Odd Semester

No.	Code	Course Name	Credits	Course Description
I	UNX01-006	Creativity and Entrepreneurship	3	The OKK Course is a Compulsory Curriculum Course (MKWK) that reflects the uniqueness of Padjadjaran University. This course is an implementation of the knowledge that has been obtained from the courses of Religion, Pancasila, Citizenship and Indonesian. This course contains material on Recognizing the basic concepts of Artificial Intelligence (AI) and its application in the Cloud, Getting to Know Your Own Culture and Identity, Getting to Know Intercultures, Getting to Know the Community, Social Action Planning, and Social Action Implementation.
	N10N1110	Introduction to Agroindustry	3	This course in addition to discussing several definitions; also contains portraits of technology, agricultural industry and agroindustry in Indonesia today; including strategies, resources (natural resources and human resources) along with their opportunities and constraints. The abundant natural resources in our country if they are not processed optimally and do not use technology, they cannot increase added value to the maximum. Availability of agricultural commodities with comparative advantages
	N10B181101	Calculus	3	This course is one of the tools and calculation basis of the scientific calculation system; so that students will be trained in designing and completing models and simple mathematical modeling that can be applied in Food Technology
	N10B181102	Biology	3	This course discusses Biological Concepts, DNA-RNA-Chromosomes, Cells, Cell Division, Plant Reproduction, Plant Growth and Development, Phytohormones, Photosynthesis, Nutrition, Plant Transport and Response

	N10B181103	Basic chemistry	3	Meaning of elements, atoms, electrons, tom structure, electron structure in atoms, mole concept, covalent bond, sigma bond, pi bond, hybrid molecular orbital, ionic bond, polar covalent bond, hydrogen bond, coordinate bond, chemical reaction rate and reaction order, calculation of acids, bases and buffers, chemical concept of carbon, lipid compounds, sugars, bonds between reactive groups, organic chemical reactions in biological systems, electron skeleton structure and phosphorus-sulfur valence, thiol groups, phosphate and their derivatives, reduction oxidation reactions in chemical processes, chemical kinetics and equilibrium reactions, light, wavelengths and frequencies, quantum theory, and spectrophotometers.
III	N10B182111	Food Biochemistry	3	Able to understand and carry out activities related to the physiological development of vegetables and fruits, initiation and change of color and carbohydrates during fruit ripening, post-mortem changes of meat and fish, conversion of muscles into meat, the role of enzymes in the food industry and its mechanisms, biochemical changes in fresh milk, enzymatic browning reaction mechanisms and their control techniques, off flavor in milk, and food spoilage by microorganisms.
	N10B182112	Physical and Analytical Chemistry	3	This course will study the methods of quantitative volumetric analysis which include acid-base titration, redox titration, precipitation titration (argentometry), complex formation titration, iodi-iodine titration, gravimetric analysis and analysis based on physicochemical properties
	N10B182113	Economics Engineering and Food Industry Management	3	This course discusses making decisions based on analysis, engineering and economic calculations to determine the best choice among engineering project alternatives based on cost and acceptance considerations, by making choices, setting selection criteria and evaluating those options.
	N10B182114	Food Chemistry	4	This course will learn about the chemical composition, structure, chemical reactions, classification, function and chemical properties of food ingredients which include: water, carbohydrates, lipids, proteins, enzymes, minerals, flavors, food systems, food additives and unwanted components (toxic compounds). Understanding and understanding of changes in the chemical properties of food content during processing and storage

	N10B182115	Post-harvest Handling of Plants and Animals	4	This course is a compulsory course that discusses: characteristics, harvesting (harvest index and harvesting method), as well as fresh handling of plant foods such as: vegetables, fruits, grains (cereals and nuts), and sweet potatoes. It also discussed post-harvest handling of animal food (mammals, unggas, and fish) starting from types, handling of mammals and poultry before slaughter, slaughtering techniques, carcass and carcass breaking, handling of carcasses and fresh meat (cooling, conditioning and freezing) as well as how to catch fish and fresh snacks of free-caught fish.
	N10B182116	Heat Transfer and Thermal Processes	3	Understanding of conduction heat transfer (steady and unsteady state), convection (natural and forced), radiation, sterilization and microwave heating processes
	N10B182117	Food Microbiology	3	This course discusses the types of microorganisms in food, recognizes laboratory tools used in microbiological analysis, factors that affect the growth of microorganisms, the beneficial and detrimental role of microorganisms in food, and chooses the right method to control microorganisms in food, both using antimicrobials, high temperature, low temperature and radiation.
V	N10B183125	Biological Evaluation of Food Components	3	The material taught includes the absorption of food components and their metabolism in the body, both macro, micro and secondary metabolites that are common in plants. Understanding the absorption and metabolism of these food components is the basis for understanding the bioavailability of food components. The existence of food components in a food matrix makes the understanding of bioavailability more complex because of the possibility of interaction between one component and another

	N10B183126	Sensory evaluation	3	Before food products are released to the market, they must first be tested for acceptance from consumers. This course teaches ways to prepare for food testing. The tests carried out can be acceptance tests, discrimination tests, and description tests. They were also taught how to draw decisions from the test results. After participating in this course, students understand and are able to explain the sensory properties of food, and the mechanism of sensing and testing the sensory properties of food starting from the preparation of the testing laboratory, the determination of the type of test, and drawing conclusions based on statistical calculations.
	N10B183127	Starch and Flour Technology	3	This course contains an understanding of the definition, role, and classification of starch and flour, sources of starch and flour, physical, chemical, and functional properties of starch and flour, the relationship between quality, damage, and handling of starch and flour, physical, chemical, and enzymatic modification of starch, and being able to apply starch and flour to various processed food products
	N10B183128	Sanitation and Food Safety	3	This course is a mandatory course for students of the Department of Food Industry Technology. In this course, sanitation will be discussed, which includes the definition, scope, chemical cleaning agents and sanitizers and sanitation stages, In addition, this course also discusses food safety, which includes: food safety control techniques, food safety control systems, factors that cause food poisoning both caused by microorganisms and non-microorganisms, infections from food and intoxication from foodstuffs.
	N10B183129	Preservation and Emerging Processing Techniques in Food Processing	3	Understanding of several preservation and emerging process techniques in food processing including Evaporation Drying, Refrigeration, Freezing, Microwave, High Pressure Processing, Pulse Electric Field, Irradiation, Combined Hurdle, Determination of shelf life of the arrhenius method, and Determination of shelf life of the labuza method
		Student Real Work Lecture	3	
	SMT VI Elective Courses			

1	N10B183130	Food and Beverage Fermentation Technology	3	This course discusses the development and scope of fermented foods and beverages, the factors that influence and how to control the fermentation process accompanied by examples of how to make several types of fermented foods and beverages based on raw materials used as substrates, microorganisms that play a role, changes that occur, and compounds produced during fermentation.
2	N10B183131	Food Biotechnology	3	This course discusses the application of biotechnology in food development with an emphasis on microbial products for food industry processes. The discussion includes the definition, development and process of food biotechnology, bioseparation of biotechnology products, and production mechanisms
3	N10B183132	Nanotechnology in Food Processing	3	This course discusses the physical and chemical properties of materials that can depend on their size, investigate how nanoparticles can be made, and determine how to strengthen small features at the nanoscale to the macroscopic scale, design nanoscale material working models or model nanoscience phenomena.
4	N10B183133	Hydrocolloid Food	3	This course teaches about the types, functions and sources of hydrocolloids used in food processing. In addition, this course also teaches how to characterize and apply hydrocolloids in food processing, produce and identify hydrocolloids and analyze hydrocolloid products.
5	N10B183134	Bread and Cake Processing Technology	3	This course contains a discussion of various theories about, processing technology of bread, cakes and other baked products as well as traditional cakes (Nusantara) which includes ingredients used both main raw materials and supporting ingredients, functions of main ingredients and processing supports, various methods of mixing ingredients, dough technology, dough fermentation and baking.

6	N10B183135	Tea, Coffee and Cocoa Processing Technology	3	This course contains theory and practice and provides an understanding of coffee, tea, and cocoa commodities starting from the history of entering Indonesia to the development of processing technology in the downstream and upstream industries. Introduction to various types of coffee, tea, and cocoa as well as the chemical components and active compounds in them. In addition, various ways of processing from fresh ingredients to semi-finished materials or finished products are also studied. Technology development is introduced in practical activities.
7	N10B183136	Chocolate and Confectionery Processing Technology	3	This course contains an understanding of sweeteners and mixing ingredients for the manufacture of various types of *confectionary* (chocolate and confectionery), processing, packaging and storage methods as well as problems related to *confectionary consumption*.
8	N10B183137	Halal Food Products	3	This course is one of the elective courses designed for students who want to learn and explore several aspects related to the analysis and management system of halal food management. The description of the material/subject matter of this course focuses more on the philosophical review of halal food, the basics of Islamic law related to halal/haram food, the institutional system and food certification, operational standards of food production & management in the industrial environment and process technology related to the analysis of food halal critical points.
9	N10B183138	Vegetable and Fruit Processing Technology	3	The course will discuss about, definition, classification, composition, and general properties of vegetables and fruits. The general principles and methods of processing vegetables and fruits include processing using low temperature, high temperature/thermal process/canning, fermentation, drying, using preservatives. Problems that occur in processed vegetable and fruit products and how to overcome them. How to measure grades and quality standards, quality supervision, determination of shelf life and quality of the processed products

10	N10B183139	Enzyme and Microbial Technology	3	Discussing enzymes and their role in food science and technology such as enzyme encapsulation and their applications in food processing by exemplifying several applications in depth such as enzymes in the modification of starch, protein, fat, enzymes in the processing of bakery products, pasta and noodles; enzymes in fruit extraction and genetic modification of microorganisms for enzyme production.
VII	N10N4212	Field Work Practice	3	This course is held in odd or even semesters after students take several academic requirements that are imposed. After attending theory and practicum lectures, students are required to improve their scientific insight, especially in the field of food technology, take and determine attitudes in interacting through activities in related institutions and companies. Thus, students can practice the knowledge gained while participating in lectures directly in the Field
		Thesis + scientific publication	6	

Even Semester

SMT	MK Code	Course Name	Credits	Course Description
II	N10B181204	Basic Physics	3	This course discusses the basic knowledge of mechanics and fluids, which are applied to food science and technology.
	N10B181205	Organic Chemistry	3	In this course, students learn about the nomenclature, structure, functional groups, physical properties and chemical properties of aliphatic and aromatic organic compounds, as well as the classification, structure and function of carbohydrates, lipids, amino acids, peptides, proteins, enzymes, and nucleic acids. This course is the basics of chemistry that can be applied in related courses at FTIP.
	N10B181206	Basic Microbiology	3	This course discusses microbiology in general as a basis for the development of microorganisms in the food industry. The material studied includes the structure and function of microorganism cells, the metabolism of microorganisms in general, microorganisms in general, microorganisms molecularly, the control and growth of microorganisms, the structure and bacteria of the genome, the diversity of microbes (prokaryotes, eukaryotes, archea), about the microorganism ecosystem, the interaction of microbes and humans.

	N10B181207	Computer Applications in Food Processing	3	Application of computers (M. Excell) in calculating and evaluating processes in food processing which include chemical kinetics in food processing, mechanical transportation of liquid foodstuffs, steady and unsteady state heat transfer, thermal processes, statistical quality control in food processing, sensory evaluation of food ingredients, cooling and freezing, isothermic absorption curves of food ingredients, linear applications of programming in food processing and evaporation and psychrometry.
	N10B181208	Food Technology Basics	3	In this course, the scope of Food Science and Technology, the development of Food Technology in Indonesia, food problems in Indonesia, food components and their properties, and food quality are explained. Briefly explained the importance of knowledge about food chemistry, food biochemistry, food processing process engineering, food microbiology, and food biotechnology in maintaining food quality. In addition, the process units applied in food processing including refrigeration, freezing, thermal processes, fermentation, radiation, changes in material characteristics during processing, the use of BTM and food packaging as well as issues in the field of Food Technology including food safety, food security, food independence, food sovereignty, and food halal were also discussed.
	N10B181209	Principles of Food Processing Engineering	3	This course discusses the basic principles of food processing techniques, analyzing calculations, connecting mathematical equations and solving equations in food processing operations with various unit systems, skills in formulating time balance problems, both mass balance of recycled flow materials, short cycling, involving chemical rx, in steady & unstable state conditions.
	N10B181210	Statistical	3	
IV	N10B182218	Food Analysis	4	This course is a combination of skills in analyzing food, including the ability to analyze chemical content, microbiological content and characterization of the physical properties of food products. In this course, various techniques for analyzing macro and micromolecular content in food with various different methods and analysis techniques in the study of food microbiology will be discussed, namely culture maintenance techniques and microorganism calculation techniques both directly and indirectly on food products. In addition, techniques for analyzing the physical properties of food, including the nature of food flow, will be discussed
	N10B182219	Nutrition Science	3	This course discusses the dynamic aspects of nutrient metabolism, both macro and micro, including the process of digestion, absorption, transport, utilization of these nutrients to excretion in the body and its relationship with the need for these nutrients. This course also discusses the structure and function of enzymes that play a role in nutrient metabolism,

				biosynthesis mechanisms, metabolic mechanisms of regulation and clinical aspects of biochemistry as well as the molecular basis of processes in the body.
	N10B182220	Food Waste Handling	3	This course is a development of the Food Microbiology course. In this lecture, we will discuss the definition, scope and grouping of agricultural waste, laws and regulations, the role of biota in waste management, principles and methods of handling waste (solid, liquid and gas) physically, chemically and biologically as well as designing the process of handling food industry waste.
	N10B182221	Shape Conversion and Separation Techniques	3	Understanding of the food conversion process (including size reduction, size enlargement, encapsulation, mixing, extrusion) and food separation (including sedimentation, centrifugation, filtration, extraction, crystallization, distillation, membrane separation).
	N10B182222	Food Processing Technology	4	The Food Processing Technology Course discusses various technologies applied in food processing, regarding types, methods, processes, influencing factors and problems contained in processing and alternative solutions. Food processing and packaging methods as well as techniques for analyzing nutrients, food additives and various contaminants contained in food are also discussed in this course.
	N10B182223	Food Fermentation Technology	3	This course is a development of the Food Microbiology course. In this course, we will discuss the scope of fermentation technology, the provision of substrates and inoculums for the fermentation process, knowledge of bioreactors, the definition and metabolic function of microbes, the development of grooves, the kinetics of microorganism growth and the doubling of fermentation scales
	N10B182224	Scientific Research and Writing Methods	3	
VI	N10B183239	Functional Food	3	This course learns about the Definition of Functional Food, Antioxidants and Their Effects on Health, Food Fiber, Effects of Fats and Oils on Health and Disease, Pre and Probiotics, Formula Milk and Medical Food, Dairy Products as a Source of Functional Food, Maximizing the Functional Benefits of Plant Food, Flavoring System in Functional Food, Measurement and Biological Availability of Nutrients and Chemical Components of Their Constituents and Effects of Food Processing on Compounds Phytochemistry: Antioxidant Case Study
	N10B183240	Food Packaging and Storage	3	This course contains an understanding of the purpose and function of packaging, types and properties of packaging materials, forms of packaging, interaction of food and packaging. Factors to consider in the selection and use of packaging materials and methods of

				determining expiration. Packaging design, labeling and regulations on packaging, packaging design and labeling as nutritional information of packaged products
	N10B183241	Plant Design	3	This course discusses designing a plan for the establishment of a food processing plant starting from product design development, process design, determination of factory location to layout design, through evaluation of physical, environmental and economic feasibility profit and loss analysis.
	N10B183242	Quality Control, HACCP and Food Regulations	4	
	N10B183243	New Product Development	3	This course discusses important aspects in product development, factors that affect the success and failure of product development, the basics of product development, strategic planning, new product classification, stages of new product development, factors that affect launching, consumer problems in food acceptance, several examples of case studies in food product development, linear programming and the simplex method
	SMT VI ELECTIVE COURSES			
	N10B183244	Technopreunership in the Food Industry	3	This course will discuss how to design a business plan, initiate a business idea, evaluate a business idea, analyze market opportunities, determine marketing concepts, map consumers, make prototypes, build a business framework, start and identify business processes and make a proposal for a technology-based food industry business offer.
	N10B183245	Food Additives	3	This course discusses: the scope of Food Additives and various types of BTPs, namely antioxidants, anti-flax, acidifiers, thickeners, buffers, enzymes, sweeteners, bleachers, thickeners, preservatives, emulsifiers, stabilizers, thickeners, hardeners, dyes, flavors/aromas, sequentials, and other BTPs, including the definition of each BTP, their types and their applications in food products
	N10B183246	Canning Technology	3	This course discusses specific canning techniques, where in this course the concept of kinetics of meicroba death will be reviewed again, studying the characteristics of food ingredients to be canned, understanding the concept of food risk levels, types of packaging materials, factors that affect the canning process
	N10B183247	Bioprocess Engineering	3	This course discusses the application of engineering principles in food industry processes that utilize microbes (bioprocessing) which includes review of Microbiology and Biochemistry, enzymatic reactions, microbial growth, microbial growth stoichiometry and product formation, batch and continuous bioreactor modification, scale duplication, pilot-scale

				bioreactor modification, bioreactor instrumentation and control, as well as recovery and purification of bioprocess products
	N10B183248	Environmental Biotechnology	3	
	N10B183249	Meat and Fish Processing Technology	3	This course discusses: the structure of meat and fish, physical and chemical properties and nutritional content of meat and fish, changes in meat after slaughter and changes in fish after catch, quality deterioration, factors affecting quality deterioration, as well as meat and fish quality control. It also discusses how to store and preserve and how to make meat-based products
	N10B183250	Fat and Oil Processing Technology	3	This course discusses: definition, role, classification, and sources of fats and oils, the use of fats and oils in food, physical properties, the chemistry of fats and oils, methods of extracting crude fats and oils (mechanical, chemical, enzymatic), factors that must be considered and problems that occur in the extraction process and how to overcome them.
	N10B183251	Spice Processing Technology	3	This course contains material on the definition of spices, spice classification, spice production, post-harvest handling of spices, composition and general properties of spices, spice industry trees, principles and technologies of processing spices into various dry products (simplicia and powder/powder), spice extracts, essential oils, spice oleoresin, encapsulation, standardization of the quality of spice products and spice industry trees
	N10B183252	Milk and Egg Processing Technology	3	This course discusses the components, structure, physical properties, chemical properties, microbiological properties, fresh handling, processing methods and quality control of milk and eggs.
	N10B183253	Processing Technology of Cereals, Nuts and Tubers	3	Discuss the classification of types of cereals and tubers that have economic potential and their utilization. Types and structures of cereals (rice, corn, wheat, sorghum), tubers (cassava, taro, sweet potato, ganyong, arrowroot, iles-iles), and chemical characteristics/composition of cereals and tubers. Processing cereals into products (parboiled rice, flour, starch, tape, pasta products, snack food extrusion). Processing of nuts into traditional food and confectionery products, protein isolates, starch, peanut butter, etc.