UNIVERSITY OF DELHI

DEPARTMENT: HOME SCIENCE

COURSE NAME: B.A(PROG) WITH FOOD TECHNOLOGY

(SEMESTER -I)

based on

Undergraduate Curriculum Framework 2022 (UGCF)

(Effective from Academic Year 2022-23)

Course name: B.A(Prog) with Food Technology

Sl. No.	Course Title	Nature of the Course	Total Credits	Components			Eligibility Criteria/ Prerequisite	**Contents of the course and reference is in**
				Lecture	Tutorial	Practical		
1	Basics in Food and Nutrition	DSC FT 1	4	3	0	1	12th Pass	**Annexure- 1**
2	Food Science Part I	DSC FT A1	4	3	0	1	12th Pass	**Annexure – 2**

Annexure- 1

DSC FT 1

BASICS OF FOOD AND NUTRITION

(CREDITS: THEORY- 3; PRACTICAL 1)

LEARNING OBJECTIVES:

1. Know the relationship between food, nutrition, nutrients and health
2. Describe the functions, sources, deficiencies and excess of various nutrients
3. Understand the principles and methods of conserving and enhancing nutrients during cooking food
4. Prepare dishes using basic principles of food science and nutrition.

COURSE OUTCOMES:

1. The students would get appraised to the basic concepts related to of the vibrant field of nutrition
2. The students will gain theoretical and practical knowledge about balanced diet, energy, macro nutrients and micro-nutrients
3. Based on the available resources the students would judiciously adopt healthier methods of cooking
4. Adopt methods of processing food which would help to conserving/ enhancing nutrients while processing food.

Credits: 4 **Total 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: Basic Concepts and introduction to Food and Nutrition Description: This unit will introduce the vibrant field of nutrition to the students. They will be appraised about the relationship of food with health and basics of a balanced diet.	5

Subtopics: • Basic terms in food, nutrition and health • Functions of food • Foods groups • Balanced diet	
UNIT II: Energy and Macronutrients Description: The students will learn about the concepts of energy in food and its role in maintain good health. They will also learn about the energy giving macronutrients.	12
Subtopics: • Energy: definition and units of measurement, factors affecting energy requirements, energy density of foods, energybalance. • Macronutrients: Functions, dietary sources and clinical manifestations of deficiency/ excess of carbohydrates, lipids and proteins.	
UNIT III: Micronutrients Description: This unit will help students to learn about the role of micronutrients in maintaining good health, effects of deficient and high intake, food sources.	16
Subtopics: Functions, dietary sources and clinical manifestations of deficiency/ excess of the following nutrients: • Fat soluble vitamins-A, D, E and K • Water soluble vitamins – thiamine, riboflavin, niacin, pyridoxine, folate, vitamin B12 and vitamin C • Minerals – calcium, iron, zinc and iodine	
Unit IV: Theory of Cooking and enhancing Nutrients Description: The basic principles/methods of cooking food and ways of enhancing, conserving nutrients while cooking or processing food.	12
Sub topics: • Methods of cooking food: dry heat, moist heat and combination • Methods of conserving nutrients • Methods of enhancing the nutritional quality of foods - supplementation, germination, fermentation, fortification and genetic modification of foods	

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

PRACTICALS	
Practical	**(No. of Lectures = 13x2=30)**
1. Prepare educational aid on balanced diet or food groups	2
2. Preparing market order, selection of raw material	2
3. Weights and measures	2
4. Identification of presence/absence of food groups in given samples of food products/dishes/snacks available in college canteen	2
5. Estimation of Edible portion size (peas/cauliflower/bottle gourd, potato, green leafy vegetables, one seasonal fruit)	2
6. Pre-preparation Methods I: Washing, Peeling, Cutting, Chopping, Grating	2
7. Pre-preparation methods II: blanching, kneading, whipping, whisking	2
8. Dry-heat methods of cooking like roasting, grilling, frying	2
9. Moist-heat methods of cooking like steaming, boiling, pressure cooking	2
10. Planning and preparation of energy rich snack/dish.	3
11. Planning and preparation of protein rich snack/dish.	3
12. Planning and preparation of micronutrient (Vitamin A, Vitamin C) rich snack/dish.	3
13. Planning and preparation of micronutrient (Calcium, iron) rich snack/dish	3

ESSENTIAL READINGS (Theory and Practical):

1. Suri, S. and Malhotra, A. (2014). *Food Science Nutrition and Safety*. Delhi: Pearson India Ltd. Online Question Bank and student E Resources:https://wps.pearsoned.co.in/suri_fsns_1/Online Instructor Resources: www.pearsoned.co.in/sukhneetsuri
2. Sethi P, Lakra P.(2015). *Aahar Vigyan, poshan evam Suraksha* (Hindi);(2015).First Ed; 2015; Delhi: Elite Publishing House (P)Ltd.
3. Srilakshmi B (2018). Food Science, 7th Edition. Delhi: New Age International Ltd.
4. Khanna K, Gupta S, Seth R, Mahna R, Rekhi T. (2004). *The Art and Science of Cooking: A Practical Manual,* Revised Edition. New Delhi: Elite Publishing House PvtLtd.

SUGGESTEDREADINGS:

1. Bamji MS, Krishnaswamy K, Brahmam GNV (2016). *Textbook of Human Nutrition*, 4th edition. New Delhi: Oxford and IBH Publishing Co. Pvt. Ltd.
2. Chadha R and Mathur P (2015). *Nutrition: A Lifecycle Approach*. Hyderabad: Orient BlackSwan.
3. Roday, S (2018). *Food Science and Nutrition.* UK: Oxford UniversityPress.
4. Lanham, SA, Hill, TR, Gallagher, AM, Vorster, HH. (2019). Introduction to Human Nutrition, Third Nutrition, Wiley Blackwell, USA.
5. Whitney, E.N., Rolfes, S.R. (2016). *Understanding Nutrition*. 14th Edition; USA: Elsevier.
6. Pike, R.L. and Brown, M.L. (1984) An Integrated Approach. Nutrition, John Wiley& Sons, Hoboken,197.
7. Swaminathan, M. (2021). Advanced Textbook on Food and Nutrition. Banagalore Press.
8. Desai. (2019). Handbook of Nutrition and Diet. CRC Pres

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