfer subjects and studies on application. Determination of production capacity, capital investment, expenses and costs. Value of money, profit and depreciation calculations.</a>

## II.YIL – I. YARIYIL

<u>DERS KODU</u>	<u>DERSİNADI</u>	<u>DÖNEM</u>	<u>DERS SAATİ</u>			<u>AKTS</u>	<u>İÇERİK</u>
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LEE 573	<a href="#">MASTER FIELD OF SPECIALIZATION</a>	FALL	8	0	0	8	<a href="#">It is a theoretical course that will be applied to transfer the knowledge, skills and experiences of the advisor in the scientific field in which the advisor is working, to give students the ability to follow and evaluate the scientific ethics and study discipline, to follow and evaluate the current literature, to create and conduct the scientific foundations of thesis studies.</a>
LEE 583	<a href="#">MASTER ADVISING</a>	FALL	0	1	0	1	<a href="#">It is an application course that the thesis advisor will open together with the master's specialization and thesis work.</a>
LEE 591	<a href="#">MASTER THESIS</a>	FALL	0	2	0	6	<a href="#">Providing students' presentations in class by making studies on the field they intend to research.</a>

## II.YIL – II. YARIYIL

DERS KODU	DERSİNADI	DÖNEM	DERS SAATI			AKTS	İÇERİK
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LEE 574	MASTER FIELD OF SPECIALIZATION	FALL	8	0	0	8	It is a theoretical course that will be applied to transfer the knowledge, skills and experiences of the advisor in the scientific field in which the advisor is working, to give students the ability to follow and evaluate the scientific ethics and study discipline, to follow and evaluate the current literature, to create and conduct the scientific foundations of thesis studies.
LEE 584	MASTER ADVISING	FALL	0	1	0	1	It is an application course that the thesis advisor will open together with the master's specialization and thesis work.
LEE 592	MASTER THESIS	FALL	0	2	0	6	Providing students' presentations in class by making studies on the field they intend to research.