

**CBCS SYLLABUS**  
**FOR**  
**THREE YEARS UNDER-GRADUATE COURSE**  
**NUTRITION (PROGRAMME)**  
*(w.e.f. 2022)*



**BANKURA UNIVERSITYBANKURA**  
**WEST BENGALPIN**  
**722155**

**STRUCTURE IN NUTRITION (PROGRAMME)****SEMESTER – I**

Course Code	Course Title	Credit	Marks			No. of Hours		
			I.A.	ESE	Total	Lec.	Tu.	Pr.
<b>SP/NUT/101/C-1A</b>	<b>C-T1: Basic Nutrition</b>	<b>6</b>	<b>10</b>	<b>40</b>	<b>50</b>	<b>5</b>	<b>1</b>	<b>-</b>
SP/102/ C-2A	Discipline-2	6	10	40	50			
SP/103/ C-3A	Discipline-3	6	10	40	50			
ACSHP/ 104/ AECC-1	Environmental Studies	4	10	40	50	4	-	-
<b>Total in Semester – I</b>		<b>22</b>	<b>40</b>	<b>160</b>	<b>200</b>	<b>9</b>	<b>1</b>	<b>-</b>

**SEMESTER –II**

Course Code	Course Title	Credit	Marks			No. of Hours		
			I.A.	ESE	Total	Lec.	Tu.	Pr.
<b>SP/NUT /201/C-1B</b>	<b>C-T2: Food Commodities (Theory)</b> <b>C-P2: Food Commodities (Practical)</b>	<b>6</b> <b>(4+2)</b>	<b>10</b>	<b>40</b> <b>(25+15)</b>	<b>50</b>	<b>4</b>	<b>-</b>	<b>4</b>
SP/202/ C-2B	Discipline – 2	6	10	40	50			
SP/ 203/C- 3B	Discipline – 3	6	10	40	50			
AVSHP/204/ AECC-2	English/MIL	2	10	40	50	2	-	-
<b>Total in Semester – II</b>		<b>20</b>	<b>40</b>	<b>160</b>	<b>200</b>	<b>6</b>		<b>4</b>

**SEMESTER – III**

Course Code	Course Title	Credit	Marks			No. of Hours		
			I.A.	ESE	Total	Lec.	Tu.	Pr.
SP/NUT / 301/C-1C	<b>C-T3: Human Nutrition (Theory)</b> <b>C-P3: Human Nutrition (Practical)</b>	<b>6 (4+2)</b>	<b>10</b>	<b>40 (25+15)</b>	<b>50</b>	<b>4</b>	<b>-</b>	<b>4</b>
SP/302/C-2C	Discipline - 2	6	10	40	50			
SP/ 303/ C-3C	Discipline - 3	6	10	40	50			
SP/NUT /304/ SEC-1	<b>SECP-1: Food Adulteration</b>	<b>2</b>	<b>10</b>	<b>40</b>	<b>50</b>	<b>-</b>	<b>-</b>	<b>4</b>
<b>Total in Semester - III</b>		<b>20</b>	<b>40</b>	<b>160</b>	<b>200</b>	<b>4</b>		<b>8</b>

**SEMESTER – IV**

Course Code	Course Title	Credit	Marks			No. of Hours		
			I.A.	ESE	Total	Lec.	Tu.	Pr.
SP/NUT /401/C-1D	<b>C-T4: Food Laws And Concepts Of Food Safety</b>	<b>6</b>	<b>10</b>	<b>40</b>	<b>50</b>	<b>5</b>	<b>1</b>	<b>-</b>
SP/ 402/ C-2D	Discipline-2	6	10	40	50			
SP/ 403/ C-3D	Discipline-3	6	10	40	50			
SP/NUT /404/ SEC-2	<b>SECP-2: Practical Approaches in Food and Nutrition (Practical)</b>	<b>2</b>	<b>10</b>	<b>40</b>	<b>50</b>	<b>-</b>	<b>-</b>	<b>4</b>
<b>Total in Semester - IV</b>		<b>20</b>	<b>40</b>	<b>160</b>	<b>200</b>	<b>5</b>	<b>1</b>	<b>4</b>

**SEMESTER – V**

Course Code	Course Title	Credit	Marks			No. of Hours		
			I.A.	ESE	Total	Lec.	Tu.	Pr.
SP/NUT /501/DSE-1A	DSET-1: Diet Therapy DSEP-1: Diet Therapy (Practical)	6 (4+2)	10	40 (25+15)	50	4	-	4
SP/ 502/DSE-2A	Discipline - 2	6	10	40	50			
SP/ 503/DSE-3A	Discipline - 3	6	10	40	50			
SP/NUT /504/SEC-3	SECP-3: Assessment of Community Nutritional Status (Practical)	2	10	40	50	-	-	4
<b>Total in Semester – V</b>		<b>20</b>	<b>40</b>	<b>160</b>	<b>200</b>	<b>4</b>		<b>8</b>

**SEMESTER – VI**

Course Code	Course Title	Credit	Marks			No. of Hours		
			I.A.	ESE	Total	Lec.	Tu.	Pr.
SP/NUT / 601/DSE-1B	DSET-2: Approaches In Community Nutrition	6	10	40	50	5	1	-
SP/ 602/DSE-2B	Discipline - 2	6	10	40	50			
SP/ 603/DSE-3B	Discipline - 3	6	10	40	50			
SP/NUT / 604/SEC-4	SECP -4: Nutritional Management of Malnutrition in Community (Practical)	2	10	40	50	-	-	4
<b>Total in Semester – VI</b>		<b>20</b>	<b>40</b>	<b>160</b>	<b>200</b>	<b>5</b>	<b>1</b>	<b>4</b>

SP= Science programme/Pass, NUT= Nutrition, ACSHP= Arts Commerce Science Honours Paass, C= Core Course, MIL= Modern Indian Language, AECC = Ability Enhancement Compulsory Course, SEC= Skill Enhancement Course, DSE= Discipline Specific Elective IA= Internal Assessment, ESE= End-Semester Examination, Lec.= Lecture, Tu.= Tutorial, and Pr.=Practical



**SEMESTER – I**

**C-T1: Basic Nutrition (Theory)**

1. Basic terms used in food and nutrition
2. Functions, dietary sources, clinical manifestations of deficiency/ excess of the following nutrients:
  - Carbohydrates, lipids and proteins
  - Fat soluble vitamins – A, D, E and K
  - Water soluble vitamins – thiamine, riboflavin, pyridoxine, folate, vitamin B12 and vitamin C
  - Minerals – calcium, iron and iodine
3. Food groups and Food pyramid. Concept of balanced diet. Reference man and woman
4. Concept of dietary reference intakes
5. Dietary guidelines for Indians

**Suggested reading:**

1. B. Srilakshmi. Nutrition Science. New Age International Publishers
2. U. Satyanarayan, U. Chakrapani. Biochemistry. ELSEVIER.
3. Ravinder Chadha. Pulkit Mathur. Nutrition. Orient BlackSwan

**SEMESTER – II**

**C-T2: Food Commodities (Theory)**

1. Nutritional contribution and changes during cooking of the following food groups:
  - Cereals
  - Pulses
  - Fruits and Vegetables
  - Milk and Milk products
  - Eggs
  - Meat, Poultry and Fish
  - Fats and Oils
2. Food Adjuncts
  - Spices and Herbs

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- Food Additives

3. Different methods of cooking: Dry heat, Moist heat, Shallow fat frying, Deep fat frying, Braising
4. Effects of cooking on nutritive value of foods

**C –P2: Food Commodities (Practical)**

1. Weight measurement
2. Different Methods of Cooking – understanding the principles involved and nutritional quality and portion size
3. Preparation of dishes involving each food group

**Suggested reading:**

1. B. Srilakshmi. Food science. New Age International Publisher
2. N. Shakuntala Manay, M. Shadaksharaswamy. Foods, Facts and Principles. New Age International Publisher
3. Prasanta Mukherjee. Textbook of Food Commodities. Aman Publications

**SEMESTER – III**

**C-T3: Human Nutrition (Theory)**

1. RDA, nutritional guidelines, nutritional concerns and healthy food choices for:
  - Adult man and woman
  - Pregnant woman
  - Lactating mother
2. RDA, nutritional guidelines, nutritional concerns and healthy food choices for:
  - Infants
  - Preschool children
  - School children
  - Adolescents

**C-P3: Human Nutrition (Practical)**

1. Introduction to meal planning
2. Planning and preparation of diets and dishes for pregnant and lactating woman, preschool child, school child and adolescents

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**Suggested reading:**

1. B. Srilakshmi. Dietetics. New Age International Publisher
2. Kumud Khanna. Sharda Gupta. Santosh Jain Passi. Rama Seth. Ranjana Mahna. Seema Puri. Textbook of Nutrition and Dietetics. Elite Publishing House Pvt Ltd
3. Suryatapa Das. Textbook of Human Nutrition. Academic Publishers
4. Ravinder Chadha. Pulkit Mathur. Nutrition. Orient BlackSwan

**SECP-1 Food Adulteration(Practical)**

1. Food Adulteration: Types of food adulteration, common adulterants in food and their effects on health. Common methods to detect adulterants in foods
2. Detection of common adulterants in following foodstuffs :
  - Detection of vanaspati in ghee/butter
  - Detection of khesari flour in besan
  - Detection of metanil yellow in turmeric/coloured sweet products
  - Detection of argemone oil in edible oil
  - Detection of artificial colour/ foreign matter in tea

**Suggested reading:**

1. B. Srilakshmi. Food science. New Age International Publisher
2. Food Safety and Standards Authority of India. Detect Adulteration with Rapid Test.

**SEMESTER – IV**

**C-T4: Food Laws and Concepts of Food Safety (Theory)**

1. Concept of food safety, factors affecting food safety
2. Basic concept of HACCP
3. Safe food handling practices
4. Food adulteration, Food additives
5. Food laws – PFA, Agmark, Codex alimentarius, BIS, FPO, MPO, FSSAI

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6. Food contamination and related health hazards – botulism, aflatoxin and staphylococcal intoxication, Arsenic and lead poisoning

**Suggested reading:**

1. B. Srilakshmi. Food science. New Age International Publisher
2. Food Safety and Standards Authority of India. Detect Adulteration with Rapid Test
3. N. Shakuntala Manay, M. Shadaksharaswamy. Foods, Facts and Principles. New Age International Publisher

**SECP-2: Practical Approaches in Food and Nutrition (Practical)**

1. Recording of self diet by 24 hour recall method and its nutritional analysis
2. Planning of meals for adults of different activity levels for various income groups
3. Nutritional labelling of food products

**Suggested reading:**

1. Ravinder Chadha. Pulkit Mathur. Nutrition. Orient BlackSwan
2. M. Swaminathan. Food & Nutrition. Vol-2. The Bangalore Printing & Publishing Co Ltd
3. C. Gopalan. Nutritive Value of Indian Foods. ICMR, NIN.

**SEMESTER - V**

**DSET-1: Diet Therapy**

1. Therapeutic adaptations of normal diet
2. Clear fluid, full fluid, soft and regular diet
3. Aetiology, clinical features and nutritional management of
  - GI Tract Disorders – Peptic ulcer, diarrhoea, constipation, flatulence, celiacdisease
  - Liver – Viral hepatitis
  - Obesity
  - Diabetes mellitus
  - Hypertension and coronary heart disease
  - Fever

**DSEP-1: Diet Therapy (Practical)**

Planning, preparation and service of diets for the following:

- Therapeutic diets – Normal, soft, clear and full fluid
- Obesity

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- Type 2 diabetes mellitus
- CHD
- Viral hepatitis

**Suggested reading:**

1. B. Srilakshmi. Dietetics. New Age International Publisher
2. F. P. Antia, Philip Abraham. Clinical Dietetics and Nutrition. Oxford
3. Sumati R. Mudambi, MV Rajagopal. Fundamental of Food, Nutrition and Diet Therapy. New Age International Publisher
4. Subhangini A Joshi. Nutrition and Dietetics. Mc Grow Hill
5. C. Gopalan. Nutritive Value of Indian Foods. ICMR, NIN
6. V. Vimla. Advances in Diet Therapy. New Age International Publisher

**SECP-3: Assessment of Community Nutritional Status (Practical)**

1. Growth chart: plotting and interpretation
2. Nutritional anthropometry: estimation of BMI and WHR
3. Clinical assessment of nutritional deficiencies
4. Anthropometric and clinical status assessment in a community

**Suggested reading:**

1. Suryatapa Das. Textbook of Community Nutrition. Academic Publishers
2. B. Srilakshmi. Nutrition Science. New Age International Publisher

**SEMESTER - VI**

**DSET-2 Approaches in Community Nutrition**

1. Definition, Factors affecting community health
2. Nutritional status assessment: nutritional anthropometry – height, weight, BMI, MUAC, head and chest circumference, Diet survey by recall method, Clinical assessment, Biochemical assessment
3. National programmes to combat malnutrition: ICDS, Mid day meal, National food security mission
4. National and International agencies to combat malnutrition: NIN, ICMR, ICAR, CFTRI, WHO, FAO, UNICEF, CARE

**Suggested reading:**

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1. Suryatapa Das. Textbook of Community Nutrition. Academic Publishers
2. B. Srilakshmi. Nutrition Science. New Age International Publisher
3. Rajvir Bhalwar. Textbook of Community Medicine. Wolters Kluwer
4. K. Park. Park's textbook of preventive and social medicine. M/s Banarsidas Bhanot publishers

**SECP -4 Nutritional Management of Malnutrition in Community (Practical)**

1. Nutritional management of the following in children:
  - Protein energy malnutrition
  - Nutritional anaemia
  - Vitamin A deficiency
  - Iodine deficiency disorders
2. Planning and preparation of low cost dishes for the following:
  - Protein energy malnutrition
  - Nutritional anaemia
  - Vitamin A deficiency

**Suggested reading:**

1. Suryatapa Das. Textbook of Community Nutrition. Academic Publishers
2. B. Srilakshmi. Nutrition Science. New Age International Publisher
3. Rajvir Bhalwar. Textbook of Community Medicine. Wolters Kluwer
4. K. Park. Park's textbook of preventive and social medicine. M/s Banarsidas Bhanot publishers
5. Roy, R and Saha, Mahajan & Gupta Textbook of Preventive and Social Medicine. Jaypee Brothers Medical Publishers

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PROGRAMME OUTCOME (PO)		
Program Outcome (PO)		Description
PO 1	Sound knowledge in different domains of nutrition	After completion of this programme, the student will learn the fundamental concepts, principles and processes underlying the academic field of Nutrition and its different subfields (such as human physiology, biochemistry, food science, dietetics, food microbiology, epidemiology and public health).
PO 2	Development of professional skill in the field of nutrition	The students will be able to develop the professional skill in the field of nutrition and other associated fields such as food preservation, preparation of low cost locally available food, preparation of normal as well as therapeutic diet.
PO 3	Academic and scientific endeavor	The student will be able to find out the nutritional status of the people of the community and able to suggest the way to prevent the wide prevalence of malnutrition.
PO4	Developing practical skills	The programme will enable the students to develop practical skills in different fields of nutrition which they can put to use in identifying, analyzing and solving problems.
PO5	Job opportunity	After successful completion of this programme, the students will get job opportunity in hospitals or health care institution (as dietitian/nutritionist), in food industries, in academic institutions.

PROGRAMME SPECIFIC OUTCOME (PSO)	
PSO	Description
PSO 1	The core courses will help the student to develop knowledge on the fundamentals of nutrition, nutrients, their role in health and diseases, different foods, dietary guidelines as well as food safety and standards.
PSO 2	The discipline specific electives will add additional knowledge about applied aspects of the program as well as its applicability in maintaining good health and nutritional status.
PSO 3	The skill enhancement courses would offer an opportunity for the students to develop practical skills related to the subject.
PSO 4	Students will be able to identify, analyze and solve nutrition related problems.
PSO 5	Students will become aware of the current nutrition scenario and develop an aptitude to pursue the subject further through various avenues available to them after completion of the programme.

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COURSE OUTCOME		
Papers	Title	Course outcome
<b>Semester-I</b>		
<b><u>C-T1</u></b>	<b>Basic Nutrition</b>	The students will be able to know about the fundamentals of nutrition and the macro and micro nutrients present in food – there sources, functions, consequences of deficiency and excess. It will also help to gain knowledge on foods, food groups and balanced diet and dietary guidelines.
<b>Semester-II</b>		
<b><u>C-T2</u></b>	<b>Food Commodities</b>	It will provide knowledge on the nutritional and dietary contribution of different commodities included in various food groups and cooking methods.
<b><u>C-P2</u></b>	<b>Food Commodities (Practical)</b>	It will provide practical knowledge on the nutritional implications of different cooking methods and contribution of different food groups in human diet.
<b>Semester-III</b>		
<b><u>C-T3</u></b>	<b>Human Nutrition</b>	This course provides knowledge on physiological changes and nutritional needs of humans throughout lifespan as well as special physiological states of life.
<b><u>C-P3</u></b>	<b>Human Nutrition (Practical)</b>	It will provide practical knowledge to plan and prepare diets for different age groups and different physiological conditions.
<b><u>SECP-1</u></b>	<b>Food Adulteration (Practical)</b>	This course provides practical knowledge of detecting the presence of adulterant in different food stuffs.
<b>Semester-IV</b>		
<b><u>C-T4</u></b>	<b>Food Laws and Concepts of food Safety</b>	It will provide knowledge on different aspects of food safety, food laws, food handling practices and food contamination with its hazards.

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<b><u>SECP-2</u></b>	<b>Practical Approaches in Food and Nutrition (Practical)</b>	It will provide knowledge on planning meals for adults of different activity level of different income groups. It will also provide knowledge on assessing self diet (by 24 hours recall method) provide practical knowledge on market survey.
<b>Semester-V</b>		
<b><u>DSET-1</u></b>	<b>Therapeutic Nutrition</b>	The course will enable students to learn about the different aspects of therapeutic diet and its application in weight management, diabetes mellitus, fever, liver diseases and gastrointestinal diseases.
<b><u>DSEP-1</u></b>	<b>Therapeutic Nutrition (Practical)</b>	This practical course will enable students to plan and prepare different types of therapeutic diet for patients with obesity, type II diabetes, fever, viral hepatitis and cardiovascular diseases.
<b><u>SECP-3</u></b>	<b>Assessment of Community Nutritional Status</b>	The students will be able to determine the nutritional status of the people by anthropometric measurement, clinical assessment and diet survey.
<b>Semester VI</b>		
<b><u>DSET-2</u></b>	<b>Community Nutrition</b>	This course will enable students with the knowledge to determine the nutritional status of the people of the community and to know the different factors that affect the community health.
<b><u>SECP-4</u></b>	<b>Nutritional Management of Malnutrition In Community</b>	This practical course will enable students to identify and manage different malnutrition-related public health problems prevalent in the community.

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