

**Telangana State Council of Higher Education, Govt. of Telangana  
B.Sc., CBCS Common Core Syllabi for all Universities in Telangana (wef 2019-20)**

**PROPOSED SCHEME FOR CHOICE BASED CREDIT SYSTEM IN  
B.Sc., FOOD SCIENCE AND QUALITY CONTROL**

**For SATAVAHANAUNIVERSITY, KARIMNAGAR**

<b>SEMESTER-I</b>			
<b>Course Type</b>	<b>Course Title</b>	<b>HPW</b>	<b>Credits</b>
AECC 1	Environmental Science	2	2
L-1A	English	4	4
L-2A	Second Language	4	4
DSC - 1A	Food chemistry and Nutrition	4T+2P=6	4+1=5
DSC - 2A	Optional II	4T+2P=6	4+1=5
DSC - 3A	Optional III	4T+2P=6	4+1=5
	<b>TOTAL</b>		<b>25</b>
<b>SEMESTER-II</b>			
AECC 2	Basic Computer Skills	2	2
L-1B	English	4	4
L -2B	Second Language	4	4
DSC -1B	Food microbiology, Sanitation and Hygeiene	4T+2P=6	4+1=5
DSC -2B	Optional II	4T+2P=6	4+1=5
DSC -3B	Optional III	4T+2P=6	4+1=5
	<b>TOTAL</b>		<b>25</b>
<b>SEMESTER-III</b>			
SEC -1	Technology of food preservation	2	2
SEC - 2	Technology of Sugar Confectionery and Chocolate manufacture	2	2
L -1C	English	3	3
L -2C	Second Language	3	3
DSC- 1C	Post HarvestTechnology of field crops	4T+2P=6	4+1=5
DSC- 2C	Optional II	4T+2P=6	4+1=5
DSC- 3C	Optional III	4T+2P=6	4+1=5
	<b>TOTAL</b>		<b>25</b>
<b>SEMESTER-IV</b>			
SEC – 3	Extrusion Technology	2	2
SEC – 4	Baking Technology	2	2
L-1D	English	3	3
L-2D	Second Language	3	3
DSC- 1D	Food Safety, Quality control and sensory evaluation	4T+2P=6	4+1=5
DSC- 2D	Optional II	4T+2P=6	4+1=5

DSC- 3D	Optional III	4T+2P=6	4+1=5
	<b>TOTAL</b>		<b>25</b>
<b>SEMESTER-V</b>			
GE-1	Food Packaging	4T	4
L-1E	English	3	3
L-2E	Second Language	3	3
DSE-1E	A-Technology of Animal Based Foods	4T+2P=6	4+1=5
	B –Technology of Milk and Milk Products		
DSE-2E	Optional II A/B	4T+2P=6	4+1=5
DSE-3E	Optional III A/B	4T+2P=6	4+1=5
	<b>TOTAL</b>		<b>25</b>
<b>SEMESTER-VI</b>			
L-1F	English	3	3
L-2F	Second Language	3	3
DSE-1F	A –Technology of fermented foods and Beverages	4T+2P=6	4+1=5
	B – Technology of spices, condiments and Plantation crops		
DSE-2F	Optional II A/B	4T+2P=6	4+1=5
DSE-3F	Optional III A/B	4T+2P=6	4+1=5
	Project work/Optionals	4	4
	<b>TOTAL</b>		<b>25</b>
	<b>TOTAL CREDITS</b>		<b>150</b>

AECC- Ability Enhancement Compulsory Course

DSC- Discipline Specific Core

SEC- Skill Enhancement Course

DSE- Discipline Specific Elective

GE- Generic Elective

HPW – Hours per week

\*Credits under Non-CGPA : i. NSS/NCC/Sports/Extra-curricular – 2 in each year (upto 6)  
ii. Summer internship – 2 in each after I & II years (upto 4)

**DSC - 1A**  
**FOOD CHEMISTRY AND NUTRITION**

**CREDITS -4; 60 HOURS**

**Course Objectives:**

- To provide an optimum environment for students to gain an understanding of the chemical bases of food component reactivity and functionality.
- To provide an opportunity for students to test various approaches for manipulating the chemical and/or functional properties of foods.

**UNIT –I**

1. Introduction to nutrition–definition of nutrition, Food as a source of nutrients. Functions of foods
2. Interrelationship between nutrition and health, visible symptoms of good health.
3. Food guide-basic five food groups and usage of food guide.
4. Use of food in body-digestion, absorption, transport, utilization of nutrients in the body.

**UNIT–II**

1. Carbohydrates-composition, classification, sources, functions, structure, physical & Chemical properties.
2. Lipids–classification, composition, nomenclature, saturated & unsaturated fatty acids, food sources, functions of fats.
3. Proteins–composition, classification, sources, functions, denaturation and protein deficiency, determination of protein quality.
4. Amino acids–classification, Physio-chemical properties, modification of food protein through processing and storage.

**UNIT –III**

1. Water as a nutrient, functions, sources, requirement, structure and water balance–effect of deficiency.
2. Moisture in food: Hydrogen bonding, Bound water, free water, Water activity and Food Stability
3. Energy–Unit of energy, food as a source of energy, energy value of food, body's Need for energy, energy requirement for different age groups. B.M.R. activities
4. Enzymes. Nomenclature, specificity, uses of enzymes in foods, enzyme added to food during processing

## **UNIT –IV**

1. Mineral functions, sources, Bio-availability and deficiency of minerals.
2. Vitamins–Classification, units of measurement, sources, functions and deficiency diseases caused by following vitamins: Fat soluble vitamins-A,D,E,K. - Water Soluble Vitamins :B- complex group, Vitamin C
3. Pigments indigenous to food, structure, chemical and physical properties. Effect of processing and storage.
4. Flavours– Vegetables, fruit and spice flavours, fermented food, Meat and sea food.

### **COURSE OUTCOME:**

Student will be able to understand the basic components of food and their importance.

### **Text books:**

1. FennemaOR.1996.*FoodChemistry*.MarcelDekker.
2. MeyerLH.1987.*FoodChemistry*.CBS.
3. BelitzHD.1999.*FoodChemistry*.SpringerVerlag.
4. DeManJM.1976.*Principles ofFoodChemistry*. AVI.
5. Bamji MS,RaoNA& ReddyV.2003.*TextbookofHumanNutrition*.Oxford&IBH.
6. SwaminathanM.1974.*Essentials ofFoods andNutrition*.Vol.II. Ganesh& Co.

**PRACTICAL**

**B.Sc. Food Science and Quality Control (Sem-I)**

**FOOD CHEMISTRY & NUTRITION**

**CREDIT 5**

**15 HOURS  
NO. OF CREDITS-1**

1. Qualitative tests for mono saccharides-Glucose, Fructose and Galactose
2. Qualitative tests for Disaccharides-maltose, lactose and sucrose.
3. Qualitative tests for Polysaccharides-starch
4. Estimation of glucose in a given sample.
5. Qualitative tests for amino acids.
6. Qualitative tests for proteins
7. Estimation of Acid value.
8. Estimation of Peroxide value
9. Estimation of Fat
10. Determination of Ash and Acid insoluble Ash content
11. Estimation of Moisture content.

**DSC -1B**  
**FOOD MICROBIOLOGY, SANITATION AND HYGEIENE**

**CREDITS -4; 60 HOURS**

**Course Objectives:**

- To study the role and significance of microorganisms in food,
- Recognize important microorganisms affecting food quality and safety,
- Identify methods of microorganism control to preserve food and make food consumption safe,

**UNIT-I**

- Introduction to microbiology and its relevance to everyday life-General morphology of micro-organisms –General characteristics of bacteria, fungi, virus, protozoa, algae.
- Control of micro-organisms, growth curve– Effect of environmental factors on growth of microorganisms-pH, water activity–oxygen availability, temperature& others.
- The relationship of micro-organisms to sanitation. Role of microbiology-Environment effects of microbial growth.

**UNIT-II**

- Effects of micro-organisms on food degradation and food borne illness–Bacteria, Virus, Molds, Yeasts and parasites (food poisoning).
- Other food hazards –chemicals, antibiotics, hormones, metals contamination–poisonous foods.
- Other agents of contamination: Human, domestic animals, vermins, birds.
- Beneficial effect of micro-organisms.

**UNIT-III**

- Microbiology of different foods–Spoilage and contamination-Sources, types, effects on the following:
  - a) Cereals&Cereals products.
  - b) Vegetables&Fruits.
  - c) Meat&Meatproducts.
  - d) Eggs&Poultry.
  - e) Milk &Milk products.
  - f) Canned Foods

## **UNIT –IV**

- Importance of personal hygiene of food handlers–clothes, illness. Education of food handler in handling and serving food
- Safety in food procurement, storage, handling and preparation– control of spoilage– Safety of left over foods.
- Cleaning and sanitization. Products and methods– use of detergents and chemicals
- Planning and implementation of training programmes for health personnel.
- Relevance of microbiological standards for food safety.
- Microbiology of water

### **COURSE OUTCOME:**

- By the end of the course, students will come to know the importance of microorganisms and their role in food.

### **Text Books:**

1. Adams, M. R. and Mass, M. D. (2008). Food Microbiology. New Age International Pvt. Ltd Publishers.
2. Banwart, G. T. (1987). Basic Food Microbiology. CBS Publications: New Delhi.
3. Block, J. G. (1999). Microbiology Principles and Explorations. 4<sup>th</sup> Edition. John Wiley and Sons Inc.
4. Frazier, W. C. (1968). Food Microbiology. 4<sup>th</sup> Edition. McGraw Hill Inc.
5. Jay, J. M., Lossner, M. J. and Golden, D. A. (2008). Modern Food Microbiology. 7<sup>th</sup> edition. Springer. ISBN: 0387231803
6. Kawata, J. G. (1963). Environment Sanitation in India. Lucknow Publishing House.
7. Longree, K. (1967). Quality Food Sanitation. McGraw Hill Publishers: New York.
8. Pelezar, H. J. and Rober, D. (1968). Microbiology. 2<sup>nd</sup> Edition. McGraw Hill: New York.

## **PRACTICALS**

### **FOODMICROBIOLOGY, SANITATION AND HYGIENE**

**CREDIT 5**

**15 HOURS  
NO. OF CREDITS-1**

1. Equipments used in microbiology and sterilization techniques.
2. Microscope and its parts. Examination under low power/high power and oil immersion objectives.
3. Simple staining
4. Gram staining
5. Isolation Techniques
6. Examination of yeasts, mould and non-pathogenic bacteria.
7. Qualitative analysis of water.
8. Determination of Total plate count.
9. Estimation of surface microflora of foods
10. Estimation of internal microflora in foods



**B.SC I SEMESTER(CBCS) EXAMINATION**  
**Subject: FOOD SCIENCE AND QUALITY CONTROL**

THEORY MODEL PAPER- CBCS Pattern

Time 3 Hrs.

Max Marks 80

**PART A (8x4=32M)**  
**(SHORT ANSWER TYPE)**

**NOTE: ANSWER ANY EIGHT OF THE FOLLOWING QUESTIONS**

1. CREDIT I
2. CREDIT I
3. CREDIT I
4. CREDIT II
5. CREDIT II
6. CREDIT II
7. CREDIT III
8. CREDIT III
9. CREDIT III
10. CREDIT IV
11. CREDIT IV
12. CREDIT IV

**PART -B(4x12=48M)**  
**(ESSAY ANSWER TYPE)**

**NOTE: ATTEMPT ALL THE QUESTIONS**

- 13 (a) CREDIT I  
(or)  
(b) CREDIT I
- 14 (a) CREDIT II  
(or)  
(b) CREDIT II
- 15 (a) CREDIT III  
(or)  
(b) CREDIT III
- 16(a) CREDIT IV.  
(or)  
(b) CREDIT IV