FYUGP CURRICULAR FRAMEWORK FOR BACHELORS PROGRAMME WITH FOOD SCIENCE & TECHNOLOGY AS MAJOR-2023

SEMESTER	COURSE CODE	TITLE OF COURSE	CREDITS	
			TEACHING	PRACTICAL
1st	FST123J	**FOOD SCIENCE & TECHNOLOGY:** FOOD CHEMISTRY AND MICROBIOLOGY	4	2
2nd	FST222J	**FOOD SCIENCE & TECHNOLOGY:** FRUIT AND VEGETABLE PPROCESSING	4	2
3rd	FST322J1	**FOOD SCIENCE & TECHNOLOGY:** FOOD CHEMISTRY AND MICROBILOGY-II	4	2
4th	FST422J1	**FOOD SCIENCE & TECHNOLOGY:** PRINCIPLES AND METHODS OF PROCESSING	3	1
	FST422J2	**FOOD SCIENCE & TECHNOLOGY:** CEREAL AND BAKERY TECHNOLOGY	4	2
	FST422J3	**FOOD SCIENCE & TECHNOLOGY:** SPICES, FLAVOURS AND PLANTATION CROPSFA	4	2
5th	FST522J1	**FOOD SCIENCE & TECHNOLOGY:** FOOD PACKAGINGFA	3	1
	FST522J2	**FOOD SCIENCE & TECHNOLOGY:** PROCESSING TECHNOLOGY OF MILK AND MILK PRODUCTS	4	2
	FST522J3	**FOOD SCIENCE & TECHNOLOGY:** ENTREPRENEURSHIP AND PROJECT MANAGEMENT	4	2
6th	FST622J1	**FOOD SCIENCE & TECHNOLOGY:** FOOD QUALITY ASSURANCE	3	1
	FST622J2	**FOOD SCIENCE & TECHNOLOGY:** TECHNOLOGY OF MEAT, EGG AND POULTRY	4	2
	FST622J3	**FOOD SCIENCE & TECHNOLOGY:** FOOD ENGINEERING	4	2
FYUGP WITH HONOURS				
7th	FST722J1	**FOOD SCIENCE & TECHNOLOGY:** FOOD ADDITIVES AND TOXICOLOGY	3	1
	FST722J2	**FOOD SCIENCE & TECHNOLOGY:** LEGUME AND OIL SEED TECHNOLOGY	4	2
	FST722J3	**FOOD SCIENCE & TECHNOLOGY:** FOOD ANALYTICAL TECHNIQUES	4	2
8th	FST822J1	**FOOD SCIENCE & TECHNOLOGY:** BIOSTATICS AND COMPUTER APPLICATION IN FOOD SCIENCE	3	1
	FST822J2	**FOOD SCIENCE & TECHNOLOGY:** NUTRACEUTICALS AND FUNCTIONAL FOODS	4	2
	FST822J3	**FOOD SCIENCE & TECHNOLOGY:** FOOD BIOTECHNOLOGY	4	2
FYUGP HONOURS WITH RESEARCH				
7th	FST722J1	**FOOD SCIENCE & TECHNOLOGY:** FOOD ADDITIVES AND TOXICOLOGY	3	1
	FST722J2	**FOOD SCIENCE & TECHNOLOGY:** LEGUME AND OIL SEED TECHNOLOGY	4	2
	FST722J3	**FOOD SCIENCE & TECHNOLOGY:** FOOD ANALYTICAL TECHNIQUES	4	2
8th	FST822J1	**FOOD SCIENCE & TECHNOLOGY:** BIOSTATICS AND COMPUTER APPLICATION IN FOOD SCIENCE	3	1
	FST822JP	**FOOD SCIENCE & TECHNOLOGY:** RESEARCH PROJECT WITH DISSERTATION	12	

HoD / CONCENOR BOUGS

BACHELORS WITH FOOD SCIENCE AND TECHNOLOGY AS MAJOR

1st SEMESTER

FST123J FOOD SCIENCE AND TECHNOLOGY _ FOOD CHEMISTRY AND MICROBIOLOGY-I

CREDITS: THEORY-4; PRACTICAL - 2

OBJECTIVES/EXPECTED LEARNING

- *To acquaint the students to different types of microorganisms associated with food spoilage and food preservation*
- *To acquaint the students about the structure and properties of different components of food*

THEORY (4 CREDITS): 60 HOURS

UNIT- 1 (15 HOURS)

- History and scope of food microbiology–Historical development in food preservation, food spoilage and food poisoning
- Microbial growth pattern–Growth curve of microbial cultures, its application to food preservation.
- Factors affecting microbial growth–pH, moisture content, Eh, nutrient content, antimicrobial constituents, biological structures and extrinsic factors

UNIT- 2 (15 HOURS)

- Bacteria–Morphological & structural features of Gram +ve & Gram –ve bacteria, physiological characteristics
- Mold–General characteristics, morphological features, reproduction, physiological requirements, common molds associated with foods
- Yeast–General Characteristics, reproduction, cultural characteristics, physiological characteristics
- Viruses–Structure and replication with particular reference to food born viruses
- Important food spoilage and pathogenic bacteria associated with foods

UNIT- 3 (15 HOURS)

- Food chemistry: Definitions & Scope
- Water: Structure of water, hydrogen bonding, common food components involved in hydrogen bonding
- Water solute interactions–Free water, bound water, interaction of water with ionic and non-ionic groups
- Water activity and its relation with shelf–life of foods
- Carbohydrates: Definition, chemistry, classification, sources and properties
- Proteins: Definition, chemistry, classification, sources, Amino acid structure, Acid base properties

UNIT – 4 (15 HOURS)

- Fats: Definition, Sources, classification, structure and properties
- Pigments in foods–Chlorophyll, carotenoids, anthocyanins: Classification, structure and properties.
- Vitamins: Definition, sources, classification, bioavailability, losses and stability

PRACTICALS (2 CREDITS: 60 HOURS)

- Microscope: Types and working of microscope
- Cleaning and sterilization of glassware
- Identification of different food bacteria, yeast and mold on the basis of morphological characteristics
- Preparation of nutrient media and techniques of inoculation
- Gram staining of microbes–Gram positive and gram negative bacteria
- Determination of microbial load in food samples using different plating techniques
- Determination of coliform count in foods
- Preparation and standardization of solutions
- Determination of moisture, ash, crude protein and crude fat content in food samples
- Qualitative tests of carbohydrates and amino acids
- Determination of total and reducing sugars in food

REFERENCES:

- Frazier, W.C. (2017). Food Microbiology (5th Ed.). McGraw Hill Education (India) Private Ltd.
- Jay, J. (2012). Modern Food Microbiology. Springer Science & Business Media.
- George J. Banwart. (2012). Basic Food Microbiology. Springer Science & Business Media.
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- Ray, B. & Bhunia, A. (2013). Fundamentals of Food Microbiology. CRC Press,
- Owen R. Fennema. (2007). Food Chemistry. CRC Press
- Meyer. (1960). Food Chemistry. Reinhold Publishing Corporation.
- Wong. (2018). Mechanism & Theory in Food Chemistry. Springer International Publishing
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- John M. deMan. (2018). Principles of Food Chemistry. Springer International Publishing.