

MAHARAJA RANJIT SINGH PUNJAB TECHNICAL UNIVERSITY BATHINDA-151001 (PUNJAB), INDIA

(A State University Estb. by Govt. of Punjab vide Punjab Act No. 5 of 2015 and Approved u/s 2(f) & 12 (B) of UGC; Member AIU)

Department: DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

Program: B.Sc. (Food Science and Technology)

COURSE ARTICULATION MATRIX (STUDY SCHEME: 2018)

Subject	S Code	Semester	Credit	Duration (Hrs)	LTP	cos	Statement	P01	P02	PO3	P04	PO5	P06	P07	P08	60d	PO10	P011	P012	PSO1	PSO2	PSO3	PSO4
						C01	CO1 Understanding the various theories related to growth of micro-organisms and their disease causing abilities	3												2			
gy						C02	CO2 Remembering the general characteristics of micro-organisms in relation to their effect on plant and human health.		3											2			
General Microbiology	REOTS1-101		4	60	310	CO3	CO3 Selection of suitable tools, equipments and environmental conditions for the growth of micro- organisms.					3										ß	
Gei					-	C04	CO4 Identifying the appropriate method for the control of micro-organisms that result in food preservation.		3													2	
					-	CO5	CO5 Creating the ability to communicate with food science community and society about the merits and demerits of micro-organisms.										3				3		

							CO1. Creating awareness about various	3		1							3			
						C01	disciplines of food science and technology and their applications in food production and preservation.													
ßy	02					C02	CO2. Understanding about selection of appropriate techniques for the production of nutrient dense foods with reduced toxicity.			1		2							3	
Introduction to Food Technology	BFOTS1-102	1	4	60	310	CO3	CO3. Acquire knowledge about compositional and nutritional properties of different cereal grains that aids in the production of different food products.			3							1		2	
tion to Foc	Ш					C04	CO4. Identifying problems related to the degradation of fats and their solutions that results in preservation.				3									3
Introduc						CO5	CO5. Imparting knowledge about various physical and chemical changes occur during processing	3									1			1
	3					C01	CO1. Imparting knowledge about basics of mathematics that helps the students with biology background in understanding food engineering	2									2			
Mathematics	BFOTS1-103	1	4	60	31 0	C02	CO2. Developing an ability to understand the use of calculations and numerical in solving problems related to processing and preservation.		3								2			
	В					CO3	CO.3 Engaging students in life-long learning by creating a linkage between mathematics and food sciences									3		1		
suc						C01		60	31 0								3			
Computer Science and Applications	BFOTS1-104	1	4	60	31 0	C02	CO.2 Creating an ability to identify problems related to security against computer viruses along with their preventive measures.		3											1
Computer Scien	BFO.					CO3	CO.3 Creating an ability to communicate effectively with attractive presentations and report writing with society.								3			3		
						C04	CO.4 Providing knowledge about collection, storage and analysis of data with minimum human errors.				3						2			

						CO5	CO.5 Developing the management skills by imparting knowledge about applications of computers in management of data in every field									3			2		2
						C01	CO.1 Understanding about working of different equipment's of microbiology and their applications in food production and preservation.			2		3								3	
gy Lab-I	5					C02	CO.2 Imparting knowledge about practical handling of microbiological tools that ensures safety of food products.					1	2							2	
General Microbiology Lab-I	BFOTS1-105	1	2	30	004	CO3	CO.3 Enumeration of microbial load of different food products with suitable techniques and interpret the factors associated with them.				3										2
General	BI					CO4	CO.4 Selection of suitable methods for the cultivation, isolation and storage of micro-organisms that can be beneficial for human health and environment.					2		2						2	
						505	CO.5 Creating ability to work effectively both individually and as a team during the collection of samples from different sources.								3					3	
						C01	CO.1 Providing knowledge about various cell organelles to the students from non-biology background that helps them in understanding the need of nutrition for health.	3										1			
sa	02					C02	CO.2 Understanding the physiology and anatomy of human body that create an ability to develop foods as for allergic			3										2	
Life Sciences	BPHARO-002	1	4	60	31 0	CO3	CO.3 Identifying the micro-organisms responsible for infectious and contagious diseases along with their preventive measures		3												3
						CO4	CO.4 Creating an ability of developing vaccines and antibiotics that can be beneficial for society and environment.							3						2	
						CO5	CO.5 Applying genetic engineering in food and human health that can support agro-food industries									3			3		
Communi cative	рпийдо- 001	3	0	45	300	C01	CO.1 Recognizing the need of command over the communicative skills engage students in independent and life-long learning.										3		3		

						C02	 CO.2 Creating an ability to communicate effectively with food science community and the society with effective report writing and presentations. CO.3 Engaging students in team work 								3				2		
						CO3	by organizing group discussions on different topics.								5				2		
						CO4	CO.4 Increasing the probability of employment in a reputed industry or organization by improving the interview skills.									1	2		2		
						202	CO.5 Creating an ability to identify problems and solutions by improving the listening skills of the students.		3												3
						C01	CO.1 Identifying the problems arise during storage of fruits and vegetables and resolve them by basic and advanced tools.		3												3
chnology II						C02	CO.2 Understanding the compositional and nutritional properties of fruits and vegetables that results in the production of value-added food products.	2										3			
Introduction to Food Technology II	BFOTS1-201	2	4	60	31 0	CO3	CO.3 Applying ethical principles during the handling of animals before processing and preservation of animal products.							3				2			
Introductio	Ш					CO4	CO.4 Creating the knowledge about overview of general processing methods of Indian spices and their therapeutic uses.						3					1		1	
						CO5	CO.5 Imparting the knowledge regarding usages of appropriate techniques for the quality evaluation of various food products.					3								2	2
servation	2					C01	CO.1 Imparting the knowledge regarding various methods of preservation of food and their effect on physiochemical properties of food.			3			2					3			
Principles of Food Preservation	BFOTS1-202	2	4	60	31 0	C02	CO.2 Selecting appropriate equipment's for preservation of different food products with an objective of minimal degradation of nutrients.					3								3	
Principle						CO3	CO.3 Synthesize information for freezing and drying of different food products with the use of freezing and drying curves.				2									2	

						CO4	CO.4 Identifying the problems associated with food spoilage and selection of suitable methods of		3										3
						CO5	preservation CO.5 Creating the awareness about the effect of chemical and physical preservation techniques on health and nutritional components of food.	1			3							2	
						C01	CO.1 Creating the awareness about the multidisciplinary nature of environmental studies that promotes individual and team work to resolve issues related to depletion of natural resources.	2					3				3		
Studies	:03					C02	CO.2 To engage students in various environmental activities that promotes the life-long learning.								3			1	
Environmental Studies	BFOTS1-203	2	3	45	300	CO3	CO.3 Understanding the concept of ecosystem and its role in sustainable development.					3				1			
Envi						CO4	CO.4 Identify the problems associated with environmental pollution and design effective solutions in context to society and health.		3	2									2
						CO5	CO.5 Creating an ability to communicate effectively about the problems of environment degradation and solutions for conservation with society at large.			2				3			1		
						C01	CO.1 Understanding the chemical structure of food components in relation to shelf life and nutritional value of food products	3								3			
ž	4					C02	CO.2 Identifying the suitable methods for the production of novel food products.			3								3	
ood Chemistry	FOTS1-204	2	2	30	004	CO3	CO.3 Imparting the knowledge of physicochemical properties of food among students.	2								3			
Fo	BF					CO4	CO.4 Creating the awareness about the functions of various food components.					2						2	
						CO5	CO.5 Remembering the concept of minerals and vitamins associated with human health for various life long benefits.				3							1	

						C01	CO.1 Imparting the knowledge of basic instruments used in food industry for analysis of various components of food.	3	0	0	0	0	2	0	0	0	0	0	0	2		
Lab II	9					C02	CO.2 Performing various test for chemical analysis of food.	0	0	0	0	2	2	0	0	0	0	0	0		1	
technology	BFOTS1-206	1	2	30	004	CO3	CO.3 Understanding the effects of hydrothermal processes on produce.	0	0	2	0	0	2	0	0	0	0	0	0			2
Introduction to Food technology Lab II	BF					C04	CO.4 Conduct test for qualitative analysis of various food components.	0	0	0	0	0	2	0	0	0	3	0	0		1	2
Introductio						CO5	CO.5 Collection of data from various quality assessment methods and their interpretation into valid conclusions															
ŧ						C01	CO.1 Preparation of value added products using various fruits and vegetables.			3											2	
Principles of Food Preservation Lab-III	C					C02	CO.2 Understanding the effects of hydrothermal processes on different vegetables.		2												2	
ood Preser	NZ-TCIO-	2	2	30	004	CO3	CO.3 Performing the analysis of various packaged food.					3										3
nciples of F	٥					C04	CO.4 Applying different food preservation techniques for preservation of various food.					3	1								3	
Pri							CO5 Gaining practical knowledge of various instruments used in food processing industry	3													3	
chnology						C01	CO.1 Understanding the physical, chemical and nutritive value of milk for processing of liquid milk and as raw material for the production of various milk products as per the legal standards specified by various agencies.	1					3							3	2	
Dairy Techn		3	4	60	310	C02	CO.2 Creating awareness about selection of equipment's for the processing and quality assessment of milk and milk products					3									3	2
						CO3	CO.3 Identifying the various defects arise during processing and storage of milk and milk products along with the causes behind these defects.		2													3

						1	CO.4 Development of fermented milk	 [2		[2							3	
						CO4	and milk products with the selection of appropriate micro-organisms having some therapeutical effects.													
						CO5	CO.5 Creating ability to communicate efficiently with the developing milk processing industries and help them to manage projects by resolving their issues								3			2		
						C01	CO.1 Developing the ability to check the maturity of fruits and vegetables along with its suitability for processing into value added food products	1	2										3	
d Vegetables	41C-11-214	3	4	60	310	C02	CO.2 Understanding quality analysis of fruits and vegetables along with the factors affecting processing and interpret valid conclusions for effective preservation of food products.	1	2	3										3
Technology of Fruits and Vegetables					(7)	CO3	CO.3 Identifying the problems related to spoilage of fruit and vegetable products and use of preservatives along with processing techniques to prevent spoilage	3												3
Techno						C04	CO.4 Creating ability to utilize the fruit and vegetable industry waste to reduce the environmental stress.		2				3					2		
							CO.5 Selection of suitable techniques for the production of food products with enhanced shelf life and minimal degradation of nutrients.		3		1								3	
~						C01	CO.1 Understanding the role of micro- organisms in production and spoilage of raw along with processed food.	3									3			
ogy and Food Safety		3	4	60	310	C02	CO.2 Identifying the enumeration methods for micro-organisms and implementation of different preservative methods in combination to preserve food.		2	3									3	
Food Microbiolog					č	CO3	CO.3 Collecting knowledge regarding microbial quality of raw, processed and spoiled foods and interpret that in context to public health.			3		2							2	
Foo						C04	CO.4 Creating awareness regarding applications of various food safety tools for the production of safe food meeting the legal standards.				3	2							3	

							CO.5 Analyzing the nature of various food safety hazards and control them to ensure environmental sustainability					3					2		2
						C01	CO.1 Collecting data from different platform tests and implementing the information to ensure suitability of raw material for processing.		3							1		2	
/ Lab-IV	50					C02	CO.2 Applying standard protocols for the production of safe milk and milk products meeting the legal specifications.				3							3	
Dairy Technology Lab-IV		3	2	30	004	CO3	CO.3 Creating ability to determine the quality of milk and milk products and ensuring their safety for human consumption with certain limitations.				2							2	3
Da						C04	CO.4 Understanding the working and applications of various dairy equipments in milk processing.			3								3	
							CO.5 Developing the spirit of individual and team work by familiarizing the students with industrial environments						3				3		
٩						C01	CO.1 Applying theoretical knowledge for the production of value added products meeting the specified needs of society	2			3							3	
getables La						C02	CO.2 Evaluating the quality of food products using basic and advanced equipments.			3									3
lits and ve		3	2	30	004	CO3	CO.3 Developing food preserves to enhance the shelf life along with reduction in wastage of perishable foods	3				1							1
Technology of Fruits and vegetables Lab V						CO4	CO.4 Reducing environmental stress by utilizing by-products of fruit and vegetable industry by converting them into attractive food products.	2				3						2	
Tec							CO.5 Creating an ability to share views related to a food industry and their management during industrial visits							3			3		
iology and y Lab VI					-	C01	CO.1 Understanding the use of various equipments of microbiology and their applications in food safety.			3								3	
Food Microbiology ar Food Safety Lab VI		3	2	30	004	C02	CO.2 Creating an ability to identify different micro-organisms and relate their characterstics with the safety of human and plant health.	2										3	

						CO.3 Applying appropriate methods to				2	2								3
					CO3	analyze the microbial safety of food products and implement that information to determine the efficiency of preservation methods.													
					C04	CO.4 Creating skill for development of fungal and fermented foods reducing stress on environment to fulfill the need of nutrient rich foods for growing population			3			3					1		1
						CO.5 Identifying the problems associated with spoilage of raw and processed foods due to different micro- organisms and applying suitable preservation methods.		3											3
					C01	CO.1 Understanding the basic concepts of Entrepreneur, Entrepreneurship and Enterprise in relation to food Industry.	2										3		
rship ent	3	3	45	300	C02	CO.2 Developing entrepreneurial skills in the students and ability to communicate effectively on the issues of an Entrepreneur and Entreprisewith the food science community.								3	1		3		
Entrepreneurship Development					CO3	CO.3 Developing a spirit of individual and team work by teaching them with the help of case studies of successful entrepreneurs.							2				3		
					C04	CO.4 Creating an ability to identify opportunities in business and generation of unique business ideas.		3											1
						CO.5 Applying the principles of management to manage projects as individual and team.							2		1		2		
nology					C01	CO.1 Applying the knowledge of microbiology for the production and preservation of food products.	1		2							3			
tation Tech	3	3	45	300	C02	CO.2 Understanding the working of various fermenters for the production of healthy food with increased palatability.					3						3		
Food Fermentation Technology					CO3	CO.3 Reducing the stress on environment with the production of organic acids and vitamins by using micro-organisms and utilizing industrial waste						3						3	

					CO4	CO.4 Creating an awareness about the quality assessment of raw material and its usage for the production of safe and		3										1	2
						healthy food products. CO.5 Selecting suitable type of fermentation for the production of specific product and interpret the whole information related to the specific product for efficient recovery.			2									2	1
					C01	CO.1 Understanding the general characteristics of various food additives and their application in improvement of physical and chemical properties of food	3									3			
sa	2	2	45	00	C02	CO.2 Collecting basic knowledge regarding the mechanism of action of various additives and utilize it for the production of healthy food products with enhanced shelf life.		3										2	
Food Additives	3	3	45	300	CO3	CO.3 Creating awareness about different techniques for the processing, preservation and extraction of essential oils from various Indian spices.				3								3	
					C04	CO.4 Understanding the importance of legal standards specified for the use of additives and applying that knowledge for the production of safe and healthy food products.					3							3	
					C01	CO.1 Creating an awareness about problems of drug abuse by proving a comfortable environment in class that engage students in life-long learning.									3		2		
g Abuse	3	0	30	200	C02	CO.2 Understanding the concept of drug dependence, addiction and tolerance along with their solutions develops a passion to work for the wellness of society.					1				1		1		
Dru					CO3	CO.3 Creating an ability to communicate effectively on various long term and short term effects of drug abuse.								3			1		
					CO4	CO.4 Encouraging individual and team work by creating awareness about the consequences of drug abuse and their effect on individual, parents and society							3				2		

							CO.5 Imparting moral values to the students that aids in the development of an individual and society.							3				2		
eds						C01	CO.1 Understanding the structure and composition of different cereal grains and their effect on the quality of processed food.	3									3			
s and Oilse		4	4	60	0	C02	CO.2 Identifying the suitable methods for the processing of cereal and their conversion into different food products.		3	2									3	
Technology of Cereals, Pulses and Oilseeds				00	310	CO3	CO.3 Remembering the concept of conversion of cereal grain in value added product and their application related with human health.					3							3	
echnology of						CO4	CO.4 Imparting basic knowledge of physiochemical properties of different cereals and their effect on processing of food.	3												2
							CO.5 Acquiring the knowledge of development of food products and processes using cereal grains.		3		2								2	
						C01	CO.1 Providing the knowledge of structure and composition of different meat and meat products.	3									3			
Technology	MFOT1-418				310	C02	CO.2 Understanding the techniques used for conversion of eggs into different products and their impact on different food components.		3				2						3	
Egg, Poultry and Meat Technology	MFOT	4	4	60	31	CO3	CO.3 Applying the ethical principles during handling of animal and their conversion into meat for developing different meat products.							3			2			
Egg, Poul						C04	CO.4 Imparting the knowledge of different quality evaluation methods for meat and meat products.	3			3									2
							CO.5		2				1							
t Hygiene vitation	1-410	4	4	60	0	C01	CO.1 Understanding the concept and importance of personal hygiene and its role in food safety.			3							2			
Food Plant Hygiene and Sanitation	TINI				310	C02	CO.2 Familiarizing the students with different types of byproduct utilization and their application in various fields.				3								1	

						~	CO.3 Creating the knowledge of different waste disposal and its					2									1
						CO3	treatment by various physical and chemical agents.														
						C04	CO.4 Applying distinctive methods of cleaning and sanitation to maintain industrial hygiene.	3			1								2		
							CO.5 Aware the students about design and layout of effluent treatment plant used in various food industry.			3		2							1		1
Oilseeds						C01	CO.1 Understanding the concept and importance of personal hygiene and its role in food safety.				3									2	
Pulses and					_	C02	CO.2 Familiarizing the students with different types of byproduct utilization and their application in various fields.					3								3	
Technology of Cereals, Pulses and Oilseeds Lab VII		4	2	30	004	CO3	CO.3 Creating the knowledge of different waste disposal and its treatment by various physical and chemical agents.					2						2			
Technolo						C04	CO.4 Applying distinctive methods of cleaning and sanitation to maintain industrial hygiene.	3			1										3
							CO.5 Aware the students about design and layout of effluent treatment plant used in various food industry.			3		2								3	
						C01	CO.1 Conducting various tests required for grading and quality evaluation of different meat and meat products.				3									2	
schnology	418					C02	CO.2 Preservation of meat products by using appropriate preservation methods.		3											2	
Egg, Poultry and Meat Technology Lab VIII L	MFOT1-418	4	2	30	004	CO3	CO.3 Development of numerous meat and meat products by suitable methods to meet specified needs of the public health.			2			2								2
Egg, Poultry						CO4	CO.4 Familiarize students about ethical principles during slaughtering and dressing of meat for the conversion of muscles into meat								3			2			
							CO.5 Imparting the concept and practical knowledge of different meat processing operation from farm to folk.					2		2						2	

						C01	CO.1 Understanding the working and principles of various equipments used to determine the safety of food.					3							2	
Sanitation	-418				t t	C02	CO.2 Imparting knowledge regarding safety standards of various food products along with their analysis.					2	2						2	2
Food Plant Hygiene and Sanitation Lab IX	MFOT1-418	4	2	30	004	CO3	CO.3 Identifying various problems related to food safety with the help of appropriate techniques and conclude their solutions		3										2	
Food Plant						C04	CO.4 Developing the spirit of team work during sample collection from various sites in the university.								3			3		
							CO.5 Understanding the impact of different processing techniques on water and environment.							3					2	
spo						C01	CO.1 Understanding the concept of nutraceutical and functional food and their associated health benefits.	3					2				2			
Nutraceutical and Functional Foods	1-418				0	C02	CO.2 Familiarize the students about the functions of various types of nutraceutical compounds, sources and their role in promoting human health						3						2	
aceutical and	MFOT1-418	4	4	60	400	CO3	CO.3 Creating the knowledge of various sources of function foods and their potential for use in improving human health.			3								2		
Nutra						C04	CO.4 Imparting the knowledge of fermented foods and their role in various harmful diseases.	2			1						1		2	
						CO5	CO.5 Aware the students about the future prospects of various health promoting foods and their potential for use in promoting human health.		2				2						2	
tional foods	0					C01	CO.1 Creating the ability to understand about various nutraceuticals and functional foods available in the market and their associated health benefits.	3											2	
al and func Lab X	14-110-11	4	2	30	004	C02	CO.2 Familiarize the students with the approach behind development of nutraceuticals and functional foods.			2			3						2	
Nutraceutical and funct Lab X	21					CO3	CO.3 Aware the students about analysis of compounds responsible for imparting nutraceutical properties to the food product.				3									2

						C04	CO.4 Imparting the knowledge about formulation and development of various nutraceutical and functional foods.			3						1		2	
						CO5	CO.5 Applying various estimation techniques to determine different components present in food.				3							3	
						C01	CO.1 Familiarize the students with current scenario and economic importance of Bakery Industry in India.	3								2			1
Bakery Technology	VIFU11-410	4	4	60	400	C02	CO.2 Aware the students with different categories of bakery products and their possible uses.	2				3				2			
Bakery Te	IVIFUI				40	£03	CO.3 Understanding the concept and techniques required for formulation of different bakery products.			3								3	
						CO4	CO.4 Impart the knowledge of different ingredients used and their role in the bakery products formulation				3							2	
						C05	CO.5 Providing knowledge about the development to modified bakery products with special needs.			3		2						3	
neering						C01	CO.1 Understanding the concept of unit operation and various preliminary unit operations required for material handling.	3			1					3			
Unit Operations in Food engineering		E	4	60	310	C02	CO.2 Understanding the principles and working of equipments used in food industries.				3							3	
erations in		5	4	60	31	CO3	CO.3 Formulate and analyze the problems related to unit operations used in food engineering.		3										3
Unit Op						CO4	CO.4 Creating awareness regarding selection and application of tools and techniques used for the processing and storage of foods.				3				1			2	
						C05	CO.5 Applications of various processing methods in food industries			2							1	2	
ckaging	0T 1 -T	5	4	60	0	C01	CO.1 Imparting knowledge regarding importance of packaging in foods.	3								2			
Food Packaging					310	C02	CO.2 Understanding of various environmental concerns related to food packaging.					2	3					1	

						CO3	CO.3 Creating awareness regarding novel methods of food packaging.		2					1			2	2
						CO4	CO.4 Selection and application of appropriate packaging materials and techniques depending on the requirements of food products.			3							2	
						CO5	CO.5 Understanding of different types of packaging materials used in food packaging	3			1				1	2		
nology						C01	CO.1 Imparting the knowledge regarding manufacturing and deterioration of sugar.	3			2					3		
Sugar and Confectionary Technology	1-418	_		60	0	C02	CO.2 Understanding of icings, toppings and confectionary.	2							1	2		
nd Confecti	MFOT1-418	5	4	60	400	CO3	CO.3 Utilization of by-products of sugar industry.					3					2	
Sugar ar						C04	CO.4 Creating awareness regarding processing methods of cocoa and chocolate used in food industries.			2				1			2	
						CO5	CO.5 Understanding various defects of chocolate.	2			1				1			2
IV-8						C01	CO.1 Imparting knowledge about testing of physic-mechanical parameters of packaging materials.	3							2			2
Lab XII LAE	1-418				4	C02	CO.2 Understanding of principle and working of FFS machine.	2		3						2		
Food Packaging Lab XII LAB-VI	MFOT1-418	5	2	30	004	CO3	CO.3 Creating awareness about the recent advances in food packaging			3				2		2		
Food						C04	CO.4 Analyzing the effect of packaging on shelf life to food products in order to ensure food safety.				3				1		2	
						CO5	CO.5 Quality assessment of packaged food products			2	2				1			2
Sugar and Confectio	1/1/11- 110	5	2	30	004	C01	CO.1 Imparting knowledge about manufacturing of sugar and confectionary based products.	3									2	

						C02	CO.2 Students become aware about manufacturing of confectionary products.			2				1					2	
					-	CO3	CO.3 Evaluation of various quality parameters of confectionary products.					3								2
					-	C04	CO.4 Understanding the mode of working in industrial setup as an individual and as a team.								3	1		2		
						CO5	CO.5 Understanding of various types of packaging materials used for confectionary.	3											1	
ogy						C01	CO.1 Imparting knowledge classification, composition and uses of spices and flavors.	3				1					3			
or Technol	MFOT1-418	5	4	60	400	C02	CO.2 Understanding about processing techniques of spices.				3								2	
Spices and Flavor Technology	MFOT	5	4	60	40	CO3	CO.3 Understanding of flavoring compounds, its classification and its application in food industries	3							2		2			
Spic						C04	CO.4 Creating awareness about microbial contamination and insect infestation in spices and its control.					3		2	1					2
						CO5	CO.5 Analyzing the role of flavorings and their stability during processing.		1			1			2					2
Lab XIV						C01	CO.1 Imparting knowledge of proximate composition of spices.	3									3			
Spices and Flavor Technology Lab XIV	1-418				4	C02	CO.2 Understanding of adulteration in spices.				1	3					1			1
nd Flavor T	MFOT1-418	5	2	30	004	CO3	CO.3 Evaluation of organoleptic properties of spices for their appropriate use in food products.				1				2				3	
Spices an						C04	CO.4 Analysis of microbiological quality of spices to ensure their safety for human consumption				1	3			1				3	
						CO5	CO.5 Quality assessment of different spices.				2	1			1					2

ts						C01	CO.1 Imparting knowledge of nutritional importance of fats and oils in human nutrition.	3				2				3			
Technology of Oils and Fats	1-418	_		60	0	C02	CO.2 Understanding the extraction and processing techniques of fats and oils used at home and industrial scale.				3				1			2	
chnology of	MFOT1-418	5	4	60	400	CO3	CO.3 Analyzing the physico-chemical properties of oils and fats for their suitability in food products				2				1			2	
Te						CO4	CO.4 Creating awareness about factors affecting the storage of fats and oils from the safety point of view.					3		2	1			1	1
						CO5	CO.5 Understanding of various modification methods of fats and oils to improve their physic-chemical properties.	3		2								1	
ab XV						C01	CO.1 Imparting knowledge about physic- chemical properties of fats and oils.	3								3			
and Fats L	l-418				4	C02	CO.2 Understanding of adulteration in fats and oils.	3				2				1			1
Technology of Oils and Fats Lab XV	MFOT1-418	5	2	30	004	CO3	CO.3 Evaluation of organoleptic properties of fats and oils for their appropriate use in food products.				3	2			1			2	
Techno						C04	CO.4 Analysis of quality parameters of fats and oils to ensure their safety for human consumption.				2				2			2	2
						C05	CO.5 Understanding of various processing methods used at industrial scale.									1	1		
						C01	CO.1 Familiarize students with the basic concepts of food engineering including units and dimensions	3								3			
eering	1-418				0	C02	CO.2 Understanding the basic principles, processes and components of material and energy balances		2							2			
Food Engineering	MFOT1-418	6	4	60	310	CO3	CO.3 Providing the knowledge about thermodynamic system and its different properties			1						2			
						CO4	CO.4 Aware students about principles of fluid flow and its effect in food processing.					2						2	

						CO5	CO.5 Interpretation of data using psychrometry and synthesis of information for developing appropriate				3								2
						C01	storage and processing conditions. CO.1 Understanding the concepts of relationship between food, nutrition and health.	3									2		
Food and Nutrition	MFOT1-418	6	4	60	310	C02	CO.2 Aware students about various nutrients, their classifications and functions associated with the human health.						2				1	1	
Food and	MFOT	0	4	00	Ϋ́.	CO3	CO.3 Familiarize students with the concept of RDA and its importance in maintaining the health.			2							1	1	
						C04	CO.4 Imparting the knowledge of importance of meal planning in diet for different group of people.			2			2				1		1
						CO5	CO.5 To create the awareness about FSSAI guidelines used for nutritional labelling in India.						2					2	
σ						C01	CO.1 Aware students about structure and functions of taste organs.	2									3		
tion of Foo	-418					C02	CO.2 Providing the knowledge about taste measurements and taste abnormalities		2									1	
Sensory Evaluation of Food	MFOT1-418	6	4	60	400	CO3	CO.3 Familiarize the students with the importance of odour, flavor and colour in sensory evaluation of food.						2				1		1
Se						C04	CO.4 Understanding the importance of texture and texture perception in food.				2								1
						CO5	CO.5 Application of different types of equipment used for sensory evaluation of food.					3						2	
Food LAB-	8					C01	CO.1 Creating awareness among students about the importance of sensory panel.	3									1		
aluation of XVI	MFOT1-418	6	2	30	004	C02	CO.2 Provide practical knowledge of various sensory tests.						2					1	
Sensory Evaluation of Foo XVI	2					CO3	CO.3 Conducting various tests for sensory evaluation of different food products.						2					1	1

						C04	CO.4 Familiarize students with various quality tests for milk products, cereals and confectionary products.				2							1	1
						CO5	CO.5 Imparting the knowledge about qualitative tests for various oils and fats				2								2
						C01	CO.1 Provide knowledge about concepts of designing and importance of a good layout.	1		2						1			
FOOD PLANT LAYOUT	014-1 IUIV	6	4	60	00	C02	CO.2 Imparting the knowledge about importance of plant site and location factors.		2										1
FOOD PLAN	INFUT				400	CO3	CO.3 Familiarize the students about the selection of plant building material and equipment's.												1
						CO4	CO.4 Creating the awareness about layout symbols among students.									1			
E.						C01	CO.1 Preparing the layouts for different processing plants.	3									1		
OUT LAB X	014-	4	2	30	t	C02	CO.2 Familiarizing the students about process diagrams of various manufacturing units.				2						1		1
FOOD PLANT LAYOUT LAB XVII			2	50	004	CO3	CO.3 Imparting the knowledge about calculations related to processing cost.								2		1		
FOOD						CO4	CO.4 Creating the awareness among students about the processes to calculate the life of various machines and equipments in the plant.				2				2		1		1
						CO5	CO.5 Synthesize the information about the shelf life estimation of various machines.		2								1		1
AFETY	-418				C	C01	CO.1 Aware students about food safety and importance of food safety.	3								3			
FOOD SAFETY	MFOT1-418	6	4	60	400	C02	CO.2 Understanding the concept of Hygiene and Sanitation in Food Service Establishments and their association with food safety.					2						2	

						CO3	CO.3 Familiarize the students about various food hazards and its impact on health.		1		2						1	1
						C04	CO.4 Providing knowledge about food safety tools and their need for food quality.			3				2			1	1
							CO.5 Imparting the knowledge about different food safety laws.				2				1		1	
						C01	CO.1 Performing various tests for preparation of selective and complex media.	1									1	
B XVIII	∞					C02	CO.2 Creating the ability of handling tools for microbiological tests.			3							1	
FOOD SAFETY LAB XVIII	MFOT1-418	6	2	30	004	CO3	CO.3 Imparting the knowledge about different methods of staining and its use in food safety.				3			1			1	
FOOD SA	Σ					CO4	CO.4 Aware students about the importance of personal hygiene and its assessment.					2						2
						CO5	CO.5 Familiarize the students about detection of physical and chemical hazard in food.			2								2
						C01	CO.1 Aware students about quality concepts, quality perception, quality attributes of foods.	3							3			
nagement	418					C02	CO.2 Familiarize students to the concepts of quality management	3			2							1
Food Quality Management	MFOT1-418	6	4	60	400	CO3	CO.3 Imparting the knowledge about food contamination, heavy metals, pesticide residues, antibiotics, agrochemicals, veterinary drug residues, environmental pollutants.					3						2
						C04	CO.4 Understanding the need of food additives in food processing and preservation.		2						1		1	
						CO5	CO.5 Providing the knowledge of various freezing methods used in food industries.			1						1	1	
Food Quality		4	2	30	004	C01	CO.1 Understanding the concept of qualitative analysis of various milk products.	3		1					1		1	

1	CO 2 Familiaria atalanta mithemalita			•					I	2
C02	CO.2 Familiarize students with quality inspection of cereals, pulses and spices.			2						2
CO3	CO.3 Creating the ability to determine various contaminants in water.	3		1						2
CO4	CO.4 Providing a platform for quality testing of various food products.			3					1	1
CO5	CO.5 Imparting the knowledge about insecticides and heavy metals present in food.				2					3

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		·									

Enter Correction levels 1, 2 or 3 as defined below:

1. Slight (Low) - upto 30% 2. Moderate (Medium) – above 30% and upto70% 3. Substantial (High) – above 70%