

FDSC Operations and Management Option																	
Content	Learning Outcomes	Freshman classes			Sophomore classes				Junior classes					Senior classes			
		FDSC 1101	FDSC 1102	AEM 1200	FDSC 2000	FDSC 2100	ECON 1110	ECON 1120	FDSC 3210	FDSC 3940	FDSC 4170	AEM 2400	AEM 2100	FDSC 4100	FDSC 4230	FDSC 4000	FDSC 3960
General Success Skills																	
Communication skills	Demonstrate the use of oral and written communication skills: writing technical reports, letters, and memos; communicating technical information to a nontechnical audience; making formal and informal presentations.	✓	✓			✓				✓	✓			✓	✓	✓	✓
Critical-thinking/problem solving skills	Define a problem, identify potential causes and possible solutions, and make thoughtful recommendations.	✓	✓		✓	✓			✓	✓	✓			✓	✓		✓
	Apply critical thinking skills to new situations.	✓	✓		✓				✓	✓	✓			✓	✓	✓	✓
Professionalism skills	Commit to the highest standards of professional integrity and ethical values.		✓							✓	✓			✓	✓		✓
	Work and /or interact with individuals from diverse cultures.		✓								✓			✓	✓		✓
Life Long Learning Skills	Explain the skills necessary to continually educate oneself.		✓						✓	✓	✓				✓		✓
Interaction skills	Work effectively with others.	✓	✓			✓			✓	✓				✓	✓		✓
	Provide leadership in a variety of situations.	✓	✓							✓							✓
	Deal with individual and/ or group conflict.	✓	✓			✓				✓				✓			
Information acquisition skills	Independently research scientific and nonscientific information.	✓	✓		✓	✓				✓	✓			✓		✓	✓
	Competently use library resources.	✓			✓	✓				✓	✓			✓	✓	✓	✓
Organizational skills	Manage time effectively.	✓	✓			✓				✓	✓				✓		✓
	Facilitate group projects.	✓	✓			✓				✓				✓			✓
	Handle multiple tasks and pressures.	✓	✓			✓				✓				✓			
Food Chemistry and Analysis																	
Structure and properties of food components.	Understand the chemistry underlying the properties and reactions of food components (water, carbohydrates, protein, lipids, other nutrients, food additives).				✓	✓			✓		✓				✓		
Chemistry of changes occurring during processing, storage, and utilization.	Have sufficient knowledge of food chemistry to control reactions in foods.				✓	✓					✓				✓		
	Understand the major chemical reactions that limit shelf life of foods.				✓	✓					✓						
	Be able to use the laboratory techniques common to basic and applied food chemistry.					✓											
Principles, methods, and techniques of qualitative and quantitative physical,	Understand the principles behind analytical technique when presented with a practical problem.					✓					✓						

chemical, and biological analysis of food and food	Demonstrate practical proficiency in a food analysis laboratory.					✓											
Food Safety and Microbiology																	
Pathogenic and spoilage microorganisms in foods.	Identify the important pathogens and spoilage microorganisms in foods and the conditions under which they grow.	✓			✓	✓				✓					✓		✓
	Utilize laboratory techniques to identify microorganisms in foods.								✓								
Beneficial microorganisms in food systems.	Understand the principles involving food preservation via fermentation processes.	✓			✓	✓				✓							✓
Influence of the food system on the growth and survival of microorganisms.	Understand the role and significance of microbial inactivation, adaptation, and environmental factors on growth and response of microorganisms.				✓	✓				✓					✓		✓
Control of microorganisms.	Be able to identify the conditions, including sanitation practices, under which the important pathogens and spoilage microorganisms are commonly inactivated, killed or made harmless in foods.	✓			✓	✓				✓	✓				✓		✓
Food Processing and Engineering																	
Characteristics of raw food material.	Understand the source and variability of raw food materials and their impact on food processing operations.	✓			✓	✓				✓					✓		
Principles of food preservation, including low and high temperatures, water activity, etc.	Know the spoilage and deterioration mechanisms in foods and methods to control deterioration and spoilage.				✓										✓		
	Understand the principles that make a food safe for consumption.				✓				✓						✓		
Engineering principles, including mass and energy balances, thermodynamics, fluid flow, and heat and mass transfer.	Understand the transport processes and unit operations in food processing as demonstrated both conceptually and in practical laboratory settings.	✓							✓						✓		
	Be able to use the mass and energy balances for a given food process.								✓						✓		
	Understand the unit operations required to produce a given food product.				✓				✓						✓		
Principles of food processing techniques, such as freeze drying, high pressure, aseptic processing, extrusion, etc.	Understand the principles and current practices of processing techniques and the effects of processing parameters on product quality.	✓			✓	✓			✓		✓				✓	✓	
Packaging materials and methods.	Understand the properties and uses of various packaging materials.				✓				✓							✓	
Cleaning and sanitation.	Understand the basic principles of and practices of cleaning and sanitation in food processing operations.				✓												✓
Water and waste management.	Understand the requirements for water utilization and waste management in food and food processing.					✓							✓	✓	✓		
Applied Food Science																	

Integration and application of food science principles	Be able to apply and incorporate the principles of food science in practical real-world situations and problems.	✓				✓			✓	✓	✓			✓	✓		✓
Computer skills	Know how to use computers to solve food science problems.					✓			✓					✓	✓		
Statistical Skills	Be able to apply statistical principles to food science applications.											✓	✓				
Quality Assurance	Be able to apply the principles of food science to control and assure the quality of food products.				✓	✓								✓	✓	✓	✓
Analytical and affective methods of assessing sensory properties of foods.	Understand the principles of sensory analysis and be able to assess sensory properties of foods utilizing statistical methods.				✓									✓			
Current issues in food science.	Be aware of current topics of importance to the food industry.	✓			✓	✓				✓	✓			✓		✓	
Food laws and regulations.	Understand the government regulations required for the manufacture and sale of food products.	✓			✓	✓			✓	✓	✓			✓	✓	✓	✓
Applied Business Knowledge and Skills																	
Basic management and business.	Posses basic knowledge of marketing, finance, strategy and entrepreneurship applicable to the food industry				✓												
Basics of Microeconomics	Understand how the price system operates and how is modified and influenced by private organizations and government policy.							✓									
Basics of Macroeconomics	Understand fundamental issues of aggregate economic activity, including unemployment, inflation, balance of payments, deficits, and economic development.								✓								
Fundamentals of food marketing.	Understand how to price, promote, and distribute goods and services in the context of food production.											✓					