



## 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)	L T P	COs	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4							
General Microbiology	BEOTS1-101	1	4	60	3 1 0	CO1	CO1 Understanding the various theories related to growth of micro-organisms and their disease causing abilities	3													2									
						CO2	CO2 Remembering the general characteristics of micro-organisms in relation to their effect on plant and human health.		3															2						
						CO3	CO3 Selection of suitable tools, equipments and environmental conditions for the growth of micro-organisms.					3																3		
						CO4	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			

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

						C05	CO.5 Developing the management skills by imparting knowledge about applications of computers in management of data in every field										3			2		2						
General Microbiology Lab-I	BFOTS1-105	1	2	30	004	C01	CO.1 Understanding about working of different equipment's of microbiology and their applications in food production and preservation.			2		3										3						
						C02	CO.2 Imparting knowledge about practical handling of microbiological tools that ensures safety of food products.				1	2													2			
						C03	CO.3 Enumeration of microbial load of different food products with suitable techniques and interpret the factors associated with them.				3																	2
						C04	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	
						C05	CO.5 Creating ability to work effectively both individually and as a team during the collection of samples from different sources.											3									3	
Life Sciences	BPHARO-002	1	4	60	310	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								
						C02	CO.2 Understanding the physiology and anatomy of human body that create an ability to develop foods as for allergic			3																2		
						C03	CO.3 Identifying the micro-organisms responsible for infectious and contagious diseases along with their preventive measures		3																			3
						C04	CO.4 Creating an ability of developing vaccines and antibiotics that can be beneficial for society and environment.							3													2	
						C05	CO.5 Applying genetic engineering in food and human health that can support agro-food industries															3				3		
Communi- cative	BPHARO-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							















						CO4	CO.4 Creating an awareness about the quality assessment of raw material and its usage for the production of safe and healthy food products.			3										1	2					
							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					
Food Additives	3	3	45	300	CO1	CO.1 Understanding the general characteristics of various food additives and their application in improvement of physical and chemical properties of food	3											3								
					CO2	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				
					CO3	CO.3 Creating awareness about different techniques for the processing, preservation and extraction of essential oils from various Indian spices.					3													3		
					CO4	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	
Drug Abuse	3	0	30	200	CO1	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						
					CO2	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					
					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		

















						CO5	CO.5 Interpretation of data using psychrometry and synthesis of information for developing appropriate storage and processing conditions.				3										2								
Food and Nutrition	MFOT1-418	6	4	60	310	CO1	CO.1 Understanding the concepts of relationship between food, nutrition and health.	3													2								
						CO2	CO.2 Aware students about various nutrients, their classifications and functions associated with the human health.							2										1		1			
						CO3	CO.3 Familiarize students with the concept of RDA and its importance in maintaining the health.					2														1		1	
						CO4	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						
Sensory Evaluation of Food	MFOT1-418	6	4	60	400	CO1	CO.1 Aware students about structure and functions of taste organs.	2														3							
						CO2	CO.2 Providing the knowledge about taste measurements and taste abnormalities					2															1		
						CO3	CO.3 Familiarize the students with the importance of odour, flavor and colour in sensory evaluation of food.									2												1	
						CO4	CO.4 Understanding the importance of texture and texture perception in food.								2														
						CO5	CO.5 Application of different types of equipment used for sensory evaluation of food.																2						
Sensory Evaluation of Food LAB- XVI	MFOT1-418	6	2	30	004	CO1	CO.1 Creating awareness among students about the importance of sensory panel.	3														1							
						CO2	CO.2 Provide practical knowledge of various sensory tests.									2											1		
						CO3	CO.3 Conducting various tests for sensory evaluation of different food products.																				1		1



						C03	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.										1		1							
FOOD SAFETY LAB XVIII	MFOT1-418	6	2	30	004	C01	CO.1 Performing various tests for preparation of selective and complex media.	1											1							
						C02	CO.2 Creating the ability of handling tools for microbiological tests.					3										1				
						C03	CO.3 Imparting the knowledge about different methods of staining and its use in food safety.							3				1					1			
						C04	CO.4 Aware students about the importance of personal hygiene and its assessment.									2									2	
						C05	CO.5 Familiarize the students about detection of physical and chemical hazard in food.							2												2
Food Quality Management	MFOT1-418	6	4	60	400	C01	CO.1 Aware students about quality concepts, quality perception, quality attributes of foods.	3										3								
						C02	CO.2 Familiarize students to the concepts of quality management	3					2											1		
						C03	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		
						C05	CO.5 Providing the knowledge of various freezing methods used in food industries.					1							1	1						
Food Quality	MFOT1-418	4	2	30	004	C01	CO.1 Understanding the concept of qualitative analysis of various milk products.	3				1						1		1						




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%