

## B. Sc. General (DSC) in Nutrition

### Programme Specific Outcome (PSO)

By the end of the entire program of UG in Nutrition a successfully passed out student will be able to:

- The student will be Know the Dietary pattern, it's vast impact in our daily life and help to reduce the Risk of Chronic Diseases.
- They will have depth knowledge about interrelationship between Drug and Nutrient or Drug-nutrient Interaction.
- Gain comprehensive knowledge in Molecular Biology, Genetics, Toxicology, Biostatistics, Bioinformatics, Biochemistry, Physiology, Microbiology, Sport nutrition etc.
- Learn that Nutrition plays a key role in the Healthy development of our body & mind.
- Understanding that Nutrition effects the individual's thinking skills, Behaviour & Health.
- Nutrition Education may indirectly improve one's self image by improving feelings of wellbeing, improved appearance through weight control, increased motivation, knowledge & skills.
- Pursue Higher study in Nutrition & get opportunity to engage in the new field of Research or work as researcher/ Scientist/ New Food Developer.
- Compete different types of Government Services like Nutritionist, Dietitian, Counsellor, Community development officer, Nutritional Epidemiologist, teacher in schools or Colleges etc.
- Will have the opportunities as Nutritionists, Nutrition Educator, Counsellor, Community Education Officer, Food Technologist, Food Safety Auditor, Food Labelling Specialist, Health Promotion Specialists, Regulatory Affairs Specialist, International Aid/Development Worker, Nutritional Therapist, Dietitian, Health Service Manager, Herbalist, Food Writer, Professional Chef, Personal Trainer, Wellness Consultant, Product/process development Scientist.
- Work in Different type of sectors like Food Industry, Food develops Company or they will also develop self-Business as an Entrepreneur.

## Course Outcome

### **NUTGCC01: Nutritional aspect of food items.**

### **NUTGCC01T: Nutritional aspect of food items.**

#### **Outcomes:**

1. Students will have clear Concept about definition of terms, Food, Food Groups, Food Pyramid, Functions of food, Nutrient and Nutritive value, Concept of Balanced Diet.
2. They will be aware the Cereals, Pulses and legumes, Nutritional aspects of wheat, rice and oat, Types of pulses and legumes, uses, and nutritional aspects.
3. They will learn about the Milk and milk Products, Nutritive value of milk, composition of milk, Types of processed milk, milk products (butter, curd, paneer and cheese), Pasteurization.
4. They will also study the Egg, Fish and meat, Nutritional aspects and uses, Nutritional aspects of edible fish and meat, concept of red and white meat.
5. They will acquire knowledge about Vegetables and fruits, Uses and nutritional aspect of commonly available vegetables, Fresh fruits and dry fruits– raw and processed product.
6. They will also study the Salts, Fats and oils, Uses and nutritional aspects of various salts, Types, sources, use and nutritional aspects of fats and oils.
7. They will learn about the Methods of cooking, Dry, moist, frying and microwave cooking, Effect of various methods of cooking on foods, nutrient losses in cooking.

### **NUTGCC01P: Nutritional aspect of food items.(Practical)**

#### **Outcomes:**

Student will prepare about the Food preparation and nutritive value as per portion size wherever applicable –

1. Beverages: Lassi
2. Cereals: Fried Rice
3. Milk and milk products: Payasam
4. Eggs: Egg pudding
5. Snacks: Sandwiches

**NUTGCC02: Nutrients and its physiological role**  
**NUTGCC02T: Nutrients and its physiological role**

**Outcomes:**

1. Students will have clear Concept about definition of terms: Growth, Development, Nutrition, Malnutrition and Health, Scope of Nutrition.
2. Student will introduce about protein, carbohydrate and fats Dietary sources, physiological role and deficiency disorders.
3. Student will learn about Role of Vitamins and Minerals, Fat soluble vitamin- Physiological role, dietary sources and deficiency disorders, Water soluble vitamin- Physiological role, dietary sources and deficiency disorders, Minerals-Physiological role, dietary sources and deficiency disorders in special references to calcium, iron, sodium and potassium.
4. Students also know about Principles of meal planning, Food exchange list, Factors affecting meal planning and food related behaviour, Dietary guidelines for Indians.
5. They will also study the Minimum nutritional requirement and RDA, Formulation of RDA, dietary guidelines with reference to man and woman.
6. Students will have clear Concept about Energy in human nutrition: Energy and its unit, Energy assessment and balance, Factors of energy requirement, BMR and its regulation, SDA of food.

**NUTGCC02P: Nutrients and its physiological role( Practical)**

1. Student will prepare the Growth chart, Plotting and Interpretation using primary or secondary data in accordance with both ICMR and WHO Chart.
2. Students will have clear concept about the Clinical assessment and sign of nutrient deficiency disorders: Protein energy malnutrition (PEM), Anemia, Rickets, Goiter (Slide/Photography).
3. Students will have clear concept about the Clinical assessment and sign of vitamin deficiency disorders: Vitamin A, Vitamin C and Vitamin B-complex (Slide/Photography).
4. Students will have clear concept about the Clinical assessment and sign of obesity and metabolic disorders risk factors.



### **NUTGCC03: Nutrition: Infancy to old age**

### **NUTGCC03T: Nutrition: Infancy to old age**

#### **Outcomes:**

1. Students will have clear Concept about Nutrition during infancy, Breast feeding, Formula feeding, Weaning, Supplementary foods, Nutritional management of Preterm baby.
2. Students also know about Nutrition for children, Diet in early childhood, elementary school age, high school age.
3. Student will learn about Nutrition during pregnancy and lactation, Nutritional demands of Pregnancy, Food selection during Pregnancy, Complications of pregnancy and dietary management, Diet during Lactation.
4. Student will learn about Geriatric nutrition, Planning of meals for older people, Nutrition of aged persons, Physiological complications in geriatric group and dietary modifications required.

### **NUTGCC03P: Nutrition: Infancy to old age**

#### **Outcomes:**

1. Students will prepare normal diets for infant (Dahl soup ), normal diets for preschool children (Dalia), normal diets for pregnant lady and lactating mother (Khicheri with mixed vegetables).

### **NUTGCC04: Nutritional Surveillance and Programme**

### **NUTGCC04T: Nutritional Surveillance and Programme**

#### **Outcomes:**

1. Student will assess the Nutritional Status and Surveillance, Direct Nutritional status assessment of human groups - Biochemical, Biophysical and anthropometric methods., Indirect assessment: Secondary sources of community health data.
2. Students will have clear Concept of surveillance systems: Role of international and national organizations and agencies (WHO, FAO, UNICEF, CARE, NIN, CFTRI, ICMR).
3. Students will learn about Communication in Nutrition and Health Education: • Type, process and media of communication. • Importance and relevance of Information, Education and communication (IEC) in Nutrition and Public Health.

4. Students will learn about National Nutritional Intervention Programmes: • Objective, Target group, Scheme details - Integrated Child Development Services (ICDS), Mid Day Meal Programme (MDMP), Vit A prophylaxis Prophylaxis programme, Anemia prophylaxis programme.
5. Students will have clear Concept about Immunization Programme: Immunization: National Immunization schedule for children and adults, Immunization for foreign travelers.

### **NUTGCC04P: Nutritional Surveillance and Programme**

#### **Outcomes:**

1. Student will measure the Weight for age, height for age, weight for height and its comparison with reference value.
2. Students will determine the of BMI and comments on results.
3. Student will measure the circumference of chest, upper arm, waist - hip ratio.

### **NUTGDS01: Food Microbiology and Food borne Illness: (Theory)**

#### **Outcomes:**

1. Students know about Introduction of Microbiology: Introduction of microbiology and its relevance to everyday life. General characteristics of bacteria, fungi, virus, protozoa and algae. Growth of microorganisms : Growth curve, effects of environment factors in growth of microorganisms –pH, water activity, oxygen availability, temperature and others. Microorganisms involved in food fermentation and their role.
2. Student will learn about Microbiology of deficient food: Spoilage. Contamination sources, types, effect on the following: a. Cereal and cereal products. b. Sugar and sugar products. c. Vegetables and fruits d. Meat and meat products. e. Fish, egg and poultry, Milk and milk products. f. Canned foods.
3. Students will have clear concept about Environmental microbiology: a. Water and water borne diseases. b. Air and air borne diseases. c. Soil and soil borne diseases. d. Sewage and diseases.
4. Student will get idea about Beneficial effect of microorganisms.

5. Student will learn about Waste product handling: a. planning for waste disposal. b. Solid wastes and liquid wastes.
6. Students will have clear concept about Microbial intoxication and infections: Sources of contamination of food, toxin production and physiological action, sources of infection of food by pathogenic organisms, symptoms and method of control.
7. Student will get idea about Control of microorganisms: 1. Physical and chemical methods used in sterilization and disinfection. 2. Uses of high and low temperature, dehydration, freezing, freeze drying, irradiation and use of preservatives.
8. Student will get idea about Nutrition and culture of microorganisms: 1. Microbial nutrition-Types of culture media, Methods of pure culture and sub culture. 2. Bacterial growth-Extrinsic and intrinsic factors affecting growth.
9. Student will learn about Food contamination: Primary sources of food contamination
10. Student will get idea about Food infections: 1. Bacterial food infections-Salmonellosis, Shigellosis and Listeriosis. 2. Food poisoning (Staphylococcal & Botulism) - Symptoms, mode of transmission and methods of prevention, Concept of aflatoxin intoxication. 3. Relevance of microbial standards for food safety.

### **NUTGDS01: Food Microbiology and Food borne Illness: (Practical)**

#### **Outcomes:**

1. Students will Study the equipments in a microbiology lab.
2. Students will Prepare of laboratory media and special media, liquid (broth) and solid media Slant and Stab.
3. Students will know about Microbiological pure culture technique: Spread plate, Pour plate and Streak plate. Cultivation of yeasts and moulds.
4. Students will prepare Microbial Staining: Simple stain, Differential stain (Gram stain).
5. Cultivation and identifications of important molds and yeast in food items.
6. Students will Demonstrate of available rapid methods and diagnostic kits used in identification of microorganisms or their products.
7. Students will Visits ( at least two) to food processing units or any other organization dealing with advanced methods in food microbiology.

### **NUTGDS02: Community Nutrition and Epidemiology: (Theory)**

#### **Outcomes:**

1. Students will have clear Concept of population and Community: Concept and characteristic features of population. Concepts and types of community. Concept of community nutrition. Factors affecting health of community – environmental, social, political, cultural and economical.



2. Students will get knowledge about Community water and waste management: Source of water, safe drinking water, etiology and effects of toxic agents. Microbial examination of water, Water-Potability test (MPN Test). Sewage disposal and treatment.
3. Student will learn about Nutritional problems in community: a. Nutrition and health in National Development. b. Malnutrition – meaning, factors contributing to malnutrition, over nutrition. c. Nutritional disorders : Epidemiology, clinical features, prevention and dietary treatment for protein energy malnutrition, nutritional anaemias & vitamin deficiency disorders. d. Nutritional and infection relationship : Immunization and its importance, Food borne infection, and intoxication diseases, foods involved, methods of prevention, infestation of food borne diseases, outbreak, Prevention sign and control of infection.
4. Students will learn about Community nutrition programme planning – identification of problem, analysis of causes, resources constraints, selection of interventions, setting a strategy, implementations and evaluation of the programme.
5. Students will get knowledge about Nutritional status assessments and Nutritional intervention programmes : a. Nutritional status assessment: Meaning, need, objectives and importance. Methods of assessing nutritional status: i. Sampling techniques, identification of risk groups. ii. Direct assessment – Diet surveys, Nutritional anthropometry – height, weight, BMI, MUAC, head and chest circumference, Diet survey by recall method, Clinical assessment, biochemical assessments. iii. Indirect assessment – Food balance sheet, ecological parameters and vital statistics. b. National and International agencies in uplifting the nutritional status: • FAO, WHO, UNICEF, CARE, ICMR, ICDS, ICAR, CSIR, CFTRI ANP, VHA, NIN. • Role of voluntary health organization in the improvement of community health. c. Nutritional intervention programmes : Nutritional intervention programme to combat malnutrition. Concept of food fortification and food enrichment.
6. Students know about Nutrition Education : Definition, objectives of nutrition education. Methods of imparting nutrition education.
7. Students will get Concept of Disease: Endemic, Epidemic and Pandemic, Acute and Chronic. Communicable and Noncommunicable diseases, Zoonosis, Epizootic and Enzootic.
8. Students will know about Principles of Epidemiology: Epidemiological study- Descriptive and Analytical. Rate of Disease in a Population-Attack rate, Mortality and Morbidity rate, Prevalence and Incidence of a disease, The incubation period, Quarantine period. Factors that Influence the Epidemiology of Disease.

## **NUTGDS02: Community Nutrition and Epidemiology: (Practical)**

### **Outcomes:**

1. Student will Prepare of homemade ORS.
2. Students can Identify of vulnerable and risk groups,

3. Student will Prepare of weaning foods for infants.
4. Student will Prepare of low cost and medium cost school tiffin.
5. Student can Use of anthropometric measurements in children.
6. Students perform Diet survey by 24 Hours recall methods.
7. Student will Prepare of visual aids.
8. 8. Field visit to : a) Observe the working of nutrition and health oriented programmes ( survey based results), b) Hospitals to observe nutritional deficiencies.
9. Students will Visit to old age home / ICDS Centre / Nutrition Rehabilitation Centre (NRC) / Slum area / any public place and Prepare a report on nutritional status and health concern ( at least 10-15 case studies to be done).
10. Visit to a Rural Technology Centre/Community Welfare Centre and prepare a brief field report on Rural Technology and Community Development.

### **Skill Enhancement Course (SEC) :**

- Students learn about Definition of Dietetics, dietitian, goals of diet therapy.
- Students also gain their knowledge about basic concepts of Diet therapy: Therapeutic adaptations of normal diet, Classification of therapeutic diets (Progressive diets – Normal, Soft, Clear fluid diet and Full fluid).
- Student know about Dietitians and hospital basic diets: • Types of dietitians and role of dietitian in a hospital. Routine hospital diets. Specially modified therapeutic diet. • Nutritional adequacy of hospital diets, Basic concept and methods of (i) Oral feeding (ii) Tube feeding (iii) Parenteral feeding.
- Students learn about Etiology, symptoms, diagnostic tests and dietary management of Gastro-intestinal tract and liver diseases - Diarrhoea, Constipation, Irritable Bowel Syndrome, Peptic ulcer, Jaundice and Cirrhosis of liver.
- Student know about Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management: Diabetes mellitus, Diabetes insipidus.
- Student can know about Etiology, symptoms, diagnostic tests and dietary management of Malabsorption syndrome, Lactose intolerance, Food allergy.
- Student know about Anemia: definition, causes, classification and dietary management of nutritional anaemia.
- 8. Fever: Definition, causes, types, symptoms and dietary management.
- Students know about Etiology, clinical features, dietary and general management of Weight Imbalances: Underweight, Overweight and Obesity.
- Eating disorder: Concept of Anorexia nervosa and bulimia.
- Students learn about Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management of Hypertension, Renal diseases in special reference to Glomerulonephritis, Uremia, and Nephrosis.



- Students know about Diseases of the cardio vascular system: a. Brief review of lipoproteins (TC, TG, LDL, HDL, VLDL), b. Atherosclerosis – etiology, risk factor and dietary management.
- Students know about Etiology, Risk factor, Sign and Symptom, Diagnosis and dietary management of Cancer.

