

FACULTY OF SCIENCE AND FOOD TECHNOLOGY

Undergraduate Programmes being offered:

Bachelor

1. *Bachelor of Food Science & Technology*
2. *Bachelor of Science (Food Studies)*
3. *Bachelor of Science (Food Service Management)*

STUDY SCHEME (BACHELOR OF FOOD SCIENCE AND TECHNOLOGY)

<i>Notes : L = Lecture , L/T = Laboratory/Tutorial</i>							
SEMESTER 1				SEMESTER 2			
1ST YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
PRT2008	Agriculture and Man	2	0	BBI2423	Academic Interaction and Presentation	2	1
SKP2101	Malaysian Nationhood	3	0	CHM3201	Organic Chemistry 1	3	1
SKP2203	Asian and Islamic Civilization	2	0	MGM3101	Principles of Management	3	0
SKP2204	Ethnic Relation	2	0	FST3201	Basic Food Microbiology	2	1
CHM2000	General Chemistry	3	1	FST3401	Fundamentals of Food Engineering	2	1
FST3110	Food Biochemistry	3	0	QK_XXXX	Co-curriculum II	0	1
QK_XXXX	Co-curriculum I	0	1		TOTAL	12	5
	TOTAL	15	2				
2ND YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
FST3114	Chemistry and Analysis of Food Macro-Components	2	2	MTH3003	Statistics for Applied Sciences	3	1
MGM3180	Basic Entrepreneurship	2	1	FST3115	Chemistry And Analysis Of Food Micro-Components	2	1
FST3202	Food Microbiology	2	1	FST3405	Unit Operations in Food Processing II	2	1
FST3302	Fundamentals of Food Processing and Preservation	3	0	FST3601	Food Hygiene and Sanitation	2	0
FST3404	Unit Operations in Food Processing I	2	1	FST3602	Halal Food	2	0
BBI 2424	Academic Writing	2	1	FST3701	Nutrient Changes in Foods	3	0
	TOTAL	13	6		TOTAL	14	3
3RD YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
FST4830	Processing Technology of Plant Products	2	1	FST4828	New Food Product Development	1	2
FST4831	Processing Technology of Animal Products	2	1	FST4959A	Bachelor Dissertation	0	3
FST4832	Sensory Evaluation of Food	1	1		Electives		
	Electives				TOTAL		
	TOTAL						
4TH YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
FST4959B	Bachelor Dissertation	0	3	FSM4901	Industrial Training	0	12
	Electives				TOTAL	0	12
	TOTAL						

STUDY SCHEME (BACHELOR OF SCIENCE – FOOD STUDIES)

Notes : L = Lecture , L/T = Laboratory/Tutorial							
SEMESTER 1				SEMESTER 2			
1ST YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
SKP2101	Malaysian Nationhood	3	0	BBI2423	Academic Interaction and Presentation	2	1
PHY 2001	General Physics	3	1	CHM 3201	Organic Chemistry I	3	1
FSM 3001	Introduction to Food Industry	3	0	FSM3101	Chemistry and Functionality of Food Ingredients	2	1
MGM 3101	Principles of Management	3	0	ECN3100	Principles of Economics	3	0
ACT 2112	Introductory Accounting	3	1	PRT2008	Agriculture and Man	2	0
QK_XXXX	Co-curriculum I	0	1	SKP2204	Ethnic Relation	2	0
	TOTAL	15	3	QK_XXXX	Co-curriculum II	0	1
				TOTAL		14	4
2ND YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
BBI2424	Academic Writing	2	1	MTH3003	Statistics for Applied Sciences	3	1
FST3113	Nutritional Changes in Foods	3	0	FST3201	Basic Food Microbiology	2	1
FST3401	Fundamentals of Food Engineering	2	1	MGM3113	Organizational Behavior	3	0
SKP2203	Asian and Islamic Civilization	2	0	MGM3180	Basic Entrepreneurship	2	1
	Electives				Electives		
	TOTAL				TOTAL		
3RD YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
LP_ 2101	Basic Global Language	3	0	LP_ 2102	Global Language II	2	1
FST4823	Food Hygiene and Sanitation	3	0	FST4824	Food Quality Management	3	0
FST4826	Processing of Plant and Animal Products	3	1	FST4825	Food Law	2	0
	Electives			FSM4999A	Final Year Project I	0	3
	TOTAL				Electives		
					TOTAL		
4TH YEAR							
CODE	COURSE NAME	L	L/T	CODE	COURSE NAME	L	L/T
FSM4801	Seminar	0	1	FSM4901	Industrial Training	0	12
FSM4999B	Final Year Project II	0	3		TOTAL	0	12
	Electives						
	TOTAL						

STUDY SCHEME (BACHELOR OF SCIENCE – FOOD SERVICE MANAGEMENT)

Notes : L = Lecture , L/T = Laboratory/Tutorial							
SEMESTER 1				SEMESTER 2			
1ST YEAR							
<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>	<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>
<i>SKP2204</i>	<i>Ethnic Relation</i>	2	0	<i>BBI2423</i>	<i>Academic Interaction and Presentation</i>	2	1
<i>MGM3180</i>	<i>Basic Entrepreneurship</i>	2	1	<i>FSM3203</i>	<i>Functionality Of Food Ingredients</i>	2	1
<i>FSM3001</i>	<i>Introduction to Food Industry</i>	3	0	<i>FSM3204</i>	<i>Nutrition In Foodservice</i>	2	1
<i>FSM3205</i>	<i>Microbiology In Foodservice</i>	2	1	<i>FSM3401</i>	<i>Restaurant Services</i>	0	2
<i>FSM3302</i>	<i>Basic Theory Of Food Preparation</i>	3	0	<i>SKP2203</i>	<i>Asian and Islamic Civilization</i>	2	0
<i>FSM3303</i>	<i>Fundamental Laboratory For Food Preparation</i>	0	2	<i>SKP2101</i>	<i>Malaysian Nationhood</i>	3	0
<i>QK_XXXX</i>	<i>Co-curriculum I</i>	0	1	<i>QK_XXXX</i>	<i>Co-curriculum II</i>	0	1
	TOTAL	12	5		TOTAL	11	6
2ND YEAR							
<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>	<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>
<i>BBI2424</i>	<i>Academic Writing</i>	2	1	<i>PRT2008</i>	<i>Agriculture and Man</i>	2	0
<i>FST3301</i>	<i>Principles Of Food Processing And Preservation</i>	3	1	<i>FSM4206</i>	<i>Hygiene And Sanitation In Foodservice</i>	2	0
<i>FSM3501</i>	<i>Menu Development</i>	3	0	<i>FSM4503</i>	<i>Information System In Foodservice</i>	2	1
<i>FSM3602</i>	<i>Human Resource In Foodservice</i>	3	0	<i>FSM4504</i>	<i>Equipment Layout And Design For Foodservice Facilities</i>	2	1
	<i>Electives</i>				<i>Electives</i>		
	TOTAL				TOTAL		
3RD YEAR							
<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>	<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>
<i>MTH3003</i>	<i>Statistics for Applied Sciences</i>	3	1	<i>FSM4901</i>	<i>Industrial Training</i>	0	12
<i>FSM4603</i>	<i>Marketing And Sales In Foodservice</i>	3	0		TOTAL	0	12
<i>BBI2412</i>	<i>Writing for Academic Purposes</i>	2	1				
	<i>Electives</i>						
	TOTAL						
4TH YEAR							
<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>	<i>CODE</i>	<i>COURSE NAME</i>	<i>L</i>	<i>L/T</i>
<i>FSM4101</i>	<i>Research Methods In Foodservice</i>	2	1	<i>FSM4999B</i>	<i>Final Year Project II</i>	0	3
<i>FSM4999A</i>	<i>Final Year Project I</i>	0	3	<i>FSM4977</i>	<i>Seminar</i>	0	1
<i>FSM4304</i>	<i>Advanced Food Preparation</i>	1	2	<i>FSM4803</i>	<i>Foodservice Industrial Law</i>	3	0
	<i>Electives</i>				<i>Electives</i>		
	TOTAL				TOTAL		

COURSE SYNOPSIS

Department of Food Science

FST3110 Food Biochemistry 3 (3 + 0)

Prerequisite : None

This course covers the major components and biochemical processes occurring in living system. This course also covers water and buffer systems; amino acids and proteins; enzyme catalysis; bioenergetics; biological membranes; metabolic pathways of major biomolecules; photosynthesis, transcription and translation processes.

FST3114 Chemistry and Analysis Of Food Macro-Components 4 (2 + 2)

Prerequisite : FST3110

This course covers the physico-chemical properties of macro-components of food namely water, carbohydrates, dietary fibre, proteins and lipids. This course also covers the relationship between the physico-chemical and their functional properties. It includes application of the main methods in the analysis of food macro-components.

FST3115 Chemistry And Analysis Of Food Micro-Components 3 (2 + 1)

Prerequisite : FST3114

This course covers the physico-chemical properties of micro-components of food namely vitamins, minerals, animal and plant pigments, natural flavours, enzymes, natural toxicants, contaminants, bioactive compounds and food additives. This course also covers the relationship between the physico-chemical and their functional properties in foods. It includes the application of the main methods in the analysis of food micro-components.

FST3201 Basic Food Microbiology 3 (2 + 1)

Prerequisite : None

This course covers introduction to microbiology and basic techniques used in the laboratory, characteristics of microorganisms and classification, structures and functions of prokaryotes and eukaryotes, cultivation and maintenance of cultures, reproduction and growth, metabolism and biosynthesis, control of microbial growth, sterilization and disinfection, mutation, genetic engineering, immune and allergic responses, and characteristics of foodborne yeasts, fungi and viruses.

FST3202 Food Microbiology 3 (2 + 1)

Prerequisite : FST3201

This course covers the role and significance of microorganisms in foods and environment, factors affecting their growth in foods, effects of food processing and preservation techniques on the growth and survival of microorganisms, microbial activities as a causal agent for food poisoning and spoilage, microbial quality of food and water, indicator organisms, probiotics and beneficial microorganisms.

FST3601 Kebersihan Dan Sanitasi Makanan/ Food Hygiene and Sanitation 2 (2 + 0)

Prerequisite : FST3202

This course covers principles of hygiene and sanitation in food industries. This course also covers the various aspects of sanitation such as infection, hygiene, methods to determine hygiene, elements of sanitation, water quality, soils, surface technology, cleaning technology, hygienic design and Cleaning In-Place (CIP) concept.

- FST3701 Nutrient Changes in Foods** 3 (3 + 0)
Prerequisite : None
This course covers the contribution and significance of nutrients on health, Recommended Dietary Allowance (RDA), nutrition for special groups and nutritional status assessment. This course also covers the nutritional changes occurring during processing and storage of food.
- FST4201 Rapid Methods in Food Analysis** 3 (2 + 1)
Prerequisite : FST3202
This course covers basic genetics and its organization in microorganisms and higher organisms, diagnostic principles and their applications of kits for rapid food analysis.
- FST4505 Food Bioprocessing** 3 (3 + 0)
Prerequisite : None
This course covers the history and trend of enzyme application, sources of industrial enzymes, application of enzymes in food and food ingredient industries, status of enzymes in food law and regulations, and current issues in enzyme applications. This course also covers the history and principles of food fermentation, types of food fermentation, starter cultures, applications of microorganisms in the food and food ingredient industries, and current issues in microbial applications
- FST4607 Food Toxicology** 3 (3 + 0)
Prerequisite : FST3115
This course covers the basic chemical and biological aspects of food toxicology, biotransformation, risk assessment, natural toxicants, food-borne toxins and food additive. Their roles and side effect of toxicants in the food system shall also be covered. This course also covers the relationship between food chemicals and mechanism of carcinogenesis in food.
- FST4608 Food Safety** 3 (3 + 0)
Prerequisite : FST3202 and FST3115
This course covers the concept of quality, and application of Food Safety Management System, Food Quality Management Systems, and Total Quality Management in the food industry. This course also covers issues of quality management and proposed solutions for improving the quality of food.
- FST4610 Food Quality Management** 3 (3 + 0)
Prerequisite : FST4608
This course covers the concept of quality, and application of Food Safety Management System, Food Quality Management Systems, and Total Quality Management in the food industry. This course also covers issues of quality management and proposed solutions for improving the quality of food.
- FST4705 Functional Food** 3 (3 + 0)
Prerequisite : FST3302
This course covers functional compounds in foods, future prospects, their health benefits and proposed mechanisms, effects of processing on bioactive compounds, bioavailability, quality control and standardization, efficacy studies, safety issues, regulatory status and of functional food.
- FST4833 Postharvest Handling of Fruits and Vegetables** 3 (2 + 1)
Prerequisite : FST4830 or FST4826
This course introduces postharvest handling of fruits and vegetables which encompasses biochemical and biophysical changes after harvest, postharvest activities, quality criteria and maturity index, methods of treatments, role and effect of packaging, temperature and relative humidity. This course also covers postharvest wastage and physiological disorder of fruits and vegetables during storage.

**FST4959A Disertasi Bacelor/ Bachelor Dissertation
and B**

6 (0 + 6)

Prerequisite : Student Semester 6 (FST4959A) and Semester 7 (FST 4959B) BSTM

This course aims to equip student with skills and knowledge necessary to solve a problem of appropriate complexity in food science and technology. The study intergrates knowledge and skills acquired from previous courses through guided research. It requires the student to review the literature, prepare a research proposal, conduct appropriate experiments, collect and analyse data, interpret and discuss research results, and conclude findings of the study.

FSM4901 Industrial Training

12 (0 + 12)

Prerequisite : FST 4959A and B

This course provides students with the opportunity to evaluate the technologies used in the food industry and gain experience working in an environment in the industry. The training is carried out over a period of 24 weeks at government or private agencies for exposure on work planning and coordination under the supervision of an appointed officer of the agency.

Department of Food Technology

FSM3001 Introduction to Food Industry 3 (3 + 0)

Prerequisite : None

This course covers the history and development in the food industry. The principles of food science and technology in processing, preparation and food service, as well as operations and management in the food industry will be discussed.

FST3301 Principles of Food Processing and Preservation 4 (3+1)

Prerequisite : None

This course covers characteristics of food quality, results and effect of food spoilage, hurdle concept, heating, refrigeration, drying, evaporation, irradiation, ultra high pressure and ultrasonication, packaging and food additives.

FST3302 Fundamentals of Food Processing and Preservation 3 (3 + 0)

Prerequisite : None

This course covers characteristics of food quality, results and effect of food spoilage, hurdle concept, heating, refrigeration, drying, evaporation, irradiation, ultra high pressure and ultrasonication, packaging and food additives.

FST3304 Unit Operations in Food Processing I 4 (3 + 1)

Prerequisite : FST3401

This course covers the principles of physical unit and ancillary operations in food processing. These include size reduction and solids filtration, homogenization and emulsification, mixing, separation techniques and extraction. Techniques that are associated with processed foods such as packaging, extrusion and forming will also be discussed.

FST3305 Unit Operation in Food Processing II 3 (2 + 1)

Prerequisite : FST3401, FST3304

This course covers the principles of food preservation unit operations in food processing, preservation techniques such as thermal processing, low temperature preservation, dehydration, evaporation and concentration, high pressure processing and food irradiation.

FST3401 Fundamentals of Food Engineering 3 (2 + 1)

Prerequisite : None

This course covers the introduction to food engineering, units and dimensions, dimensional analysis, mass and energy balances, thermodynamics and refrigeration, fluid flow, heat and mass transfer, unsteady state heat transfer, psychrometry. Laboratory practical emphasizes basic principles of food engineering.

FST3404 Unit Operations in Food Processing I 3 (2 + 1)

Prerequisite : FST3401

This course covers the principles of the physical unit and ancillary operations in food processing. These include size reduction and solids filtration, homogenization and emulsification, mixing, separation techniques and extraction. This course also covers the application of techniques that are associated with processed foods such as packaging, extrusion and forming.

FST3405 Unit Operations in Food Processing II 3(2 + 1)

Prerequisite : FST3404

This course covers the principles of food preservation unit operations in food processing, preservation techniques such as thermal processing, low temperature preservation, dehydration, evaporation and concentration, high pressure processing and food irradiation.

FSM3601 Food Industry Operations Management 3 (3 + 0)

Prerequisite : FSM3001 and MTH3003

This course covers the analytical techniques application in the food manufacturing industry. The course focuses on the application of modeling theory to planning and decision-making.

FST3602 Halal Food 2 (2 + 0)

Prerequisite : None

This course introduces the concept of halal and haram food in Islam, halal food chain involving halal food processing and preparation concept from farm to plate. The course also covers regulations and legislation related to halal food, analysis, halal standard MS1500:2009, halal certification and logo, relationship between halal and quality systems for halal products. It also discusses current issues in global halal food and food service industries and market

FSM4401 Information System in Food Industry 3 (2 + 1)

Prerequisite : None

This course covers the computer technology management which includes the aspect of management, organization, technology usage, administration and marketing in the food manufacturing industry.

FST4405 Engineering Properties of Foods 3 (2 + 1)

Prerequisite : FST3401

This course covers engineering properties of food encompassing biological and physico-chemical properties of foods, water and food properties, rheological properties of solid foods, rheological properties of viscoelastic foods, thermal properties of foods, aerodynamic and hydromanic properties of foods, and optical properties of foods.

FST4406 Food Process and Plant Design 4 (4 + 0)

Prerequisite : FST3304 and FST3305

This course covers principles and procedures in developing plant and planning in food industry, development of food projects and processes, evaluation of food processes and plants, project evaluation and investment, equipment selection and specifications, site selection and plant layout, food project management, food plant and process safety and quality control system management, case studies on business plans of food projects.

FST4407 Operational Management of Food Plant 3 (3 + 0)

Prerequisite : FST3405

This course covers operational management of food plant, preoperational, current, optimization and post operational activities, operations improvement, new manufacturing technologies, case studies on manufacturing and marketing of products.

FST4408 Food Packaging 3 (2 + 1)

Prerequisite : FST3302 or FST4826

This course covers food packaging which encompasses concept and functions of packaging, food protection, packaging materials and manufacturing, packaging materials testing methods, type of failures in food packaging, forms of packaging system, packaging and application, packaging equipment, laws and regulation on food packaging, active packaging, smart packaging and current and future developments in food packaging.

FST4409 Water and Waste Water Management in Food Industry 2 (2 + 0)

Prerequisite : FST4608

This course covers an overview of water management, water supply and management, chemical properties of water, conventional water treatment, advance water treatment, waste water management, primary, secondary and tertiary treatments of industrial waste water, economics and design consideration, and current issues.

FST4410 Food Industry Waste Engineering 2 (2 + 0)

Prerequisite : None

This course covers food industry waste engineering which encompasses sources and classification of industrial wastes, problems in waste management, physical and chemical waste treatment processes, integrated physical and biological processes, thermal waste treatment processes, and waste reduction strategies.

FST4411 Food Plant Design 3 (3 + 0)

Prerequisite : FST3405

This course covers the principles and procedures in developing a food processing plant. It also emphasizes project management and economics assessment.

FSM4502 Marketing and Sales in Food Industry 3 (3 + 0)

Prerequisite : None

This course covers the marketing principles and consumer behaviour in food manufacturing industry. The activities pertaining to marketing planning and sales will be discussed.

FST4609 Food Law 3 (3 + 0)

Prerequisite : FST4828

This course covers Food Laws Malaysia i.e. Food Act 1983 and Food Regulations 1985 which includes administration and enforcement, appointment of analysts and authorised officers, power and procedure of sampling, standards, packaging and labelling of foods, additives and food composition, power to make regulations, litigation and product recall. This course also covers other laws of Malaysia concerning the food industry such as Food Hygiene Regulations 2009, Food Analysts Act 2011, the role of Royal Customs and Excise Department, Codex Alimentarius and consumer movements.

FSM4658 Current Issue in Food Business 3 (3 + 0)

Prerequisite : None

This course covers the discussion of current issues in food industry. Proposal and solution to the current issues are also emphasized.

FSM4801 Seminar 1 (0 + 1)

Prerequisite : None

This course covers the preparation and effective presentation techniques. Students are required to present the findings of their research project.

FST4826 Processing of Plant and Animal Products 4 (3 + 1)

Prerequisite : FSM3101

This course covers chemical composition and changes in the physico-chemical properties of plant and animal products during handling and processing. Technology and analysis of quality related to various plant and animal based products will also be emphasized during laboratory practical.

FST4828 New Food Product Development 3 (1 + 2)

Prerequisite : FST4832, FST4408

This course covers new food product development which encompasses the role and importance of new product development in a food manufacturing company, definition of product, idea generation, consumer survey, idea evaluation and screening. Students will be trained in development of product concept, project planning, and production of prototype, testing and identification of defects as well as problem solving. Students will have experience in the product development process, production plan, consumer testing, marketing and product launching.

FST4829 Sensory Evaluation of Food 3 (2 + 1)

Prerequisite : MTH3003

This course covers sensory evaluation concept and its applications, sensory evaluation method, selection and training of panel members, format and techniques for obtaining data, preparation of sample for presentation, factors which influence measurement of sensory evaluation, consumer testing and data analysis.

FST4830 Processing Technology of Plant Products 3 (2 + 1)

Prerequisite : FST3302

This course covers the processing technology of plant products which includes the physico-chemical and biochemical changes in fats and oils, fruits and vegetables, cereals and legume products during handling, processing and storage.

FST4831 Processing Technology of Animal Products 3 (2 + 1)

Prerequisite : FST3302

This course covers processing technology of animal products which includes the physico-chemical and biochemical changes in meat, seafoods and dairy products during handling, processing and storage.

FST4832 Sensory Evaluation of Food 2(1 + 1)

Prerequisite : MTH3003

This course covers sensory evaluation concept and its applications, sensory evaluation method, selection and training of panel members, format and techniques for obtaining data, preparation of sample for presentation, factors which influence measurement of sensory evaluation, consumer testing and data analysis.

FST4834 Technology of Oils and Fats 3 (2 + 1)

Prerequisite : FST4830 or FST4826

This course covers chemistry and technology of oil and fat which includes different compositions and properties of various fats and oils, processing technology, analysis of fats and oils, physical properties of fats, oils and fats by-products, deteriorative reactions of fats and oils, technology of fats modification, manufacturing technology of fats, oils and specialty fats, environmental aspects of fats and oils processing and case study.

FST4835 Cereals and Legumes Technology 3 (2 + 1)

Prerequisite : FST4830 or FST4826

This course covers cereals and legumes technology which includes utilization, production and the quality evaluation of cereals and legumes; and their products, current issues and new findings.

FST4836 Dairy Technology 3 (2 + 1)

Prasyarat : FST4831 atau FST4826

This course covers the composition of milk, physiology of lactation, processing of fluid milk, fluid and concentrated milk and their products, classification and terminology of cream, butter and AMF, classification and terminology of ice cream, processing of yogurt, cheese and powdered milk, sanitation and disinfection system, and new findings in dairy technology.

FST4837 Beverage Technology 3 (2 + 1)

Prerequisite : FST4830 or FST4826

This course covers classification of beverages, processing methods of fruit juice, coffee, tea, carbonated drinks, functional and health drinks including bottled water. This course also emphasizes on the equipment used, ingredients and their specific functions, product stability and quality, aspects on regulations and product specifications.

FST4838 Chocolate and Sugar Confectionery Technology 3 (2 + 1)

Prerequisite : FST4830 or FST4826

This course covers chocolate and sugar confectionary technology encompasses types and attributes of confectionary products, ingredients in chocolate manufacturing, confectionary manufacturing quality of chocolate products, ingredients and quality of sugar confectionaries, properties of sugar confectionary and manufacturing of other confectionaries.

FST4839 Aquatic Product Technology 3 (2 + 1)

Prerequisite : FST4831 or FST4826

This course covers physicochemical and biochemical properties of aquatic products, post-harvest handling principles of preservation at low temperature, preservation techniques, canning process and quality control of aquatic food.

FST4840 Meat Technology 3 (2 + 1)

Prerequisite : FST4831 or FST4826

This course covers trends in meat industry and meat consumption pattern, mechanisms in muscle contraction, animal slaughtering, preservation and curing techniques, sausage and minced products, reformed products, breeding of meat products, dry products and half-dry products, packaging and distribution of meat products.

FST4914 Food Industry Waste Engineering 2 (2 + 0)

Prerequisite : None

This course covers food industry waste engineering which encompasses sources and classification of industrial wastes, problems in waste management, physical and chemical waste treatment processes, integrated physical and biological processes, thermal waste treatment processes, and waste reduction strategies.

Department of Food Service and Management

FSM3001 Introduction to Food Industry 3 (3 + 0)

Prerequisite : None

This course covers the history and development in the food industry. The principles of food science and technology in processing, preparation and foodservice, as well as operations and management in the food industry will be discussed.

FSM3101 Chemistry and Functionality Of Food Ingredients 3 (2 + 1)

Prerequisite : None

This course covers the role, properties and application of food components in food production. The functions and effects of ingredients are also be discussed.

FSM3203 Functionality Of Food Ingredients 3 (2 + 1)

Prerequisite : None

This course covers the role, properties and application of food components in food preparation and production. The functions and effects of ingredients are also be discussed.

FSM3204 Nutrition In Foodservice 3 (2 + 1)

Prerequisite : None

This course covers the properties of nutrients and their importance in preparing a balanced menu for the general public and specific group. The changes in nutrient content during storage, processing and food preparation are also emphasized.

FSM3205 Microbiology In Foodservice 3 (2 + 1)

Prerequisite : None

This course covers the importance and effects of microbiological hazard on the foodservice industry. The importance of food safety and handling is also emphasized.

FSM3302 Basic Theory Of Food Preparation 3 (3 + 0)

Prerequisite : None

This course covers the principles, techniques and skills needed in quantity food production. Emphasize is given to the management of raw materials, food production and interpersonal skills.

FSM3303 Fundamental Laboratory For Food Preparation 2 (0 + 2)

Prerequisite : None

This course covers the various basic menu preparations. The mis en place of raw materials, techniques of food preparation and serving are also discussed.

FSM3401 Restaurant Services 2 (0 + 2)

Prerequisite : None

This course covers the important aspect of handling different cultural functions. The aspects of exclusive service and food garnishing are also discussed.

FSM3501 Menu Development 3 (3 + 0)

Prerequisite : FSM3302

This course covers the principles of cost planning and control in menu development. The development of specific menu is also emphasized.

- FSM3602 Human Resource In Foodservice** 3 (3 + 0)
 Prerequisite : None
 This course covers the principles and practices of human resource management. The human resource activities pertaining to recruitment, training and development are also emphasized.
- FSM3604 Foodservice Management And Cost Control** 3 (3 + 0)
 Prerequisite : FSM3501
 This course covers the important principles and concepts in foodservice cost control system. The cost control procedures are also emphasized.
- FSM3605 Quantity Procurement In Foodservice** 3 (3 + 0)
 Prerequisite : FSM3501
 This course covers the purchasing procedures for raw materials and non-food items. The specification and handling of the items are emphasized.
- FSM4101 Research Methods In Foodservice** 3 (2 + 1)
 Prerequisite : MTH3003
 This course covers the basic principles of conducting scientific research. The usage of statistical software to analyze data dan the method of interpreting research result is also emphasized.
- FSM4206 Hygiene And Sanitation In Foodservice** 2 (2 + 0)
 Prerequisite : None
 This course covers the importance of sanitation and hygiene in foodservice operations. The principles of sanitation and hygiene for personal and foodservice establishment are emphasized. Good Manufacturing Practice (GMP) and food quality management system are also discussed.
- FSM4207 Experimental Food In Foodservice** 3 (1 + 2)
 Prerequisite : FSM3203, FSM3303 and FST3301
 This course covers scientific approach in food product innovation. The need to produce new products is emphasized.
- FSM4304 Advanced Food Preparation** 3 (1 + 2)
 Prerequisite : FSM3303 and FSM3401
 This course covers commercial food preparation, presentation and service. The effectiveness and efficiency of teamwork are emphasized.
- FSM4305 Western Cuisine** 3 (1 + 2)
 Prerequisite : FSM3303
 This course covers the basic principles and techniques in Western cuisines preparation. Emphasize is also given to the development of Western cuisines.
- FSM4306 Asian Cuisine** 3 (1 + 2)
 Prerequisite : FSM3303
 This course covers the basic principles and techniques in Asian cuisines preparation. Emphasize is also given to the development of Asian cuisines.
- FSM4503 Information System In Foodservice** 3 (2 + 1)
 Prerequisite : FSM3501
 This course covers the computer technology management which includes the aspect of planning, organization, technology usage, administration and marketing in the food institution.

FSM4504	Equipment Layout And Design For Foodservice Facilities	3 (2 + 1)
Prerequisite : FSM3205, FSM3401 and FSM3501 This course covers the effective layout and design of foodservice equipments and facilities. The computer application is also introduced.		
FSM4601	Strategic Management in Food Industry	3 (3 + 0)
Prerequisite : ACT3211 and FSM4502 This course covers the principles of strategic management in the food manufacturing industry. The process of strategies development in the food manufacturing industry will be emphasized.		
FSM4603	Marketing And Sales In Foodservice	3 (3 + 0)
Prerequisite : FSM3501 This course covers the marketing principles and consumer behavior in foodservice. Activities pertaining to marketing planning and sales are also discussed.		
FSM4606	Foodservice Operations Management	3 (3 + 0)
Prerequisite : MTH3003 This course covers the application of analytical techniques in the foodservice industry. Emphasize is given to the application of modeling theory in planning and decision-making.		
FSM4607	Foodservice Strategic Management	3 (3 + 0)
Prerequisite : None This course covers the principles of strategic management in the foodservice. The process of strategies development in the foodservice institution is also emphasized.		
FSM4701	Foodservice Operational System	3 (3 + 0)
Prerequisite : None This course emphasizes on the management of foodservice systems and operations. The productivity improvement and technology application are also discussed.		
FSM4702	Food And Beverage Management	3 (3 + 0)
Prerequisite : FSM3604, FSM4504 and FSM4603 This course covers the processes and stages, as well as the principles in food and beverage management. Emphasize is given to effective resources management by integrating information technology.		
FSM4703	Institutional Management	3 (3 + 0)
Prasyarat : FSM3204, FSM3501 dan FSM4701 This course covers the effective techniques in managing and handling foodservice institution. Activities pertaining to the foodservice institution operations are also discussed.		
FSM4704	Beverage And Bar Management	3 (3 + 0)
Prerequisite : FSM3501 and FSM3604 This course covers the principles of alcoholic and non-alcoholic beverages production. The various aspects of beverage management are also discussed.		
FSM4803	Foodservice Industrial Law	3 (3 + 0)
Prerequisite : None This course covers the laws pertaining to the formation and operations of foodservice institutions. The related food acts and regulations are also discussed.		

FSM4804 Contract And Franchise In Foodservice 3 (3 + 0)

Prerequisite : None

This course covers the basic and principles of contract and franchise development. The development and evaluation of a contract in the foodservice organization are also emphasized.

FSM4901 Industrial Training 12 (0 + 12)

Prerequisite : Student Semester 6 BS(PPM) – Complete 200 hours of service

This course provides students with the opportunity to evaluate the technologies used in the food industry and gain experience working in an environment in the industry. The training is carried out over a period of 24 weeks at government or private agencies for exposure on work planning and coordination under the supervision of an appointed officer of the agency.

FSM4977 Seminar 1 (0 + 1)

Prerequisite : Student Semester 8 BS(PPM)

This course covers the preparation and techniques of effective presentation. Students are required to present the findings of their research project.

FSM4999A Final Year Project I 3 (0 + 3)

Prerequisite : Student Semester 6 BS(PMK) and 7 BS(PPM)

The course covers the implementation of research project and scientific writing techniques. Students are required to produce a systematic academic write-up.

FSM4999B Final Year Project II 3 (0 + 3)

Prerequisite : Student Semester 7 BS(PMK) and 8 BS(PPM)

The course covers the implementation of research project and scientific writing techniques. Students are required to produce a systematic academic write-up.