

COURSE OBJECTIVES & OUTCOMES OF 3/4
YEAR UNDER GRADUATE CURRICULUM IN
NUTRITION



NISTARINI COLLEGE, PURULIA

AFFILIATED TO

SIDHO-KANHO-BIRSHA UNIVERSITY, PURULIA,
WEST BENGAL

UG NUTRITION (MAJOR) LEARNING

OBJECTIVE :

- To demonstrate critical thinking skills and analytical abilities to identify and solve problems in the nutritional sciences.
- To assess nutritional status of individuals in various life-cycle stages and determine nutrition-related conditions and diseases by applying knowledge of metabolism and nutrient functions, food sources, and physiologic systems.
 - To critique and effectively communicate nutrition information.
- To describe social, multi-ethnic, and environmental dimensions within nutrition and the life sciences.

LEARNING OUTCOME:

After completing the course students will be

1. Able to provide nutrition counselling and education to individuals, groups, and communities throughout the lifespan using a variety of communication strategies.
2. Enable to apply technical skills, knowledge of health behaviour, clinical judgment, and decision-making skills when assessing and evaluating the nutritional status of individuals and communities and their response to nutrition intervention.
3. Could implement strategies for food access, procurement, preparation, and safety for individuals, families, and communities.
4. Apply food science knowledge to describe functions of ingredients in food

Basic Nutrition and Food commodities. (

MAJOR - 1)

Learning Objectives:

- To acquire the basic idea of food and Nutrition related terms .
- To understand food commodities.

Learning outcome :

- To enable to differentiate between food and nutrients , macro and micro nutrients.
- To achieve advanced knowledge in food stuff and their nutritional significance.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –I

MAJOR – 1

COURSE TITLE: BASIC NUTRITION & FOOD COMMODITIES (THEORY)

COURSE CODE: BNUTMAJ01C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

Basic Concepts of food, Nutrition and Nutrients, classification of food, classification of Nutrients. Food Exchange list : Types, Applications ,Importance.

Cereals: Types , Uses, Nutritional aspects and storage.

Pulses and Legumes : Types of pulses and legumes , Uses , Nutritional aspects and storage.

Milk and Milk products : Composition, processing, storage, and use of Milk. Milk spoilage, nutritional aspect of Milk. Production and nutritional aspects of cheese, curd and paneer.

Eggs :Nutritional aspects and use of eggs in different food preparation.

Fish, Meat and Poultry : Major edible fishes, storage, spoilage and nutritional status .Meat andpoultry : Types, storage, spoilage and nutritional aspects.

Vegetables and Fruits : Uses and Nutritional aspects of commonly available vegetables andfruits - raw and processed product.

Fats and Oils : Types ,sources, use and nutritional aspects. Salts : Use and Nutritional aspects.

Beverages : Commonly available Types and their Uses.

Food ad adjuncts : Spices, food colours, essence- their uses in food Preparation

DETECTION OF FOOD ADULTERANTS (PRACTICAL)

CREDIT - 2

1. Common house hold methods to detect adulterants in food.
 2. a) Detection of Vanaspati in Ghee/ Butter.
 - b) Detection of khesari flour in Basan.
 - c) Detection of Metanil yellow in Turmaric/Coloured Sweet products.
 - d) Detection of saccharine in Sugar.
 - e) Detection of Starch in Milk.
3. Lab. Note Book.
4. Viva Voce.

References:

1. Nutritive value of Indian Foods – ICMR
2. Nutrient requirements and recommended dietary allowance or Indians – ICMR
3. Technical report series for different Nutrients – WHO
4. A Guide to Nutritional Status Assessment –Begin I, M.Cap B. Dujadan
5. Food Commodities – S. Lavies
6. Introductory Foods – O, Hughes, M.B

NUTRITION AND HUMAN LIFE CYCLE AND GROWTH AND DEVELOPMENT

(MAJOR-2)

LEARNING OBJECTIVES:

- To summarize nutritional requirements and dietary recommendations for Various age groups.
- To discuss the most important nutrition-related concerns during Growth and development.

LEARNING OUTCOME :

- To understand and apply the nutritional Status of various age group.
- To be able to conceptualize basic Nutrition at various age groups.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –II

MAJOR – 2

COURSE TITLE: HUMAN LIFE CYCLE AND GROWTH AND DEVELOPMENT

COURSE CODE: BNUTMAJ02C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

Concept of Nutrition – Nutrients, Malnutrition, Under nutrition and balance diet.

Minimum nutritional requirement and RDA – Formulation of RDA and dietary guidelines with reference man and woman.

Nutrition during infancy – Breast feeding initiation and duration, nutritional and other advantages, Complementary food and its management during teething.

Nutrition during pregnancy and lactation.

Nutrition of preschool and school going children and adolescent.

Energy in human nutrition – Energy and its unit . Energy balance assessment of Energy Requirement, Determination of energy of food, BMR and its Regulation, SDA.

Geriatric nutrition – Nutrition of aged persons ,dietary modification required for aged people, Planning of meals for older people, Role of antioxidative nutrients for prevention of aging.

Nutrition to athletes – Nutritional requirements Dietary Management in different sports and athletes. Meal planning of Athletes- Men and Woman.

Growth and Development :

1. Introduction to Human Growth and development. Factors influencing Growth and development.
2. Prenatal development : condition affecting parental development , birth process , hazards. Stages of development_

Infancy, childhood, adolescence, adulthood and old age.

Physical development , social development, mental development, and growth chart

Practical

Assignment – a) Anthropometric measurement : Height, Weight, Circumference of : Chest, Upper arm, Waist, Heap, BMI Waist to heap ratio.

- b) Growth chart: Plotting of growth chart.
- c) Lab: Note Book.
- d) Viva Voce.

References:

Swaminathan M : Essentials of Food and Nutrition, Vol – I & II.

The Feeding and care of Infants and young children – S. Ghosh.

3. Introductory Nutrition –Guthrie , A. H.

4. Human Nutrition and Dietetics – S .Davidson and R .Passmore

NUTRITIONAL PHYSIOLOGY (MAJOR-3)

LEARNING OBJECTIVE :

- Students will be able to learn the terminology of the subject.
- Provide basic knowledge of cells, tissues, blood and to understand anatomy and physiology of human body.

LEARNING OUTCOMES:

- This subject will develop and understanding of the structure and function of organs and organ systems in normal human body

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –III

MAJOR – 3

COURSE TITLE: NUTRITIONAL PGYSIOLOGY

COURSE CODE: BNUTMAJ03C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

Cell and Tissue –

- A. Structure and function of plasma membrane , mitochondria endoplasmic reticulum and golgibody, peroxisome, glyoxysome and nucleus.
- B. Basic concept of cell cycle, apoptosis and necrosis.
- C. Classification of tissue, structure and function of epithelium, connective, muscle and nervous tissue.

Digestive system–

- A) Basic structure of GI tract and glands.
- B) Digestion of carbohydrate, fat and nucleic acid.
- C) Absorption of nutrients (glucose, amino acids , fatty acids , iron , Calcium , glycerol , cholesterol ,Vitamins.

Cardio vascular system

- A) Composition of blood, Blood groups ,Structure and Functions of heart,
- B) Coagulation.

Respiratory system-

- A) Basic anatomy respiratory tract, lungs.
- B) Mechanism of breathing.
- C) Neural regulation of breathing.
- D) O₂ and CO₂ transport.
- E) Mountain sickness , acclimatization , Hypoxia , Cyanosis.

Excretory systems –

- A) Structure and function of Nephron.
- B) Steps of urine formation.
- C) Role of renal buffers.
- D) Mechanism of micturition.
- E) Renal stone.
- F) Structure and function of skin and structure of sweat gland and mechanism of sweating.

Reproductive system –

- A) Structure and functions of gonads, Menstrual cycle.
- B) Brief idea of pregnancy and Parturition, lactation .
- C) menopause, spermatogenesis.

Nervous system–

- A) Anatomy of Nervous system, function of different parts of the brain, (Cerebral Cortex ,Cerebellum, Thalamus, Hypothalamus, Pons, Medulla)
- B) Autonomic nervous system,
- C) Special senses(visual pathway, rhodopsin and iodopsin cycle, colour blindness, mechanism of audition, anatomy of organ of Corti , taste bud , Pathway of taste sensations , Olfactory epithelium, Olfactory tract.

Muscular skeletal system –

- A) Basic structure of skeletal muscles ,contraction of skeletal muscle and its Energy System .
- B) General idea of formation of bone and teeth.
- C). Osteoporosis, caries, osteomalasia.

Endocrine system –

Structure and functions of Pituitary, Thyroid, Parathyroid, islets of langerhans, Adrenal, and pineal gland, Adipose tissue.

PRACTICAL

CREDIT - 2

- A. Blood analysis : T.C/D.C/ESR(Wintrob's Method)/Haemoglobin Level.
- B. Estimation of Blood pressure by Sphygmomanometer(Auscultatory Method)/Detection of blood group(slide method)
- C. Identification with reasons of Histological slides(Lung, Liver, Kidney, Small intestine, Stomach, Thyroid, Adrenal gland, Pancreas, Testis, Ovary & Muscle of mammals), blood corpuscles of human.
- D. Viva Voce.
- E. Lab Note Book

References:

1. Text Book of Physiology
Volume I C.C.Chatterje
2. Text Book of Medical Physiology – A.C.Guyton.
3. Anatomy & Physiology in Health and Illness Wilson (Chunhil Living Stone : Edinburgh).

NUTRITIONAL BIOCHEMISTRY(MAJOR -4)

LEARNING OBJECTIVES:

- To enable the student to understand the chemical characteristics of different classes of nutrients.
- To explain the process of digestion, absorption and metabolism of macronutrients and micronutrients.

LEARNING OUTCOME:

- The student will have knowledge of biochemical pathways of different nutrients, how they function biochemically and physiologically.
- To get information about the role of diet and the nutrients present in them .

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –IV

MAJOR – 4

COURSE TITLE: NUTRITIONAL BIOCHEMISTRY

COURSE CODE: BNUTMAJ04C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

1. General idea food and nutrients.
2. Carbohydrate – Types of classification carbohydrate, structure, properties and function of monosaccharides, oligosaccharides
And polysaccharides. Carbohydrate metabolism. Glycolysis, TCA cycle, Gluconeogenesis, glycogenesis, regulation of blood
Sugar level, glycemic index and pentose phosphate pathway.
3. Protein – Types of classification of proteins and amino acids, structure, properties and function of proteins, and amino acids.
Protein metabolism : Deamination, Transamination and Urea cycle.
4. Lipid – Types and classification of lipid structure, properties and function of different types of lipids.
Lipids metabolism :
Oxidation of fatty acids, synthesis and utilization of ketone bodies, ketosis and fatty liver.
5. Enzyme – Classification, mechanism of enzyme activity, definition and function of co – enzyme and co- factor . Enzyme inhibitor and isoenzyme.
6. Fluids and Electrolytes – a) Mechanism of body fluid balance , tissue fluid and blood b) Electrolyte- Iron, Ca, Na, K,
c) Role of blood buffer on Ph regulation.
7. Dietary Fibre – Classification and nutritional significance .

PRACTICAL

CREDIT - 2

1. Colorimetric estimation of carbohydrate (Anthrone Reagent), protein (Folin, phenol reagent)
2. Qualitative detection of glycerol (Copper hydroxide test), sugar (Molisch's test, Benedict's test, Barfoed's test, Iodine test, Seliwanoff test methods) and non reducing sugar (Hydrolysis test or inversion test)
3. Estimation of lactose in milk. Sucrose – Fructose in food Extract. Calcium in milk, EDTA methods.
4. Lab: Note Book.
5. Viva Voce.

Reading References :-

1. Principal of Biochemistry – A.L. Lehniger, Nelson and M. m. Ox
2. Text Book of Biochemistry – E. S. West, W. R. Tood, Malson HS and J. T. Van Bruggen.
3. Biochemistry – L. Stryer ,
4. Biochemistry – D. Das

PRINCIPLES OF THERAPEUTIC DIET

(MAJOR -5)

LEARNING OBJECTIVES:

- To understand the nutritional assessment and planning, implementation, monitoring and follow up in Nutrition care point.
- The positive factors and metabolic changes in various diseases and disorders and acquire knowledge on the principle of diet therapy .
- Comprehensive principles of dietary counselling and the rational of prevention of various diseases and disorders.

LEARNING OUTCOME:

- To understand the importance of nutritional assessments in the care of patients.
- Gain knowledge about positive factors and metabolic changes in various diseases.
- Associate the principle of diet therapy.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –IV

MAJOR – 5

COURSE TITLE: PRINCIPAL OF THERAPEUTIC DIET

COURSE CODE: BNUTMAJ05C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

1. General concept of Therapeutic diet – Preventive, promotive and recoverable approach of Therapeutic diet.

1. General Principle for the conversion of Basic diet into therapeutic diet Approaches adopted.

2. Guide line of therapeutic diet formulation on the basis of patient need – Energy, Protein, Fat, Carbohydrate, Vitamins and Minerals, Nutraceuticals.

3. Therapeutic diet in fever, oxidative stress, excess

dehydration. 5. Meal frequency in therapeutic diet in different condition.

6. General approach of parenteral and Enteral care, features, advantages and disadvantages, monomeric and oligomeric diet.

7. Basic concept of RUTF for SAM. Basic Idea about formulated food.

PRACTICAL- BASIC DIET :

CREDIT - 2

1. Energy calculation on the basis of given data – a) Work style,
b) Body parameters & PAL.
c) Injury factor.
2. Distribution of energy from macro nutrients as per standard rule.
3. Menu preparation and nutrient analysis and balance sheet preparation as per meal frequency.
4. Formulation of diet of pre-school, school going children, pubertal and adult Individuals, pregnant and lactating mother and geriatric persons.
5. Lab: Note Book.
6. Viva Voce.

References:

1. Clinical Dietetics and Nutrition F.P. Anita, P. Abraham.
2. Nutrition and Diet Therapy – S.R. Williams.
3. Text Book of Food, Nutrition and Dietetics Rehana Begum.
4. Nutrition and Dietetics – S.A. Joshi.
5. Preventive medicine and Public Health – G.W. Smith.
6. Parks' Text Book of preventive and Social Medicine – K. Park

NUTRITIONAL EPIDEMIOLOGY (MAJOR - 6)

LEARNING OBJECTIVES:

- To summarize the causative factors of various diseases .
- Data analysis of epidemic , pandemic and endemic diseases.
- Assignments related to anthropometric measurements.

LEARNING OUTCOME :

- To make the students enable to interpret the morbidity , mortality rates in various diseases and the role of Nutrition.
- To apply the nutritional issues in various sectors and immunization strategies.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –V

MAJOR – 6

COURSE TITLE: NUTRITIONAL EPIDEMIOLOGY

COURSE CODE: BNUTMAJ06C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

Principles of Epidemiology Concept of disease (endemic, epidemic and pandemic, acute and chronic, communicable and non- communicable, zoonosis, epizootic, enzootic, vector-borne and nosocomial),rate of a disease in a population (attack rate, morbidity rate, mortality rate, incidence and prevalence) , Nature of infectious and communicable diseases, Factors that influence the epidemiology of a disease.

Epidemiological methods Descriptive studies, analytical ,experimental ,serological,clinical studies.

Immunization : Immunization schedule for Children, Adults and Foreign travelers.

Assessment of Nutritional Status

I . Nutritional anthropometry : Standard techniques of measurement of height, weight ,head, chest and arm circumference, interpretation and use of growth chart, anthropometric indices of Nutrition.

Direct Nutritional assessment of human groups : Biochemical and Biophysical methodology.

Practical Credits -2

ASSIGNMENT:

CREDIT – 2

a. Visit to a NRC in Hospital or ICDS center.

b. Lab: Book

c. Viva Voce

Reading References:

Nutritional Surveillance WHO – J.B.Mason, J.P.Hbichat, H.tabatabai, U. Valverde

THERAPEUTIC DIET- PART- I (MAJOR - 7)

LEARNING OBJECTIVES:

- To understand the diseases of GI tract and other organic diseases .
- Dietary management of diseases

LEARNING OUTCOME:

To attain knowledge on various GI tract and other organic diseases with the sign and symptoms.

- To apply the Nutritional management of the same type of diseases.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –V

MAJOR – 7

COURSE TITLE: THERAPEUTIC DIET – PART – 1

COURSE CODE: BNUTMAJ07C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

1. Energy modifications and nutritional care for weight management :

Identifying the over weight and obese, etiological factors contributing to obesity prevention and treatment. Low energy diets, balanced energy reduction and behavioral modification. Under weight- etiology and assessment, high energy diets for weight gain , anorexia nervosa and bulimia.

2. Diets for febrile conditions, infections and surgical condition.

3. Etiological factors, symptoms ,diagnostic tests and management of upper GI tract disease :

Disease of esophagus and dietary management, diseases of stomach and dietary management. Gastric and duodenal ulcers and dietary management.

4. Etiology, symptoms, diagnostic tests and management of intestinal diseases : Diarrhoea, Steatorrhea, Diverticular disease, Inflammatory bowel disease , Ulcerative Colitis, Flatulence, Constipation, Irritable Bowel syndrome , Haemorrhoids.

5. Etiology, symptoms, diagnostic tests and management of Malabsorption syndrome, Celiac sprue, Tropical sprue, Intestinal brush border deficiencies (Acquired disaccharide intolerance), Protein losing enteropathy.

PRACTICAL :

CREDIT - 2

1) Clinical assessment and sign of nutrient deficiency for the following :

PEM, VITA, Anemia , Rickett, Vit- B- Complex deficiencies.

2. Energy computation and Therapeutic diet formulation of obese and over weight persons.
3. Formulation of therapeutic diet for under weight.
4. Therapeutic diet formulation for recovery from diarrhea, dysentery, constipation, colitis, ulcer.
5. Therapeutic diet formulation of different febrile condition.
6. Lab: Book.
7. Viva Voce.

Reading References:

1. Clinical Dietetics and Nutrition F.P.Anita, P.Abraham.2.Nutrition and Diet Therapy S.R.Williams.

Text Book of Food, Nutrition and DieteticsRehana Begum.

Nutrition and Dietetics – S.A.Joshi.

Preventive medicine and Public Health – G.W.Smith.

Parks' Text Book of preventive and Social Medicine – K.Park

NUTRITIONAL FOOD MICROBIOLOGY (MAJOR - 8)

LEARNING OBJECTIVES:

- To acquire an elementary knowledge about microorganisms
 - To determine physiological changes at different stages of lifecycle.
 - To discuss, contrast and evaluate the roles of nutrition within the complex processes of pregnancy, lactation, child development and ageing.
 - To discuss the impact of socioeconomic, cultural and psychological factors on food and nutrition behaviour.

Learning Outcome :

- The student gains knowledge about the origin of food microbiology, learns to classify and understand the characteristic features of microorganisms.

- The student will be able to understand the bacterial growth and culturing of bacteria.
- The student will learn and apply the latest in research-based nutrient needs of infants, children, adolescents, adults, pregnant and lactating females.
- The student gains competence on meeting nutrition needs and establishing dietary patterns to promote optimum health and reducing the impact of chronic diseases in the elderly people.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VI

MAJOR – 8

COURSE TITLE: NUTRITIONAL FOOD MICROBIOLOGY

COURSE CODE: BNUTMAJ08C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

Brief history of microbiology with reference to microorganism in food.

Primary sources of food contamination, physical and chemical methods used in sterilization and disinfection.

Cultural aspect of microorganisms : Types of culture media, methods of pure culture.

Role of microorganisms in the spoilage of different kinds of foods : cereal and cereal products, vegetables and fruits, fish and other sea foods, meat and meat products.

Bacterial food infections : (Salmonellosis, Shigellosis and Listeriosis) and food poisoning (Staphylococcal and Botulism) : Symptoms, mode of transmission and methods of prevention.

Control of microorganisms in foods-extrinsic and intrinsic parameters affecting growth and survival of microbes, use of high and low temperature , dehydration, freezing, freeze-drying, irradiation and preservatives in food preservation.

PRACTICAL :

CREDIT – 2

1. Staining of bacteria, preparation of liquid media (broth) and solid media for routine cultivation of bacteria.

2. Preparation of slant and stab, Pure culture techniques : Spread plate, Pour plate and Streak plate.

3. Biochemical tests for characterization : (catalase, nitrate-reduction indole production, methyl red and voges-Proskauer Test),

4 Determination of potability of water (presumptive test) Sugar fermentation test.

5. Laboratory Note Book.

6. Viva- Voce.

Reference :

1. Food microbiology – W. C. Frazier and D. C. Westhoff
2. Microbiology – L. M. Prescott, J. P. Harley and D. A. Klein
3. Modern food of Microbiology – Jay James M
4. General Microbiology – H. G. Schlegel.
5. Microbiology – M. J. Pelczar, R. D. Reid, E. C. Chan

NUTRITIONAL DISASTER MANAGEMENT (MAJOR-9)**LEARNING OBJECTIVES:**

To be familiar with the process of planning and management of public health nutrition programmes.

To understand the concept of monitoring of programmes and nutritional surveillance.

The students will also learn about nutrition in emergency and disaster situations.

Learning Outcomes :

1. Get acquainted with the nutritional problems during emergencies/ disasters and the strategies to tackle them.
2. To familiarize students with various natural and manmade emergencies and disasters having an impact on nutrition and health status.
3. Understand strategies for nutritional rehabilitation management of the health of emergency affected populations

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR**NUTRITION OF SEMESTER –VI****MAJOR – 9****COURSE TITLE: NUTRITIONAL DISASTER MANAGEMENT****COURSE CODE: BNUTMAJ09C****CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)****THEORY:**

1. General concept of Disaster, Types of Disaster.
2. Disaster management cycle – different Phases.
3. Packed food Distribution at Disaster – Advantages – Dis advantages.

4. Supplemental Nutrition Programme in Disaster – Types, Guide line for implementation and formation of such Programme.

5. Vulnerable groups in Disaster.

ASSINGMENT :

CREDIT - 2

Submission of project (introduction , objective , review, methodology, results / data, discussion, reference, conclusion

Viva Voce

Reading References:

Preventive medicine and Public Health – G.W.Smith.

Parks' Text Book of preventive and Social Medicine – K.Park

THERAPEUTIC DIET PAR -II (MAJOR-10)

LEARNING OBJECTIVES:

- To understand the diseases of Cardiovascular , renal ,allergy and endocrine disorders.
- Dietary management of these diseases.
To prepare meal plan for various diseases

LEARNING OUTCOME:

- To attain knowledge on various Cardiovascular , renal , inborne error , allergy and endocrine disorders with the sign and symptoms.
- To apply the Nutritional management of the same type of diseases.
To be able to prepare diet chart
To classify the patients with nutritional disorders .

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VI

MAJOR – 10

COURSE TITLE: THERAPEUTIC DIET – PART – II

COURSE CODE: BNUTMAJ10C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

1. Diet in disease of the endocrine pancreas :
2. Diabetes Mellitus- Classification, symptoms, diagnosis, management-Insulin therapy, oral hypoglycemic agents, glucose monitoring at home, dietary care and nutritional therapy, meal plan (with and without insulin) , special diabetic foods, sweeteners and sugar substitute. Diabetes Incipidus.
3. Disease of the cardiovascular system : Atherosclerosis etiology and risk factors. Hyper lipidemias- Brief review of Lipoprotein and their metabolism, classification of hyper lipidemias, clinical and nutritional aspects of hyper lipidemias. Dietary care- Ischemic Heart Disease- nutritional management. Hyper tension-etiology, prevalence, nutritional management. Prevention of cardio vascular diseases and diet.
4. Renal Diseases : Classification, etiology, symptoms of Glomerulonephritis-dietary management. Acute and Chronic Nephritis-dietary management. Ureaemia-dietary management. Nephrolithiasis-dietary management. Use of sodium and potassium exchange list.
5. Allergies : Definition symptoms, diagnosis and dietary management- food selection.
6. Diet for Anemic patients.

PRACTICAL :

CREDIT - 2

1. Energy calculation nutrients requirements and diet formulation of insulin injected or without insulin
Injected diabetic patient with meal frequency, analysis and balance sheet preparation.
2. Therapeutic diet formulation with energy and nutrients supply through 5-6 meals of hyper
Tensive, hyper lipidemic, CHD patients.
3. Menu planning for low sodium diet of hyper tensive patients/ CHD patients and dietary
Analysis and balanced sheet preparation.
4. Formulation of therapeutic diet of renal patients indifferent categories.
5. Menu planning and diet formulation of allergic patients.
6. Lab: Note Book
7. Viva Voce.

Reading References:

1. Clinical Dietetics and Nutrition – F.P.Anita, P.Abraham.
 2. Nutrition and Diet Therapy – S.R.Williams.
- Text Book of Food, Nutrition and Dietetics – RehanaBegur.
- Nutrition and Dietetics – S.A.Joshi.
- Preventive medicine and Public Health – G.W.Smith.
- Parks' Text Book of preventive and Social Medicine – K.Park

ADVANCE THERAPEUTIC DIET (MAJOR-11)

LEARNING OBJECTIVES:

It is usually modification of a regular diet.

It is modified or tailored to fit the nutrition need of a particular patient like in
Born error metabolism, neural disorder, HIV etc.

LEARNING OUTCOME:

Patient requiring advance Therapeutic diet during hospitalization are frequently Exposed to food or fluid errors that may pose and acute treat to their safety. In addition , prescription of this diets may result in patients being unable to Adequately meet their nutritional requirements.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VII

MAJOR – 11

COURSE TITLE: ADVANCE THERAPEUTIC NUTRITION AND DIETETICS

COURSE CODE: BNUTMAJ11C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

1. Nutritional management of metabolic disease- Gout & Inborn errors of Metabolism.

a) Introduction of gout, roll of protein and purine, etiopathology, clinical features and complications, management of gout.

b) Disorder of amino acid metabolism – Phenylketonuria, Tyrosinemia, Maple Syrup Urine disease, homocystinuria,

Hartnup disease.

c) Hereditary lactose mal absorption, Galactosemia.

d) Hereditary fructose intolerance, essential fructuria.

e) Wilson's disease.

2. Nutritional management of Neurological Disorders- Dysphagia, Alzheimer's disease, Parkinson's disease, Epilepsy,

Neuro-trauma, Spinal trauma.

3. Nutrition and dietary modification during Cancer, Burn, Sepsis, HIV, Pre surgical and post surgical condition.

PRACTICAL :

CREDIT - 2

1. Planning preparation, service and evaluation of therapeutic diets covered in this theory.

2. Dietary counselling of patients for the disorders cover in this theory. A minimum of two case histories should be done

By each student.

3. Lab: Note Book.

4. Viva Voce.

Reference :

1. William's-Basic Nutrition and Diet Therapy.

2. Clinical dietetics and Nutrition- F. P. Antia and Philip Abraham.

3. Dietetics – B. Srilakshm.

NUTRITIONAL BIostatISTICS AND COMPUTER APPLICATIONS (MAJOR-12)

LEARNING OBJECTIVES:

- Knowledge about computer software, hardware and malware
- To understand the grouping of data and finding the deviations.

LEARNING OUTCOME:

- Students acquire the computer skills , presentation and computational skill for Nutrition.
- To interpret the data analysis .

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VII

MAJOR – 12

COURSE TITLE: BIO-STATISTICS AND COMPUTER APPLICATION

COURSE CODE: BNUTMAJ12C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

Fundamentals of Computer Basic Idea about software and Hardware of computer, Input, Output device of computer. Idea about computer virus.

MS Office (Word , Excel , PowerPoint) Internet Applications

Data Analysis

Importance of Bio-statistics in Nutrition, Idea about central Tendency, Normal distribution of variable, Standard error and Standard deviation.

Parametric and Non Parametric statistics – t' test and chi Square test, Significance study.

PRACTICAL :

CREDIT – 2

Data Analysis and Power Point Presentation.

Tabular Presentation of provided data.

Computation of central Tendency, significance of the Parametric / Non Parametric variables .

Laboratory Book.

Viva Voce.

Reference :

1. Statistical Methods – Combined Edition (Vol - .I & II) (Mc Graw Hill) : N. G. Das
2. Fundamentals of Statistics (Vol – I & II) (The world press Pvt. Ltd) : Goon, Gupta & Das Gupta.

FOOD HYGIENE , FOOD TOXICOLOGY AND FOOD SAFETY (MAJOR-13)

LEARNING OBJECTIVES:

1. To develop a knowledge base about the facilities required for different types of food service units .
2. To equip individuals in understanding and managing resources in a food service institution.
3. Understand microbial safety in various foods operations and comprehend principles of various preservation and control techniques.

4. To Know the importance of quality assurance in food industry.

Learning Outcomes :

1. Gain expertise to function as a food service manager.
2. Develop knowledge in managing various food service systems.
3. Understand and manage resources in a food service institution.
4. Provide practical experience in managing food material for food service management.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VII

MAJOR – 13

COURSE TITLE: FOOD HYGIENE, FOOD TOXICOLOGY AND FOOD SEFTY

COURSE CODE: BNUTMAJ13C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

Food Hygiene and Sanitation

General principles of food hygiene, hygiene in rural and urban areas in relation to food preparation. Personal hygiene and food handling habits. Place of sanitation in food plants. Sanitary aspects of building and equipment: Plant layout and design.

Safe and Effective insect and pest control:

Extraneous materials in foods, principles of insects and pets control.

Physical and chemical control. Effective control of micro organism: Importance of microorganism in food sanitation. Microorganism as indicator of sanitary quality.

Sanitary aspects of water supply:

Source of water, quality of water, water supply and its uses in food industries. Purification and disinfection of water prevention contamination of potable water supply.

Effective detergency and cleansing practices : Importance of cleaning technology, physical and chemical factors in cleaning, classification and formulation of detergents and sanitizers, cleaning practices.

Sanitary aspects of waste disposal, establishing and maintaining sanitary practices in food plants, role of sanitation, general sanitary consideration and sanitary evaluation of food plants.

Food Toxicology, Food laws and Food Safety

Concept and meaning of food quality and food safety, food adulteration, food hazards.

Natural toxins.

Food laws and regulations – national and international food laws, governing bodies.

Exposure, estimation, toxicological requirements and risk assessment.

Safety aspects of water and beverages such as soft drinks, tea, coffee, cocoa.5.Safety assessment of food contaminants and pesticide residues.

6. Safety evaluation of heat treatments and related processing techniques.

PRACTICAL:

CREDIT – 2

Institute visit or industrial visit or Excursion.

Reference :

1. Food, Nutrition and Hygiene - Dr. Mridula Gautam, Dr. Sunita Tripathi.
2. Fundamentals of Food Hygiene Safety and Quality By Kumar Alok.
3. Food Toxicology By S. S Deshpande.
4. Food Toxicology Edited by Debasis Bagchi and Anand Swaroop.

**MORDERN CONCEPT OF COMMUNITY NUTRITION,
PROGRAMME & PUBLIC HEALTH (MAJOR -14)**

LEARNING OBJECTIVES:

- to educate individuals and groups so that they adopt healthy eating habits
- Get basic knowledge on various foods and about adulteration.
- .Understand the adulteration of common foods and their adverse impact on health .

LEARNING OUTCOME:

- To comprehend the importance and determinants of nourishment decision practices .
- To apply methodologies used to assist individuals with adjusting their practices to improve dietary wellbeing .
- To comprehend certain skills of detecting adulteration of common foods.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VIII

MAJOR – 14

COURSE TITLE: MODERN CONCEPT OF COMMUNITY NUTRITION PROGRAMME & PUBLIC HEALTH

COURSE CODE: BNUTMAJ14C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

1. Concept of community, type of community factors affecting health of community environment, social, political, Cultural, economical, and dietary organizational.
2. Community water and its management : source of water, safe drinking water etiology and effects of toxic agents Water borne disease : (Cholera and Amoebiasis), sewage disposal and treatment.
3. Factors affecting the health of the community, sanitary quality, microbiological criteria of foods potability Of water , testing of milk quality.
4. Importance of sanitization and hygiene in foods kitchen hygiene, food plant hygiene, food laws.
5. Nutritional problems in community : Malnutrition, deficiency of Vit A, Vit D .

Nutritional Programme :

1. Basic concept of surveillance systems.
2. UNICEF, FAO, ICMR, SNP, ANP, ICDS, WFP, MDMP –
Aims, Objectives, Target Group, Service provided, Advantages, Limitation, Suggestion for Improvement.
3. Nutritional intervention programme to combat malnutrition : PHC, PDS, Midday meal.

PRACTICAL :

CREDIT - 2

Assignment – Public Health Center or Community Health Center Visit / Survey

Or

Local tribal area or District tribal area visit or Survey.

Reference :

1. Community Health – J. Clark & j. Henderson.
2. A Guide to Nutritional Status Assessment – Beghin I, M. Cap B, Dujadan.
3. Nutritional Surveillance WHO – J.B.Mason, J.P.Hbichat, H. Tabatabai, U.Valverde.

NUTRIGENOMICS AND FOOD BIOTECHNOLOGY(MAJOR-15)

LEARNING OBJECTIVES:

- To identify the genes that influence the risk of diet-related diseases on a genome-wide scale.
- To understand the mechanisms that underlie these genetic predispositions.

Learning outcome:

- To know about the mechanisms by which nutrition affects the metabolic pathways underlying homeostatic control. Subsequently, this can be used to determine naturally occurring chemical agents in food that could prevent the onset of diseases such as obesity, type-2 diabetes and cancer.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VIII

MAJOR – 15

COURSE TITLE: NUTRIGENOMICS AND FOOD BIOTECHNOLOGY

COURSE CODE: BNUTMAJ15C

CREDIT: 6 (THEORY: 4 + PRACTICAL: 2)

THEORY:

NUTRIGENOMICS

1. Basic concept about Nutrigenomics and its development, Importance .
2. General concept of Eukaryotic gene – Regulator part, Functional part.
3. Different approaches of Nutrient – Gene interactions , Possible models for such interaction .
4. Role of Macro, Micro nutrients and Nutraceuticals on gene expression.
5. Basic concept of Southern Blot and Northern Blot study in connection with nutrigenomics.

NUTRITIONAL BIOTECHNOLOGY

6. Basic concept of Bio-technology and Genetic Engineering, Types of Bio-technology.
7. Fundamental Techniques adopted in Bio-technology for quality control Food production-
 - a. Restriction Endo-nuclease-types
 - b. Recombinant DNA production.
 - c. Application of recombinant DNA GM Foods.
8. Fundamental concept of plant tissue culture.

NUTRACEUTICALS

9. Use of Nutraceuticals in traditional health science. Their role in preventing/controlling diseases.
10. Definition, classification, food and non-food sources, mechanism of action. Role of omega-3 fatty acid, Carotenoids, dietary fibre, phytoestrogens; organosulphur compounds as nutraceuticals.
11. Development of nutraceutical and functional foods – standards for health claims. Process of Developing – pre – clinical and clinical studies, marketing regulatory issues

1. Research Lab visit on above field and report preparation and submission.
2. Demonstration of Western Blotting, Identification of unknown Protein (mw) from supplied photography of Western Blotting.
3. Retrieval of Nucleic acid / Protein sequence from data basis. Storing of sequence and conversion of one sequence format to another. Sequence alignment (Pair wise alignment and multiple sequence alignment).
4. Laboratory Note Book .
5. Viva Voce

References :

1. Nutrition genomics : Impact on Health and Disease. Brigdlius – Flohe, Regina and Hans-Georg Joost, editors.
2. Text book of Food and Beverage Management – Sudhir Andrews.
3. Bioinformatics Sequence and Genome Analysis, David W. Mount.
4. Fundamental concepts of Bioinformatics- Dan E., Krne, Mchael, L. Raymer.
5. Catering service and Technology – M. Pyke.
6. Nutrigenomics and proteomics in Health and Disease : Food Factors and Gene Interaction- Yoshinori Mine PhD (Editor), Kazuo, Miyashita (Editor), Fereidoon Shahidi(Editor).
7. Fundamentals of Food Biotechnology by Lee B.H. Jhon Wiley.

RESEARCH METHODOLOGIES & ETHICS (MAJOR-16)**LEARNING OBJECTIVE:**

To understand the significance of statistics & research methodology in Home Science research.

To understand the types, tools & methods of research & develop the ability to construct data gathering instruments appropriate with the research design

To understand & apply the appropriate statistical technique for the measurement & design.

Learning Outcomes :

- To understand the concept of the field
- To enable the students to learn the methods of assessment and plan the diet
- To apply the theoretical concepts in laboratory setting
- To understand the applications of nutritional sciences in clinical interventions, communication for health promotion, food service management, food science and processing
- To acquire skills to undertake systematic research in the area of food science and nutrition.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR**NUTRITION OF SEMESTER –VIII****MAJOR – 16****COURSE TITLE: RESEARCH METHODOLOGY & ETHICS****COURSE CODE: BNUTMAJ16C****CREDIT: 4 (THEORY: 3 + PRACTICAL: 1)****THEORY:**

1. General concept of Research, Basic Research, Applied Research and Action Research Historical Research , Quantitative And Qualitative Research, basic difference between Research Methods and Research Methodology.
2. Basic idea about Research hypothesis,
3. Aims and objective and importance of literature preview in Research.
4. Ethics of Research , Principal of ethics Research and guideline of Research report preparation.
5. Normal probability and its use. Parametric and non- parametric tests.
6. Tools for Research.
7. Epidemiological Research and analytic cross sectional studies.
8. Conceptual Foundation of Scientific Research : Facts and Theory.
9. Selection of suitable problem and formulation of research problem.
10. Design and conduct observational studies and Cohort.

Reference :

1. Kothari C. R.(1991) Methodology, Methods and Techniques, Wiley Eastern Ltd, New Delhi.
2. Wilkinson and Bhandarkar. P. L. C. Methodology and techniques social research, Himalaya Publishing house, Bombay.
3. Sharma, B. A. V. Prasad R.D and Sathyanarayana. P (19195) Research Methods in social sciences , sterling Publisher, New Delhi.

SPORTS & SPACE NUTRITION(MAJOR-17)

LEARNING OBJECTIVES:

- To know the use of correct nutrients and micronutrients in the right proportion to increase strength and vitality for optimum performance.
- To understand the hydration maintaining muscle health by the regulation of fluids and electrolytes.
- Nutrition also place a key role in offsetting many negative effects of space travel, such as radiation exposure immune deficiency, oxidative stress and bone muscle loss.

LEARNING OUTCOMES :

- To identify reliable sources of population and sport-specific dietary guidelines and recommend dietary strategies for health, well-being, and performance in healthy populations.
- To be able to justify safe, legal, and effective use of supplements by athletes and active individuals.
- Space Nutrition if necessary to ensure that space food is nutritive enough to Space explorers healthy.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VIII

MAJOR – 17

COURSE TITLE: SPORTS NUTRITION AND SPACE NUTRITION

COURSE CODE: BNUTMAJ17C

CREDIT: 4 (THEORY: 3 + PRACTICAL: 1)

THEORY:

Sports Nutrition :-

Approaches to the management of fitness and health:

Nutrition, exercise, physical fitness and health - their interrelationship. Significance of physical fitness and nutrition in prevention and management of weight control regimes. Nutrition guidelines for maintenance of health and fitness.

Nutritional requirements of exercise: Effect of specific nutrients on work performance and physical fitness. Nutrients that support physical activity, mobilization of fuel stores during exercise. Fluid requirements

Nutrition in sport activities: Sports specific requirements- importance of carbohydrate loading, pre game and post game meals, diets for persons with high energy requirements, stress, fracture and injury .

Dietary supplements and ergogenic aids: Definitions, Use of different nutrigenic / ergogenic aids and commercial supplements, sports drinks, sports bars etc.

Nutrition in Sports Injury: Recovery and Psychological Disorders Related to Practicing Sport.

Eating Disorders: Bigorexia, Orthorexia, Anorexia Fatigue Caused by Overtraining

Space Nutrition :-

Classification of Space food , processing of food for space flight, planning and serving food.

Reference :

1. Sports Nutrition by Dr. Priti Rishi Lal.
2. Exercise Physiology Fitness and Sports Nutrition by Srilakshmi, B. Suganthi, B. Ashok, Klaivani C.
3. NASA : Space Food And Nutrition Educator Guide – Scholar’s Choice Edition.

DIET COUNSELLING AND PATIENT EDUCATION(MAJOR -18)

LEARNING OBJECTIVES:

1. To increase knowledge and clarify misconceptions about diet condition.
2. Implement new behaviors to adapt to diet conditions and physical limitations.
3. learn strategies to cope up with psychosocial responses to disease and disability.
4. Overcome barriers to complain by articulating.

LEARNING OUTCOME

1. Patient education promotes patient centered care and increases adherence to dietary treatments .
2. An increase in compliance leads to a more efficient and cost- effective health care delivery system.
3. Education patients ensures continuity of care and reduces complication related to the illness.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VIII

MAJOR – 18

COURSE TITLE: DIET COUNSELLING AND PATIENT EDUCATION

COURSE CODE: BNUTMAJ18C

CREDIT: 4 (THEORY: 2 + PRACTICAL: 2)

THEORY:

1. Concept of counseling and types of dietary counseling.
2. Criteria of good dietary counselor.
3. Model of dietary counseling.
4. Process of patient education – KAP model.
5. Behavioral – modification of patient through patient education.
6. Education and counseling : behavioral changes.
7. Skill and attributes of the nutrition educator and counsellor.

PROJECT

1. Submission of project (introduction, objective, review, methodology, result/ data, discussion reference, Conclusion)
2. Viva voce.

REFERENCE

1. Nutrition counseling and education skills- Betsy B, Holli and Judith A. Beto.

(MINOR- 1) COURSES

NUTRITION AND HUMAN LIFE CYCLE(2nd SEMESTER)

LEARNING OBJECTIVES:

- To relate foods and nutrients to the biological requirements of humans at different stages of the life cycle .
- 2. To generate resources to summarise and communicate nutritional information compiled from official recommendations and scientific sources .

LEARNING OUTCOME:

- To explain, compare and contrast the nutritional requirements of humans during different stages of the life cycle .
- 5. To reflect upon the consequences of physical, biochemical, physiological, social and psychological factors impacting nutritional intake and status during each stage of the human life cycle

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –II

MINOR – 1

COURSE TITLE: NUTRITION AND HUMAN LIFE CYCLE

COURSE CODE: BNUTMEB12C

CREDIT: 4 (THEORY: 2 + PRACTICAL: 2)

THEORY:

- 1) Concept of Nutrition : Nutrients, Malnutrition, Under nutrition and Balance Diet.
- 2) Minimum Nutritional requirement and RDA : Formulation of RDA and Dietary guideline with reference to man and woman.
- 3) Nutrition during Infancy : Breast feeding, initiation and duration, nutritional and other advantages, complementary food and its management during teething.
- 4) Nutrition during Pregnancy and Lactation.

PRACTICAL :

CREDIT - 2

Anthropometric measurement : Height, weight, circumference of : Chest, upper arm, waist, heap ; BMI, waist to heap ratio.)

Growth chart : Plotting of growth chart.

Laboratory Note Book

Viva Voce.

Reference :

1. Swaminathan M : Essentials of Food and Nutrition, Vol – I & II.
2. The Feeding and care of Infants and young children – S. Ghosh.
3. Introductory Nutrition – Guthrie , A. H.
4. Human Nutrition and Dietetics – S .Davidson and R .Passmore

BASIC DIET : (MINOR- 2)(3rd Semester)**LEARNING OBJECTIVES:**

- To formulate the diet chart .
- To have the basic concept of significance of various nutrients.

LEARNING OUTCOME:

- To recognise the role different foods play in a balanced diet, and the effects on health of an unbalanced diet.
To explore ways to design balanced meals from different food types.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR**NUTRITION OF SEMESTER –III****MINOR – 2****COURSE TITLE: BASIC DIET****COURSE CODE: BNUTMEB23C****CREDIT: 4 (THEORY: 2 + PRACTICAL: 2)****THEORY:**

1. General concept of diet, different types of diet-High energy and low energy diet, High fiber diet, High protein diet , High fat and High carbohydrate diet. Soft diet, fluid diet, liquid diet, SDA., BMR.
2. Energy computation for diet formulation – Basic types. Carbohydrate, protein and fat supply for energy demand- General rules as per ICMR. Variation in Macro nutrients of different age group. Energy supply in Break fast, Lunch, Dinner as per WHO. Balance Sheet Preparation of energy and Macronutrients.
3. Principle of diet formulation of Pre-school and school going children, Puberty of male and female, Adult male and female, Diet for Pregnant and Lactating Mother.
4. Nutrients demands for geriatric persons. Diet of geriatric persons.
5. Nutrient demands for sports man and athletes. Pre-game and Post game meal. Diet of athletes.
- 6) General concept of diet / Energy supply for persons in space craft.

1. Energy calculation on the basis of given data – a) Work style.
 - a) Body parameters and PAL.
 - b) Injury factor.
2. Distribution of Energy from macronutrients as per Standard rule.
3. Formulation of Diet of various age group and physiological conditions. , Menu Planning and Analysis.
4. Laboratory Note Book.
5. Viva Voce

Reading References:

1. Clinical Dietetics and Nutrition-F.P. Anita, P. Abraham.
2. Nutrition and Diet Therapy S .R. Williams.
2. Text Book of Food, Nutrition and Dietetics – Rehana Begum.
3. Nutrition and Dietetics – S.A .Joshi.

NUTRITIONAL PHYSIOLOGY : (MINOR –3)(5th Semester)

LEARNING OBJECTIVES:

- To have an knowledge and understanding of energy balance & metabolic rate, and regulation of nutrient intake.
LEARNING OUTCOME: To understand physiological adaptation at various stages of life including in early life, older age and in response to exercise.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –V

MINOR – 3

COURSE TITLE: NUTRITIONAL PHYSIOLOGY

COURSE CODE: BNUTMEB35C

CREDIT: 4 (THEORY: 2 + PRACTICAL: 2)

THEORY:

1. Cell and Tissue : General idea of cell and tissue.
2. Digestive system :

- i) Basic concept of GI tract and glands.
- ii) Digestion and Absorption of carbohydrate, fat, protein.

3. Basic concept of some Physiological System :

General idea of –i)Cardiovascular System,

ii)Respiratory System

iii)Excretory System

iv) Reproductive System

v)Nervous System

vii) Muscular Skeletal System

Vii)Endocrine System.

PRACTICAL :

CREDIT - 2

Blood analysis : Haemoglobin level.

Estimation of blood pressure by Sphygmomanometer.

Detection of blood group (slide method).

Identifications of histology slides.

Laboratory Note Book.

Viva Voce.

References:

- 3. Text Book of Physiology Volume I & IC.C.Chatterje
- 4. Text Book of Medical Physiology – A.C.Guyton.

FOOD COMMODITIES, COMMUNITY NUTRITION AND PROGRAMS

(MINOR – 4)(7th Semester)

LEARNING OBJECTIVES:

- to educate individuals and groups so that they adopt healthy eating habits
- Get basic knowledge on various foods and about adulteration.
- .Understand the adulteration of common foods and their adverse impact on health .

LEARNING OUTCOME:

- To comprehend the importance and determinants of nourishment decision practices .
- To apply methodologies used to assist individuals with adjusting their practices to improve dietary wellbeing .
- To comprehend certain skills of detecting adulteration of common foods.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –VII

MINOR – 4

COURSE TITLE: FOOD COMMODITIES, COMMUNITI NUTRITION AND PROGRAMME

COURSE CODE: BNUTMEB47C

CREDIT: 4 (THEORY: 2 + PRACTICAL: 2)

THEORY:

1. Basic food groups : Types ,importance
2. Food Exchange list : Types, application, importance
3. Types ,uses, nutritional aspects and storage of cereals, pulses and legumes, milk and milk products,egg fish and poultry, fruits and vegetables, salt , sugar, fats and oils, spices.
4. Food adulterants : Common adulterants in food and their effects on health. Laws Governing foodstandards. Significance- PFA, FPO, BIS, Agmark.
5. Concept of community Nutrition , Nutritional Problems in Community and Nutritional InterventionPrograms.

DETECTION OF FOOD ADULTERANTS (PRACTICAL)

CREDIT - 2

House hold methods to detect adulterants in food.

- a) Detection of Vanaspati in Ghee/Butter.
- b) Detection of Khesari flour in Besan.
- c) Detection of Metanil yellow in Turmaric / Coloured Sweet products.
- d) Detection of Saccharine in Sugar.
- e) Detection of Starch in Milk.
- f) Laboratory Notebook.
- g) Viva Voce.

References:

Community Health – J. Clark & J. Henderson
A Guide to Nutritional Status Assessment – Beghin I, M. Cap B. Dujadan
Nutritional Surveillance WHO – J. B. Mason, J. P. Hbichat, H. tabatabai, U. Valverde
Nutritional Monitoring and Assessment – T. Gopaldas, S. Seshalri

SKILL ENHANCEMENT COURSE (SEC)(Semester I/II/III)

FOOD PRESERVATION AND FOOD PROCESSING

LEARNING OBJECTIVES:

- Boosts the shelf life of foodstuff .
- Prevention of food contamination and Rancidity.
- To know modern techniques of food storage and transportation .
- To know to turn raw food materials into attractive , marketable products keeping the nutritional value unaltered.

• **LEARNING OUTCOME :**

- To explain major food preservation techniques and applying practically the underlying principles.
- To determine suitable methods of processing techniques of chosen foodstuff.
- To understand the purpose and principle of food packaging
To acquire knowledge in legal , environmental and quality aspects
Associated to confectionary industry.

NUTRITION UG SYLLABUS FOR NEP 2020 SYLLABUS FOR

NUTRITION OF SEMESTER –I/II/III

SEC

COURSE TITLE: FOOD PRESERVATION AND FOOD PROCESSING

COURSE CODE: BNUTSECO1/02/03C

CREDIT: 3 (THEORY: 2 + PRACTICAL: 1)

THEORY:

1. Basic concepts of food processing and food preservation
2. Food hygiene and sanitation
3. Concentrated and dehydrated milk products.
4. Bakery and confectionery products.
5. Introductions of Business laws and ethics.
6. Principles of fruits and vegetables technology.
7. Physical and chemical technique of food preservation.
8. Fermentation of food and its Nutritional importance . Food additives.
9. Containers used for storage- glass, tin, polythene, vacuum, modified atmospheric packaging ,advantage and disadvantage. Package process.
10. Definition of spoilage, types of spoilage, factors affecting growth of microorganisms.

PRACTICAL

1. Food Processing, (milk products, bakery, jam jelly, idli , dosa , pickles)
2. Preservation technique, (physical and chemical processing)

Reference :

1. Food processing and Preservation – G. Subbulakshmi , Shobha A Udipi Padmini and Ghugre

OR

1st Semester - SEC

DIET COUNSELLING AND PATIENT EDUCATION

LEARNING OBJECTIVES.

- To increase knowledge and clarify misconceptions about diet condition.
- Implement new behaviors to adapt to diet conditions and physical limitations.
- Learn strategies to cope up with psychosocial responses to disease and disability.
- Over come barriers to complain by articulating.

LEARNING OUTCOME :

- Patient education promotes patient – centered care and increases adherence To dietary treatments.
- An increase in compliance leads to a more efficient and cost – effective health Care delivery system.
- Educating patients ensures continuity of care and reduces complications Related to the illness.

B. DIET COUNSELLING AND PATIENT EDUCATION

CREDIT – 3

1. Concept of counseling and types of Dietary Counseling.
2. Criteria of good Dietary Counselor.
3. Model of Dietary Counseling.
4. Process of Patient education – KAP Model.
5. Behavioral – Modification of Patient through Patient education.

Reference :

1. Nutrition Counseling and education Skill – Betsy B. Holli and Judith A. Beto.
-