SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Principles of Food Processing [T]		
Course Code	FT-101[T]		
Course Outcomes & Bloom's Level	**CO1-** Comprehend the principles and methods involved in the processing of foods and discuss the food preservation by heating. **(BL1-Remember)** **CO2-** To describe about irradiation, microwave processing and Ohmic heating as food processing techniques**(BL2-Understand)** **CO3-** To illustrate different freezing techniques, advantages and mechanism of freezing in addition to its effect on food quality. **(BL3-Apply)** **CO4-** Interpret the use of natural as well as chemical and bio- based preservatives to increase the shelf life of food.**(BL4-Analyze)** **CO5-** Recognize different drying methods, different dryers used in food processing and drying mechanisms including sorption isotherm**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✓	**SDG (Goals)**	SDG3(Good health and well-being) SDG6(Clean water and sanitation)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	1	-	1	-	1	-	-	2	-	3	1	1
CO2	3	2	2	2	-	1	-	2	-	-	1	-	3	1	1
CO3	2	2	2	`	1	`	-	2	-	`	`	-	3	2	2
CO4	2	2	2	-	-	-	-	2	-	-	`	-	3	2	2
CO5	3	2	2	2	2	-	-	2	-	`	1	-	3	2	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Fundamentals of Food Chemistry [T]		
Course Code	FT-102[T]		
Course Outcomes & Bloom's Level	**CO1-** The student should able to define food chemistry and importance of food chemistry. Student will also learn properties and nutritional importance of water in addition to role of water activity in food stability**(BL1-Remember)** **CO2-** To describe about carbohydrate, its classification, structure and chemical reactions**(BL2-Understand)** **CO3-** To explain about lipids, its classification, structure, physical and chemical properties and causes of rancidity**(BL3-Apply)** **CO4-** To comprehend proteins, its classification, structure, chemical reactions and functional properties. The students will understand to develop a basic idea in new food product development **(BL4-Analyze)** **CO5-** Summarizes about enzymes, their classification and food use. Besides that, students will be able to understand the classification and importance of vitamins and minerals in human diet**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	1	1	-	-	1	-	-	-	-	1	-	3	1	1
CO2	3	1	1	1	1	2	-	-	-	-	1	-	3	1	1
CO3	3	2	2	2	1	1	-	-	-	-	1	-	3	1	2
CO4	3	2	2	2	2	1	1	-	1	-	2	-	3	2	2
CO5	3	2	2	2	1	1	1	-	1	-	1	-	3	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food Additives [T]		
Course Code	FT-103[T]		
Course Outcomes & Bloom's Level	**CO1-** The students will be able to comprehend about importance, classification and functions of additives like preservatives, acid, base, salts, chelating/sequestering agents, non-nutritive sweetness, emulsifier, stabilizer, thickeners, antioxidants, anticaking agents, firming agents, bulking agents, flour bleaching agents, bread improves and antimicrobial agents, humectants, acidulates, leavening agents in maintaining or improving food quality. **(BL1-Remember)** **CO2-** To give insight to various terminology such as isolation, functional properties and applications of proteins, starches and lipids as functional ingredients.**(BL2-Understand)** **CO3-** The students will be able to demonstrate the types and stability of flavours during food processing. They will also know about flavor emulsions, essential oils and oleoresins.**(BL3-Apply)** **CO4-** The course will illustrate the types and recommended doses of coloring agents. **(BL4-Analyze)** **CO5-** The course will describe the e-codes and uses and function of food additives in different food formulations.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✓ Employability ✓ Professional Ethics ✓ Gender ✕ Human Values ✕ Environment ✓	**SDG (Goals)**	SDG3(Good health and well-being) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	1	1	1	-	-	-	-	-	-	3	1	1
CO2	3	1	1	2	2	2	-	-	-	-	-	-	3	1	1
CO3	3	1	1	3	2	2	-	-	-	-	-	-	3	1	1
CO4	3	2	1	1	2	2	-	-	-	-	-	2	3	3	3
CO5	3	1	2	2	1	1	-	-	-	-	-	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food Microbiology [T]		
Course Code	FT-104[T]		
Course Outcomes & Bloom's Level	**CO1-** To classify and identify the beneficial and spoilage microorganisms associated with food besides learning the factors influencing growth of microorganism on foods**(BL1-Remember)** **CO2-** To comprehend different methods of preservation like high temperature, low temperature, drying, food additives and radiation.**(BL2-Understand)** **CO3-** To illustrate Food-borne illnesses, poisoning, infections andintoxications as well as spoilage of different kinds of foods like cereals, fruits, vegetables, animal products. **(BL3-Apply)** **CO4-** To describe the principle of food fermentation, different Indian fermented foods and importance of probiotics.**(BL4-Analyze)** **CO5-** To predict Biochemical changes caused by microorganism, food hygiene and sanitation.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG6(Clean water and sanitation) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	3	1	1	-	-	-	-	-	-	3	1	1
CO2	3	3	3	2	3	3	2	-	-	-	2	2	3	1	1
CO3	3	2	2	1	1	1	1	-	-	1	1	1	3	1	1
CO4	1	1	1	1	1	1	-	-	-	-	-	1	3	3	3
CO5	1	1	1	1	1	1	-	-	-	-	-	1	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Sensory Evaluation and Food Waste Management [T]		
Course Code	FT-105[T]		
Course Outcomes & Bloom's Level	**CO1-** To analyze the basic concepts of sensory evaluation and requirements of a sensory laboratory. **(BL1-Remember)** **CO2-** To illustrate criteria for selection of sensory panelists, sensory quality parameters and factors affecting sensory measurements. **(BL2-Understand)** **CO3-** To define different sensory tests like discrimination, descriptive, affective; flavor profile and tests; ranking tests, detection, threshold and dilution tests. **(BL3-Apply)** **CO4-** Summarizes by-product utilization of different fruits such as apple, grape, papaya, orange, citrus, mango. **(BL4-Analyze)** **CO5-** The course will provide an understanding about nutritional quality of foods and its assessments like Digestibility, Biological value, NPU, PER, etc. **(BL5-Evaluate)**		
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✓	**SDG (Goals)**	SDG3(Good health and well-being) SDG6(Clean water and sanitation)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	1	1	-	-	1	-	1	-	-	3	1	2
CO2	3	2	2	2	1	-	-	1	1	1	1	-	3	1	2
CO3	3	3	2	2	2	1	1	2	2	1	-	-	3	1	2
CO4	3	2	2	2	2	2	1	2	2	1	-	-	3	2	2
CO5	3	3	3	2	2	1	1	2	1	1	1	-	3	2	2
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	lab Course-I		
Course Code	FT-106 [P]		
Course Outcomes & Bloom's Level	**CO1-** To recognize the importance and different ways of food preservation**(BL1-Remember)** **CO2-** To describe the composition of food and interaction of different food components with each other during processing and storage. **(BL2-Understand)** **CO3-** To estimate the effect of different processing on nutritional value of food and other components. **(BL3-Apply)** **CO4-** To apply the processing methods in real life to preserve food for longer term. **(BL4-Analyze)** **CO5-** To evaluate the spoilage in foods, its critical analysis and prevention strategies**(BL5-Evaluate)**		
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG3(Good health and well-being) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	1	3	3	3	3	-	-	-	-	-	-	3	1	1
CO2	2	3	3	2	2	2	-	-	-	-	-	-	3	1	1
CO3	3	2	3	2	3	3	-	-	-	-	-	-	3	1	1
CO4	3	2	3	3	3	3	-	-	-	-	-	-	3	3	3
CO5	3	3	2	3	2	2	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Lab course-II		
Course Code	FT-107 [P]		
Course Outcomes & Bloom's Level	**CO1-** To identify the characteristics of microorganisms grown on different media**(BL1-Remember)** **CO2-** To discover isolation techniques of microbes**(BL2-Understand)** **CO3-** To apply the knowledge gained on utilizing the by-products into various value added products and differentiating products on sensory perception.**(BL3-Apply)** **CO4-** To analyse the food materials using instruments and compare the properties with sensory evaluation.**(BL4-Analyze)** **CO5-** To predict the industrial utilization of different under-utilized by-products and train the panellists for sensory evaluation**(BL5-Evaluate)**		
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG3(Good health and well-being) SDG4(Quality education) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	3	3	2	1	1	1	-	-	-	-	1	3	1	1
CO2	2	3	2	2	1	2	-	-	-	-	-	1	3	1	1
CO3	3	2	2	3	3	3	-	-	-	-	-	1	3	1	1
CO4	3	3	3	2	2	2	-	-	-	-	-	2	3	3	3
CO5	3	3	3	3	2	2	-	-	-	-	-	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Fruits and Vegetables Technology [T]		
Course Code	FT-201 [T]		
Course Outcomes & Bloom's Level	**CO1-** To comprehend the structure, composition, physiological development,post-harvest handling methods, processing and preservation of fruits and vegetables.**(BL1-Remember)** **CO2-** To illustrate the technology of Fruits and vegetables products like juicesand pulps, concentrates and powders, squashes and cordials, beverages, jam, jellies, sauces, etc**(BL2-Understand)** **CO3-** To describe the preservation methods and processing ways of spices develop value added products from them.**(BL3-Apply)** **CO4-** Identify the method of production of dry fruits, tea and coffee.**(BL4-Analyze)** **CO5-** To demonstrate the processing and chemical composition of cocoa beans,cocoa processing and manufacturing process for chocolate.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG2(Zero hunger) SDG3(Good health and well-being) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	1	1	2	-	-	-	-	-	1	3	1	1
CO2	3	3	2	3	2	3	1	-	-	1	1	2	3	1	1
CO3	3	3	2	2	3	3	-	-	-	-	-	-	3	1	1
CO4	3	3	2	2	2	2	-	-	-	-	-	1	3	3	3
CO5	3	3	3	3	2	2	1	-	-	-	1	1	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Processing of Cereals, Pulses, Oilseeds and Sugar Crops [T]		
Course Code	FT-202 [T]		
Course Outcomes & Bloom's Level	**CO1-** Students will comprehend about the basic composition, milling and processing of wheat, wheat flour properties and manufacturing of wheat-based products.**(BL1-Remember)** **CO2-** Students will evaluate the basic composition, milling and processing of rice, and milling by-products and their utilization**(BL2-Understand)** **CO3-** Students will illustrate about composition, milling and processing of corn to prepare products like cornflakes, corn syrup, corn starch, corn steep liquor, corn oil and canned corn**(BL3-Apply)** **CO4-** Students will demonstrate the composition and processing of barley, sorghum and millets.**(BL4-Analyze)** **CO5-** Students will understand about the composition and processing of legumes, oil seeds and their value-added products.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	1	2	3	3	-	-	-	-	-	-	3	1	1
CO2	3	2	1	3	3	3	1	-	-	-	1	2	3	1	1
CO3	3	2	1	3	3	3	1	-	-	-	1	2	3	1	1
CO4	3	3	2	1	2	2	-	-	-	-	-	-	3	3	3
CO5	3	3	2	1	2	2	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Processing of Milk and Milk Products [T]		
Course Code	FT-203 [T]		
Course Outcomes & Bloom's Level	**CO1-** The students will be able to comprehend milk source and composition, its characteristics, collection, chilling, transportation, cream separation, standardization, pasteurization, sterilization, homogenization, packaging, storage and distribution.**(BL1-Remember)** **CO2-** The course will illustrate the production of fermented milk products like curd, cheese, butter, yoghurt, shrikhand, etc.**(BL2-Understand)** **CO3-** The course will demonstration production of frozen milk product i.e., ice cream, its classification, manufacturing, packaging, and storage. Student can also differentiate the frozen desserts and ice cream.**(BL3-Apply)** **CO4-** The course will describe the manufacturing of evaporated milks, milk powders, whey protein isolate and their packaging and storage defects.**(BL4-Analyze)** **CO5-** The course depicts the knowledge about the different adulterants present in milk and their detection techniques.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	3	1	1	-	-	-	1	-	3	1	1
CO2	3	3	1	2	2	3	3	-	-	-	-	-	3	1	1
CO3	3	2	3	1	3	3	1	-	-	-	1	2	3	1	1
CO4	3	2	1	2	1	3	-	-	-	-	1	-	3	3	3
CO5	3	3	2	3	2	2	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Livestock products Technology [T]		
Course Code	FT-204 [T]		
Course Outcomes & Bloom's Level	**CO1-** The course will demonstrate about the slaughtering, conversion of muscle to meat and factors affecting quality of meat.**(BL1-Remember)** **CO2-** Students will be able to comprehend about the preservation of meat and meat products and effects of processing parameters on product properties.**(BL2-Understand)** **CO3-** The course will describe the slaughtering, composition and preservation of poultry meat in addition to its value-added products.**(BL3-Apply)** **CO4-** Students will be able to understand the composition, structure and nutritive value of eggs, factors affecting egg quality, preservation, and microbial spoilage of shell egg. **(BL4-Analyze)** **CO5-** Students will assimilate the fish production and processing in India to develop dried, salted and smoked fish, Surimi, etc.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	2	1	2	1	-	-	-	1	-	3	1	1
CO2	3	3	2	3	3	3	-	-	-	-	-	2	3	1	1
CO3	3	2	3	2	2	2	2	-	-	-	-	-	3	1	1
CO4	3	3	2	1	1	3	1	-	-	-	1	2	3	3	3
CO5	3	2	3	3	1	3	1	-	-	-	1	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food Engineering [T]		
Course Code	FT-205 [T]		
Course Outcomes & Bloom's Level	**CO1-** To accomplish knowledge about fundamentals of food engineering and thermodynamics.**(BL1-Remember)** **CO2-** To give an insight about the chemical kinetics of processed foods, quality changes during storage of foods, size reduction, homogenization and mixing**(BL2-Understand)** **CO3-** To comprehend about thermal processing of foods and student will learn the use and applications of heat exchangers and aseptic canning.**(BL3-Apply)** **CO4-** To illustrate the basics of chilling and freezing, cryogenic freezing and calculation of freezing time for typical foods**(BL4-Analyze)** **CO5-** To summarize different modes of heat transfer like conduction, convection and radiation and their applications in food industries**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG4(Quality education) SDG11(Sustainable cities and economies)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	1	1	1	-	-	-	-	-	1	3	1	1
CO2	3	3	2	3	2	2	1	-	-	-	1	2	3	1	1
CO3	3	2	2	1	1	1	1	-	-	-	1	2	3	1	1
CO4	3	2	3	3	1	1	2	-	-	-	2	1	3	3	3
CO5	3	3	2	2	2	1	-	-	-	-	-	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Lab course-III [P]		
Course Code	FT-206 [P]		
Course Outcomes & Bloom's Level	**CO1-** To identify different preparation techniques of fruits and vegetable products.**(BL1-Remember)** **CO2-** To explain different preservation methods of fruits and vegetable products.**(BL2-Understand)** **CO3-** To explain different preservation methods of cereal and milk products.**(BL3-Apply)** **CO4-** To identify different preparation techniques of cereal and milk products.**(BL4-Analyze)** **CO5-** To measure different levels or macro & micro nutrient in cereal & milk products.**(BL5-Evaluate)**		
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG2(Zero hunger) SDG3(Good health and well-being) SDG4(Quality education) SDG11(Sustainable cities and economies) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	3	3	2	-	-	-	-	-	2	3	1	1
CO2	3	1	3	2	3	3	1	-	-	1	1	2	3	1	1
CO3	3	2	3	3	3	2	1	-	-	1	1	2	3	1	1
CO4	3	2	2	3	3	2	1	-	-	-	1	2	3	3	3
CO5	3	1	2	2	3	3	-	-	-	-	-	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Lab course- IV [P]	
Course Code	FT-207 [P]	
Course Outcomes & Bloom's Level	**CO1-** To analyse physiochemical properties of milk **(BL3-Apply)** **CO2-** To analyse spoilage in milk products**(BL5-Evaluate)** **CO3-** To measure different levels or macro & micro nutrient in cereal & milk products. **(BL2-Understand)** **CO4-** To observe the structure of egg, its properties and quality.**(BL2-Understand)** **CO5-** To summarize the quality parameters of meat and its processing.**(BL5-Evaluate)**	
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	1	1	1	1	-	-	1	1	1	-	3	1	1
CO2	2	2	1	1	1	-	-	-	-	-	1	-	3	1	1
CO3	2	2	2	2	1	1	1	-	1	-	1	-	3	1	1
CO4	3	2	2	2	1	-	1	1	-	-	2	-	3	3	3
CO5	3	3	2	2	2	2	2	2	1	1	2	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Beverage Technology [T]		
Course Code	FT-301 [T]		
Course Outcomes & Bloom's Level	**CO1-** Comprehend the principles and methods involved in the processing of foods and discuss the food preservation by heating**(BL1-Remember)** **CO2-** To describe about irradiation, microwave processing and Ohmic heating as food processing techniques. **(BL2-Understand)** **CO3-** To illustrate different freezing techniques, advantages and mechanism of freezing in addition to its effect on food quality. **(BL3-Apply)** **CO4-** Interpret the use of natural as well as chemical and bio- based preservatives to increase the shelf life of food.**(BL4-Analyze)** **CO5-** Recognize different drying methods, different dryers used in food processing and drying mechanisms including sorption isotherm**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✓ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG3(Good health and well-being) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	2	2	3	3	3	1	1	-	-	-	-	1	3	1	1
CO2	3	3	2	2	3	2	-	-	-	-	-	-	3	1	1
CO3	3	2	2	2	1	1	1	-	-	-	1	-	3	1	1
CO4	3	3	3	2	2	2	-	-	-	-	-	2	3	3	3
CO5	2	3	3	2	2	3	1	-	-	-	-	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food analysis and Instrumentation [T]		
Course Code	FT-302 [T]		
Course Outcomes & Bloom's Level	**CO1-** To discover different kinds of chromatographic techniques, theirprinciples and applications. Main focus is to discuss the use of advanced chromatographic techniques in food analysis.**(BL1-Remember)** **CO2-** To insight about principle and various types of electrophoresis methods ,mainly SDS- PAGE and capillary electrophoresis.**(BL2-Understand)** **CO3-** To comprehend Principle, types and applications of centrifugation will be introduced to students. The course willalso cover principle and applications of ultra-centrifugation in food industry.**(BL3-Apply)** **CO4-** To describe the principle of spectrophotometry, working of a spectrophotometer and itsand different types of spectrophotometric techniques like UV, Visible, IR and fluorescenc espectroscopy, AAS, Polarimetry and Refractometry**(BL4-Analyze)** **CO5-** To illustrate different methods to estimate the food constituents like carbohydrates,proteins, minerals, vitamins, and lipids.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✓ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG1(No poverty) SDG3(Good health and well-being) SDG6(Clean water and sanitation) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	3	1	3	3	-	-	-	-	-	3	3	1	1
CO2	3	2	3	2	3	3	1	-	-	-	1	2	3	1	1
CO3	3	3	3	2	3	3	-	-	-	-	-	2	3	1	1
CO4	3	1	3	1	3	3	1	-	-	-	1	2	3	3	3
CO5	3	1	3	1	3	3	-	-	-	-	-	2	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food Safety and Management [T]		
Course Code	FT-303 [T]		
Course Outcomes & Bloom's Level	**CO1-** To comprehend the fundamentals of nutraceuticals, nutrigenomics and functional foods. They will also learn the applications of rheology and texture profile analysis in product development. **(BL1-Remember)** **CO2-** To describe, basics of product development, different steps of product development process and innovation strategies are covered which will enhance the capability of student's thinking while developing a new food product. **(BL2-Understand)** **CO3-** To evaluate different aspects of food quality, total quality control and management,statistical quality control methods, which will help him to learn the development and maintenance quality of new product. **(BL3-Apply)** **CO4-** To explore basics of food safety laws and regulations governing the country and the world **(BL4-Analyze)** **CO5-** Illustrate technology to development new food products (product qualities, raw material properties, processing, packaging requirement, distribution and marketing). **(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✕ Professional Ethics ✓ Gender ✕ Human Values ✓ Environment ✓	**SDG (Goals)**	SDG3(Good health and well-being) SDG4(Quality education) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	2	2	1	1	-	1	-	-	-	-	1	3	1	1
CO2	3	3	2	2	2	1	1	-	-	-	-	-	3	1	1
CO3	2	2	3	2	2	2	-	-	-	-	-	-	3	1	1
CO4	2	1	3	3	3	1	2	-	-	-	-	3	3	3	3
CO5	2	1	2	3	3	2	2	-	-	-	-	3	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Food Packaging [T]		
Course Code	FT-304 [T]		
Course Outcomes & Bloom's Level	**CO1-** To explore the fundamentals of food packaging and different packaging materials-paper, glass, plastics, metal, and cans.**(BL1-Remember)** **CO2-** To comprehend different types of packaging forms like modified atmospheric packaging, control atmospheric packaging, vacuum packaging and retortable plastic packaging**(BL2-Understand)** **CO3-** To describe packaging requirements and application for different food products like red meat, fish, poultry, eggs, milk and milk products, cereal product, bakery and confectionary products, fruits and vegetables :fresh and processed, oils and fats.**(BL3-Apply)** **CO4-** To illustrate recent advances in packaging techniques like edible packaging, microwavable packaging, intelligent packaging and active packaging**(BL4-Analyze)** **CO5-** To demonstrate testing of packaging materials, Bar code labelling and packaging laws and regulations.**(BL5-Evaluate)**		
Course Elements	Skill Development ✕ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✓	**SDG (Goals)**	SDG1(No poverty) SDG4(Quality education) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	1	2	2	1	-	-	-	-	-	1	3	1	1
CO2	3	3	3	2	2	2	1	-	-	-	1	1	3	1	1
CO3	3	3	2	2	2	1	1	-	-	1	1	-	3	1	1
CO4	2	3	3	2	1	1	-	-	-	-	-	-	3	3	3
CO5	2	3	3	2	2	1	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Research Methodology [T]		
Course Code	FT-305 [T]		
Course Outcomes & Bloom's Level	**CO1-** The course prepares the student to understand the basic concepts of ResearchMethodology, its applications in experimental design and future prospects. **(BL1-Remember)** **CO2-** The subject Research Methodology is designed for post graduate students of Biotechnology for describing the basic concepts of each and every division of the subject along with its applications in other fields.**(BL2-Understand)** **CO3-** The course aims to provide experimental basis, and to enable students to acquirea specialized knowledge and understanding of data and its applications in experimental verification.**(BL3-Apply)** **CO4-** The course aims to provide basis of analyzing the applications of Research Methodology in various fields of research and industries.**(BL4-Analyze)** **CO5-** To apply the understanding of statistical tools in evaluation in various samples. **(BL5-Evaluate)**		
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✓ Environment ✕	**SDG (Goals)**	SDG4(Quality education)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	3	3	2	1	2	2	-	-	-	-	-	1	3	1	1
CO2	2	2	3	2	1	1	-	-	-	1	-	-	3	1	1
CO3	2	2	2	1	2	2	-	-	-	-	-	-	3	1	1
CO4	1	1	2	2	1	2	-	-	-	-	-	1	3	3	3
CO5	1	3	3	2	3	2	1	-	-	-	1	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Lab Course-V [P]	
Course Code	FT-306 [P]	
Course Outcomes & Bloom's Level	**CO1-** To study the concept of additives being used in beverages**(BL2-Understand)** **CO2-** To evaluate the quality standards comprising of Chemical, Microbial & Sensory Evaluation **(BL5-Evaluate)** **CO3-** To discover different kinds of chromatographic techniques, their principles and applications.**(BL4-Analyze)** **CO4-** To understand about principle and various types of electrophoresis methods, mainly SDS- PAGE and electrophoresis.**(BL2-Understand)** **CO5-** To design different methods to estimate the food constituents like crude fibre, crude fat, calcium content, protein content, etc.**(BL5-Evaluate)**	
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1
CO2	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1
CO3	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1
CO4	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Lab course-VI [P]		
Course Code	FT-307 [P]		
Course Outcomes & Bloom's Level	**CO1-** To understand the manufacturing and characteristics of various packaging materials viz paper, glass, metal, and plastic**(BL2-Understand)** **CO2-** To provide the students a specialized knowledge about packaging equipment and machinery and testing of packaging systems for various types of food**(BL3-Apply)** **CO3-** To demonstrate new packaging systems and safety and legislative requirements**(BL6-Create)** **CO4-** To apply the knowledge gained from specialized techniques in food packaging such as Active, aseptic, controlled & modified atmospheric packaging etc. to create innovative food package systems.**(BL3-Apply)**		
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✕ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG1(No poverty) SDG12(Responsible consuption and production)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1
CO2	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1
CO3	-	-	-	-	-	-	-	-	-	-	-	-	3	1	1
CO4	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Research Project [P]		
Course Code	FT-401 [P]		
Course Outcomes & Bloom's Level	**CO1-** The student will be able to appreciate different processing and production technologies in various industrial settings**(BL4-Analyze)** **CO2-** The student will be exposed to the diverse setting in food industries **(BL5-Evaluate)**		
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**	SDG1(No poverty) SDG2(Zero hunger) SDG3(Good health and well-being)

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	3	2	2
CO2	-	-	-	-	-	-	-	-	-	-	-	-	3	2	3
CO3	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO4	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3

SOS-MSc_FoodTechnology

Course mapping with relevance to the local, regional, national, and global developmental needs

Title of the Course	Research Report and Presentation [P]	
Course Code	FT-402 [P]	
Course Outcomes & Bloom's Level	**CO1-** dissertation, works as skills development in students.**(BL1-Remember)** **CO2-** increases their mental ability.**(BL2-Understand)** **CO3-** express their opinion and thoughts.**(BL3-Apply)** **CO4-** enhancing writing skills and knowledge.**(BL4-Analyze)**	
Course Elements	Skill Development ✓ Entrepreneurship ✕ Employability ✓ Professional Ethics ✕ Gender ✕ Human Values ✕ Environment ✕	**SDG (Goals)**

Course Articulation Matrix

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	-	-	-	-	-	-	-	-	-	-	-	-	2	2	1
CO2	-	-	-	-	-	-	-	-	-	-	-	-	2	3	2
CO3	-	-	-	-	-	-	-	-	-	-	-	-	3	3	2
CO4	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO5	-	-	-	-	-	-	-	-	-	-	-	-	3	3	3
CO6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-