Annexure 2

DSC FT A1
FOOD SCIENCE PART I
(CREDITS- THEORY: 3; PRACTICAL: 1)

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LEARNING OBJECTIVES:

1. To introduce the students to the vibrant field of food science and food technology
2. To impart theoretical and practical knowledge about composition, nutritive value and processing of cereals, pulses, fruits, vegetables and meat.
3. To familiarize students with basics of food adulteration.

COURSE OUTCOMES:

1. The students will be able to define food science and describe its association with other related fields; and understand the role of food science in food and health industry.
2. Describe composition, nutritive value and processing of cereals, pulses, fruits, Vegetables, meat, fish and poultry.
3. Justify scientifically the changes occurring in food during processing, handling and Storage. Describe enzymatic and non-enzymatic browning reactions in various foods.
4. Describe harmful effects of adulteration on health and will be able to detect presence of common adulterants in food.

Credits: 4Total lectures (75): 75 Hours

Course Coverage (in % of total):

Theory: 75%, Credits – 3 (Lectures – 45)
Practical/Field work/Hands on learning: 25%, Credits – 1 (Lectures – 30)

THEORY	
Units	**(No. of Lectures = 45)**
Unit I: Introduction to Food Science and Technology Description: This unit will introduce the students to the field of Food Science and Technology. It will also give information on basics of nutrition and food adulteration.	15
Subtopics: ● Definition, scope and current trends in food science and technology. ● Basic introduction to macro and micronutrients-classification and functions of various nutrients ● Definitions- food, safe food, nutrient, nutrition, balanced diet ● Commonly found food adulterants and their effect on health.	
Unit II: Cereals and Pulses Description: The unit will focus on various aspects of composition, nutritive value and processing of cereals, millets and pulses.	10
Subtopics: ● Composition and nutritive value, types of cereals and millets ● Gelatinization of starch and the factors affecting it, dextrinization, germination and fermentation ● Toxic constituents in pulses.	
Unit III: Fruits and Vegetables Description: The unit is about composition, nutritive value and processing aspects fruits and vegetables. It also describes about various browning reactions that take place during food processing.	12
Subtopics: ● Classification of fruits and vegetables, composition and nutritive value; effect of processing on pigments. ● Browning Reactions- enzymatic & non-enzymatic, role in food preparation and prevention of undesirable browning.	
Unit IV: Meat, Fish and Poultry Description: The unit will focus on composition, nutritive value and processing aspects of meat, fish and poultry.	8

Subtopics: ● Composition and nutritive value ● Types of meat, fish and poultry and their selection/purchasing criteria ● Rigor mortis, Tenderization and Curing	

No. of Students per Practical Class Group: 10-15

PRACTICALS	
Practical	**(No. of Lectures = 15x2=30)**
1. Weights and Measures.	2
2. Detection of adulterants in food	2
3. Gelatinization of starch and the factors affecting it.	2
4. Preparation of dish using gelatinization of starch	2
5. Dextrinization of starch and its application	3
6. Germination of pulses and cereals	2
7. Preparation of products using sprouts	2
8. Fermentation of cereals and pulses	2
9. Preparation of cereal-pulse fermented products	2
10. Effect of heat, acid and alkali on water soluble plant pigments.	2
11. Effect of heat, acid and alkali on fat soluble plant pigments.	2
12. Maillard browning during food preparation.	2
13. Enzymatic browning and its prevention.	3
14. Caramelization reaction in food.	2

ESSENTIAL READINGS (Theory and Practical):

1. Sethi, P. &Lakra, P. (2015). Aahar Vigyan, Poshan Evam Suraksha. Delhi: Elite Publishing House Pvt.Ltd.
2. Srilakshmi, B. (2012). Food Science. Delhi: New Age International Pvt. Ltd.
3. Suri, S. & Malhotra, A. (2014). Food Science Nutrition and Safety.

Delhi: Pearson India Ltd.

i. Online Question Bank and student E Resources: https://wps.pearsoned.co.in/suri_fsns_1/Online Instructor Resources: www.pearsoned.co.in/sukhneetsuri

4. Potter,N., & Hotchkiss,J.H.(2007). FoodScience.5thEdition.Delhi:CBSPublishers.

5. Rekhi,, T. & Yadav, H. (2014). *Fundamentals of Food and Nutrition.* Delhi: Elite Publishing House Pvt. Ltd.

SUGGESTED READINGS:

1. Avantina S (2019). Textbook of Food Science and Technology, 3rd Edition, CBS Publishers and Distributors Pvt Limited
2. McWilliams, M. (2016). Foods: Experimental Perspectives. USA: Pearson.
3. Reddy,S.M. (2015).Basic Food Science and Technology. Delhi: New Age International Publishers.
4. Vaclavik, V.A. & Elizabeth, C. (2014). Essentials of Food Science. 4th Edition. New York: Springer.
5. Roday, S. (2018). *Food Science and Nutrition.* 3rd Edition. Delhi: Oxford University Press.
6. Geoffrey Campbell–Platt. Food Science and Technology. 1st edition (2009). Wiley–Blackwell
7. Sharma A. Textbook of Food Science and Technology 3rd Ed., (2022). CBS Publiher 9789386478009