Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University

Department of Biochemistry & Nutrition

Template for B.Sc. BIOCHEMISTRY, NUTRITION & DIETETICS, CHEMISTRY (BCNDC)

Under Choice Based Credit System (CBCS)

(Batch 2022-23 to 2024-25)

FIRST YEAR – SEMESTER-I				
Course Code	**Course title**	**Course Type**	**HPW**	**CREDITS**
	Environmental Science/Computer Skills	AECC-1	2	2
	English	CC-1A	4	4
	Second Language	CC-2A	4	4
	Optional 1	DSC-1A	4T+3P=7	4+1=5
ND136	**Introduction to Foods & Nutrition**	**DSC-2A**	**4T+3P=7**	**4+1=5**
	Optional 3	DSC-3A	4T+3P=7	4+1=5
	TOTAL		**31**	**25**
SEMESTER-II				
	Environmental Science/Computer Skills	AECC-2	2	2
	English	CC-1B	4	4
	Second Language	CC-2B	4	4
	Optional 1	DSC-1B	4T+3P=7	4+1=5
ND236	**Nutritional Biochemistry And Human Physiology**	**DSC-2B**	**4T+3P=7**	**4+1=5**
	Optional 3	DSC-3B	4T+3P=7	4+1=5
	TOTAL		**31**	**25**
SECOND YEAR –SEMESTER-III				
	English	CC-1C	3	3
	Second Language	CC-2C	3	3
	Optional 1	DSC-1C	4T+3P=7	4+1=5
ND336	**Normal and Therapeutic Nutrition**	**DSC-2C**	**4T+3P=7**	**4+1=5**
	Optional 3	DSC-3C	4T+3P=7	4+1=5
	Communication Skills	SEC-1	2	2
SE336	**Nutraceuticals, Functional & Novel foods**	**SEC-2**	**2**	**2**
	TOTAL		**31**	**25**

A Lai Lady 28/4/23

Head, Dept. of Biochemistry & Nutrition
Bhavan's Vivekananda College,
Sainikpuri, Secunderabad - 500 094.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

SEMESTER-IV				
	English	CC-1D	3	3
	Second Language	CC-2D	3	3
	Optional 1	DSC-1D	4T+3P=7	4+1=5
ND436	**Diet in Disease**	**DSC-2D**	**4T+3P=7**	**4+1=5**
	Optional 3	DSC-3D	4T+3P=7	4+1=5
	Universal Human Value	SEC-1	2	2
SE436	**Strategies for weight management**	**SEC-4**	**2**	**2**
	TOTAL		**31**	**25**
THIRD YEAR –SEMESTER-V				
	English	CC-1E	3	3
	Second Language	CC-2E	3	3
	Optional 1	DSE-1E	4T+3P=7	4+1=5
ND536/ ND536A	**Clinical Dietetics/ Diet Therapy**	**DSE-2E**	**4T+3P=7**	**4+1=5**
	Optional 3	DSE-3E	4T+3P=7	4+1=5
GE536	**Nutrition and Health**	**GE**	**4T**	**4**
	TOTAL		**31**	**25**
SEMESTER-VI				
	English	CC-1F	3	3
	Second Language	CC-2F	3	3
	Optional 1	DSE-1F	4T+3P=7	4+1=5
ND636/ ND636A	**Public Health Nutrition/ Community Nutrition**	**DSE-2F**	**4T+3P=7**	**4+1=5**
	Optional 3	DSE-3F	4T+3P=7	4+1=5
ND636_O ND636_PW	**Optional Paper Theory – Food Sanitation and Hygiene / Project work**		**4**	**4**
	TOTAL		**31**	**25**
	TOTAL CREDITS			**150**

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University

Department of Biochemistry & Nutrition

PROGRAM NAME: B.Sc. (MICROBIOLOGY, NUTRITION & DIETETICS, CHEMISTRY- MBNDC)
(w.e.f 2022-23)

COURSE NAME: INTRODUCTION TO FOODS & NUTRITION

PAPER CODE: ND136 **PPW: 4**
YEAR/SEMESTER: I/I **NO. OF CREDITS: 4**

COURSE OBJECTIVE: To familiarize the students with various food groups and their nutritive value and to learn about food preservation and adulteration.

UNIT-WISE COURSE OBJECTIVES:

CObj1 To describe the balanced diet and different food groups with their nutritive values.
CObj2 To explain the composition and nutritive value of pulses, cereals, legumes and fats.
CObj3 To discuss the nutritive value of vegetables and fruits and methods of food preservation.
CObj4 To explain the nutritive value of animal foods and food adulteration.

UNIT I: INTRODUCTION TO FOOD GROUPS, CEREALS & MILLETS & PURE CARBOHYDRATES **15 hours**

1. Definition- Food, nutrition, nutrients; food groups based on functions, origin and nutritive value. Food guide pyramid, balanced diet.
2. Cereals and Millets - Composition, nutritive value and nutrient losses during processing; breakfast cereals
3. Sugars - Types of sugars and stages of sugar cookery
4. Jaggery - Manufacture and stages of jaggery cookery

UNIT II: PULSES & LEGUMES, NUTS & OIL SEEDS AND FATS & OILS 15 hours

1. Pulses & Legumes - Composition, nutritive value, nutrient losses during processing, importance of germination and malting; anti nutritional factors
2. Nuts & Oilseeds – Nutritive value, toxins and role in cookery
3. Fats & Oils – Composition, nutritive value, properties- physical and chemical, functions of oils and fat in foods
4. Rancidity of Oils- Types and prevention

A. Lai Das 28/5/22

Head, Dept. of Bio-Chemistry
Bhavan's Vivekananda College
Sainikpuri, Secunderabad-500 094

PRINCIPAL
NIZAM COLLEGE, O.U.
HYDERABAD-500 001.

UNIT III: VEGETABLES, FRUITS & FOOD PRESERVATION **15 hours**

1. Vegetables - Classification, composition and nutritive value, changes during cooking, loss of nutrients during cooking, storage, factors affecting storage.
2. Fruits - Classification, composition, nutritive value, storage and ripening.
3. Enzymatic browning and its prevention.
4. Food preservation – principles, traditional methods- curing, freezing, canning, boiling, pickling; modern techniques- pasteurization, freeze drying, vaccum packing, irradiation, pascalization. Bio preservatives and chemical preservatives.

UNIT IV:ANIMAL FOODS AND FOOD ADULTERATION **15 hours**

1. Milk- Composition, nutritive value, fermented and non-fermented milk products
2. Egg - Composition, nutritive value and quality; poultry- Classification, composition and nutritive value
3. Meat -Nutritive Value and changes during cooking; fish - classification, composition and nutritive value
4. Food Adulteration- intentional and incidental

REFERENCES:

1. Srilakshmi B- Food Science, 5th Edition, New Age International Publishers, New Delhi – 110002, 2011.
2. ShakuntalaManay N - Food Facts and Principles, New Age International Publishers, New Delhi – 110002, 2005.
3. Norman Potter N -Food Science, CBS Publishers and Distributors, Newϖ Delhi – 110002, 2007.

COURSE OUTCOMES:

At the end of the course students will be able to:

ND136.CO1 Elaborate various food groups and importance of balanced diet.
ND136.CO2 Formulate the diet based on composition and nutritive value of pulses, legumes and fats.
ND136.CO3 Select types of vegetables and fruits for healthy diet and apply the methods of food preservation in food industry.
ND136.CO4 Compare the nutritive values of milk, egg and meat and discuss about food adulterants.

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University

Department of Biochemistry& Nutrition

PROGRAM NAME: B. Sc. (MICROBIOLOGY, NUTRITION & DIETETICS, CHEMISTRY-MBNDC)
(w.e.f 2022-23)

COURSE NAME: INTRODUCTION TO FOODS AND NUTRITION

PAPER CODE: ND136P **PPW: 3**
YEAR/SEMESTER: I/I **NO.OFCREDITS: 1**

COURSE OBJECTIVE:
COb1 To describe standardization of recipes and nutritive calculations.
COb2 To explain food preservation methods and detection of food adulterants.

I. Standardization, Preparation and Nutritive value calculation of the recipes based on the following food group and combination.
1. Cereal, millet and malting of grains
2. Pulse, germination of grains.
3. Cereal-pulse combination
4. Stages of sugar cookery, preparation with jaggery

II. Methods of Preservation of
5. Fruits- Squashes and jams
6. Vegetables by Pickling

III. 7. Determination of quality of an egg

IV. Detection of Adulterants
8. Water, urea and starch in milk
9. Hydrogenated fat in ghee and butter
10. Identification of food colours and textile colours

REFERENCES:

1. Srilakshmi B- Food Science, 5th Edition, New Age International Publishers, New Delhi – 110002, 2011.
2. LongvahT. ,Ananthan R. , Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, NIN

COURSE OUTCOMES:
At the end of the course students will be able to:

ND136P.CO1 Comparethe nutritive values of various food groups and standardize the recipes.
ND136P.CO2 Implement food preservation methods and identify food adulterants.

28/5/22
Head, Dept. of Bio-Chemistry
Bhavan's Vivekananda College
Sainikpuri, Secunderabad-500 094

PRINCIPAL
NIZAM COLLEGE, O.U.
HYDERABAD-500 001.

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University

Department of Biochemistry & Nutrition

PROGRAM NAME: B. Sc. (MICROBIOLOGY, NUTRITION & DIETETICS, CHEMISTRY-MBNDC)
(w.e.f 2022-23)

COURSE NAME: NUTRITIONAL BIOCHEMISTRY AND HUMAN PHYSIOLOGY

PAPER CODE: ND236 **PPW: 4**
YEAR/SEMESTER: I/II **NO. OF CREDITS: 4**

COURSE OBJECTIVE: To familiarize the students with role of micronutrients and macronutrients in the body and to understand the role of different organ systems.

UNIT-WISE COURSE OBJECTIVES:

COb1 To explain the structural and functional importance of macronutrients.
COb2 To compare the significance, functions and deficiencies of micronutrients.
COb3 To explain the significance of water, its components, enzymes and hormones.
COb4 To discuss the cell structure, immunity, blood and its components, respiratory, nervous system and skin.

UNIT 1: MACRONUTRIENTS — 15 hours

1. Carbohydrates - Composition, classification, sources, functions, deficiency and excess, glycolysis, citric acid cycle, and gluconeogenesis,
2. Lipids - Composition, classification, sources and functions; deficiency and excess of fats, essential fatty acids, beta-oxidation.
3. Amino acids- Classification - Chemical and nutritional; deamination, transamination, decarboxylation and amino acid pool, supplementary value of aminoacids.
4. Proteins- Composition, classification, sources, functions, biological value of proteins, deficiency and excess, basic steps in protein synthesis.

UNIT II: MICRONUTRIENTS — 15 hours

1. Vitamins- Introduction, Classification, fat soluble vitamins A, D, E, K – chemistry, sources, functions, deficiency symptoms, RDA.
2. Water soluble vitamins – (thiamine, riboflavin, niacin, pantothenic acid, pyridoxine, biotin, folic acid, cyanocobalamine, and ascorbic acid) chemistry, sources, functions, deficiency symptoms, RDA.

3. Minerals-Classification, sources, functions and deficiency symptoms of macrominerals (calcium, phosphorus, sodium, potassium and chlorine).
4. Microminerals: Sources, functions and deficiency symptoms (iron, iodine, fluorine, zinc, selenium)

UNIT III: WATER, ELECTROLYTES, ENZYMES AND HORMONES 15 hours

1. Water - Functions, distribution, intake and elimination, water balance
2. Electrolytes - Concentrations in intracellular and extra cellular fluids and osmotic pressure; acid base balance.
3. Enzymes - Definition, classification (IUBMB), properties, mechanism of enzyme action, inhibitors of enzyme action.
4. Hormones- Endocrine glands their secretion and functions, classification of hormones.

UNIT IV: CELL, IMMUNE SYSTEM, BLOOD, RESPIRATORY SYSTEM, NERVOUS SYSTEM AND SKIN 15 hours

1. Cell- Structure & functions, Overview of the Immune system and key features of the immune response.
2. Blood- Composition, coagulation and blood groups.
3. Respiratory system- Parts and functions, mechanism of respiration; oxygen and carbon dioxide transport
4. Nervous system – Classification and functions.
5. Skin: functions and its role in the regulation of body temperature.

REFERENCES:

1. Ferrier, D.R., Lippincott's Illustrated Reviews: Biochemistry, 5th or 6th Edition, Lippincott Williams & Wilkins, Baltimore,
2. Chatterjee C.C., Human Physiology, Vol. I & II, Medical Allied Agency, Calcutta (1987). AVSS Rama Rao - A Text Book of Bio Chemistry, 9th edition, UBS Publishers distribution Pvt.Ltd, 2002.
3. Swaminathan N - A Handbook of Food and Nutrition, 5th edition volume 1, Bangalore printing and publishing Co.Ltd, 1986.
4. Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd 2004.
5. Swaminathan M, Advanced Textbook on Food and Nutrition, Vol. I, Bappco.

COURSE OUTCOMES:

At the end of the course students will be able to:

ND236.CO1 Interpret the significance of relation between macronutrient metabolism and health.
ND236.CO2 Choose various sources of vitamins and minerals in planning healthy diet menu.
ND236.CO3 Compile the importance of water, electrolytes, enzymes and hormones.
ND236.CO4 Relatethe various organ systems and their functions.

28/1/22
Head, Dept. of Bio-Chemistry
Bhavan's Vivekananda College
Sainikpuri, Secunderabad-500 094

PRINCIPAL
NIZAM COLLEGE, O.U.
HYDERABAD-500 001.

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University

Department of Biochemistry & Nutrition

PROGRAM NAME: B.Sc. (MICROBIOLOGY, NUTRITION & DIETETICS, CHEMISTRY-MBNDC)
(w.e.f 2022-23)

COURSE NAME: NUTRITIONAL BIOCHEMISTRY AND HUMAN PHYSIOLOGY

COURSE OBJECTIVE:

COb1 To describe methods of analysis for biomolecules and other nutrients.
COb2 To explain quantitative analysis of clinical parameters in blood.

PAPER CODE: ND236P **PPW: 3**
YEAR/SEMESTER: I/II **NO. OF CREDITS: 1**

1. Qualitative tests of carbohydrates.
2. Qualitative tests of amino acids and proteins.
3. Quantitative analysis of calcium by titrimetry.
4. Quantitative analysis of vitamin C 2,6dichlorophenolindophenol dye method.
5. Determination of rancidity parameter: Acid value.
6. Determination of rancidity parameter: Peroxide value.
7. Estimation of haemoglobin.
8. Estimation of blood glucose.
9. Identification of blood group.

REFERENCES

1.Raghuramulu, Madhavannair, Kalyansundram, A manual of laboratory techniques, NIN. Hyderabad (2003).
2.Sawhney SK, Randhir Singh, Introductory practical biochemistry, Nasora Publishers, New Delhi (2000).

COURSE OUTCOMES:

At the end of the course students will be able to:

ND236P.CO1 Identify and differentiate the biomolecules and nutrients in food samples.
ND236P.CO1 Analyze the changes in clinical parameters in health and disease.

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University
Department of Biochemistry & Nutrition

PROGRAM NAME: BCNDC (BIOCHEMISTRY, NUTRITION & DIETETICS, CHEMISTRY)
(Academic year 2023-24)

COURSE NAME: NORMAL AND THERAPEUTIC NUTRITION (THEORY)

PAPER CODE: ND336 **PPW: 4**
YEAR/SEMESTER: II/III **NO. OF CREDITS: 4**

COURSE OBJECTIVE: To familiarize students with RDA, meal planning and their changes during the life cycle and diseases.

UNIT-WISE COURSE OBJECTIVES:

COb1 To describe about meal planning and nutritional requirements in various physiological states.
COb2 To explain nutritional requirements in different stages of life.
COb3 To explain therapeutic nutrition in diseases.
COb4 To discuss the diet management in various inborn errors of metabolism and food allergies.

UNIT I: MEAL PLANNING **15 hours**

1. RDA- factors affecting RDA, derivation; Principles of meal planning; Steps involved in planning a meal
2. Adulthood – Nutritional Requirements for an Adult Man and Adult Woman
3. Pregnancy – Physiological Changes, Increase in Nutritional Requirement Complications of Pregnancy
4. Lactation – Role of hormones in milk production, Increase in Nutritional Requirement and Lactogogues

UNIT II: NUTRITION THROUGH LIFE CYCLE **15 hours**

1. Infancy – Nutritional Requirement, Importance of Breastfeeding, Artificial Feeding (Comparison of various milks Vs Human Milk), Weaning and Supplementary Food
2. Pre-Schoolers and School Going Child – Nutritional Requirement and School Lunch Programmes, Growth charts
3. Adolescence – Nutritional Requirement, Eating Disorders
4. Geriatrics – Nutritional Requirement, Physiological changes and Dietary Modification

28/4/23

Head, Dept. of Biochemistry & Nutrition
Bhavan's Vivekananda College,
Sainikpuri, Secunderabad - 500 094.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

UNIT III: INTRODUCTION TO THERAPEUTIC NUTRITION 15 hours

1. Introduction to therapeutic nutrition, therapeutic modifications of normal diets in terms of Nutrients, Consistency. MNT and Role of dietician.
2. Fevers-Definition, Causes (Exogenous and Endogenous), Types – Typhoid Causative organism, Symptoms, Principles of the Diet, Dietary Modifications, Foods to Be included and Foods to Be Avoided
3. Tuberculosis - Causative Organism, Symptoms, Principles of the Diet, Dietary Modifications, Foods to be Included and Foods to be avoided
4. AIDS –Symptoms and dietary management.

UNIT IV: DIET IN GENETIC DISORDERS AND FOOD ALLERGY 15 hours

1. Inborn Errors of Metabolism; Phenylketonuria – Definition, symptoms, Dietary Management.
2. Galactosemia - Definition, symptoms, Dietary management
3. Lactose Intolerance- Definition, symptoms, Dietary management
4. Food Allergy and Food Intolerance –Definition, Clinical Signs and Symptoms, difference between food allergy and intolerance, Food and drug interaction.

REFERENCES:

1. Srilakshmi B – Dietetics, 5th edition, New Age International publishers, 2002.
2. Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 2003.
3. Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd, 2004.
4. Swaminathan, M - Essentials of Food and Nutrition, Vol 2, Bangalore Printing and Publishers Co Ltd, Bangalore, 1985.

COURSE OUTCOMES:

At the end of the course students will be able to:

ND336.CO1 Develop a meal plan to meet the requirements of various physiological states.
ND336.CO2 Differentiate the importance of nutritional requirements in different stages of life.
ND336.CO3 Relate the diet modifications to various diseases.
ND336.CO4 Plan suitable diet for inborn errors of metabolism, food allergies, intolerance and food drug interaction.

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University
Department of Biochemistry & Nutrition

PROGRAM NAME: BCNDC (BIOCHEMISTRY, NUTRITION & DIETETICS, CHEMISTRY)
(Academic year 2023-24)

COURSE NAME: NORMAL AND THERAPEUTIC NUTRITION

PAPER CODE: ND336P **PPW: 3**
YEAR/SEMESTER: II/III **NO. OF CREDITS: 1**

COURSE OBJECTIVE:
COb1 To familiarize the students with planning, calculation and preparation of diets for various physiological states.
COb2 To train the students in planning and preparing diets in diseases.

1. Standardization of Weights and Measures.
2. Planning, Calculation and Preparation of Diet for Adulthood- Male and Female.
3. Planning, Calculation and Preparation of Diet for physiological condition Pregnancy.
4. Planning, Calculation and Preparation of Diet for physiological condition Lactation.
5. Planning, Calculation and Preparation of Diet for Infancy -Weaning Mix.
6. Planning, Calculation and Preparation of Diet for Preschoolers.
7. Planning, Calculation and Preparation of Diet for School Going Child- Packed Lunch.
8. Planning, Calculation and Preparation of Diet for Adolescence- Boy and Girl.
9. Planning, Calculation and Preparation of Diet for Geriatrics.
10. Planning, Calculation and Preparation of Diet for Fevers- typhoid, tuberculosis.

REFERENCES:

1. Srilakshmi B – Dietetics, 5th edition, New Age International publishers, 2002.
2. Longvah T., Ananthan R., Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.
3. Indian Dietetic Association, Clinical Dietetics Manual 2nd Edition

COURSE OUTCOMES:

At the end of the course students will be able to:

ND336P.CO1 Prepare diets according to the RDA for different age groups.
ND336P.CO2 Implement the diet plan in preparation of diet in diseases.

A. Lai Jadi 22/4/23

Head, Dept. of Biochemistry & Nutrition
Bhavan's Vivekananda College,
Sainikpuri, Secunderabad - 500 094.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University
Department of Biochemistry & Nutrition

(Academic year 2023-24)

COURSE NAME: NUTRACEUTICALS, FUNCTIONAL & NOVEL FOODS

PAPER CODE: SE336A **PPW: 2**
YEAR/SEMESTER: II/III **NO. OF CREDITS: 2**

COURSE OBJECTIVE: To acquire knowledge about the importance of nutraceuticals, functional and novel foods.

UNIT-WISE COURSE OBJECTIVES:
COb1 To acquire knowledge related to food supplements and other foods.
COb2 To isolate and identify different nutrients from food samples and prepare functional foods.

UNIT I
1. Nutraceuticals – definition, types, classification & significance and role as bioactive compounds and antioxidants.
2. Prebiotics and Probiotics-definition, types, common food sources, fermented and nonfermented probiotics, role of probiotics and prebiotics as nutraceuticals
3. Functional foods - definition, types, common food sources, and their health benefits.
4. Novel foods – introduction, definition and types, novel food protein, leaf protein, chlorella and spirulina.
5. Use of nutraceuticals, functional and novel foods as food supplements.

UNIT II
1. Estimation of bioactive compounds & antioxidants from food samples (saponins, terpenoids, tannins, phenolics).
2. Fractionation of proteins from food samples (milk, soya milk etc.).
3. Isolation of gluten from food sample.
4. Survey on nutraceutical, functional and novel foods in the market.
5. Preparation of functional foods rich in nutrients like proteins, vitamins, minerals, antioxidants, etc.

REFERENCES:

1. Srilakshmi B – Nutrition Science, 7th edition, New Age International publishers, 2002.
2. Robert E.C. Wildman – Handbook of Nutraceuticals and Functional foods., CRC Press, 2001.

COURSE OUTCOMES:

At the end of the course students will be able to:

SE336A.CO1 Implement the knowledge of the nutraceuticals, functional and novel foods in day-to-day diets.
SE336A.CO2 Execute the preparation of functional foods and nutraceuticals in food industries.

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University
Department of Biochemistry & Nutrition

PROGRAM NAME: BCNDC (BIOCHEMISTRY, NUTRITION & DIETETICS, CHEMISTRY)
(Academic year 2023-24)

COURSE NAME: DIET IN DISEASE

PAPER CODE: ND436 **PPW: 4**
YEAR/SEMESTER: II/IV **NO. OF CREDITS: 4**

COURSE OBJECTIVE: To gain knowledge about weight management and plan special diets in diseases.

UNIT-WISE COURSE OBJECTIVES:

COb1 To discuss energy metabolism and diet management in underweight and obesity.
COb2 To explain the dietary modifications in diabetes and cardiovascular diseases.
COb3 To elaborate upon disorders of gastrointestinal diseases and their dietary modifications.
COb4 To acquire knowledge of liver and biliary disorders and dietary management.

UNIT I: ENERGY METABOLISM **15 hours**

1. Energy metabolism- Measurement of energy by direct and indirect calorimetry, determination of energy value of food by bomb calorimeter and Benedict's oxy calorimeter
2. Energy balance, Factors affecting TEE - BMR, Physical Activity, SDA.
3. Underweight- Definition, Causes, Principles of the Diet, Dietary Modifications, Foods to be included and avoided.
4. Obesity - Definition, Causes, Assessment (BMI, Body Weight, Broca's Index), Types (Grade I, II, II, Apple and Pear shape) Complications, metabolic syndrome, Principles of the Diet, Dietary Modifications, Foods to Be Included and avoided

UNIT II: DIET IN DIABETES AND CARDIO VASCULAR DISEASES **15 hours**

1. Diabetes - Definition, Causes, Types, T1DM -Risk factors, Signs, Symptoms, Complications and Dietary Modifications
2. T2DM- risk factors, Signs, Symptoms, Complications and Dietary Modifications.
3. Circulatory system- Parts & functions of heart, heart rate, cardiac cycle, cardiac output; blood pressure.
4. Hypertension- Definition, Causes, Types, Risk factors, Signs, Symptoms, Complications and Dietary Modifications
5. Atherosclerosis and Hyperlipidaemia - Definition, Causes, Risk factors, Signs, Symptoms, Complications and Dietary Modifications

28/9/23

Head, Dept. of Biochemistry & Nutrition
Bhavan's Vivekananda College,
Sainikpuri, Secunderabad - 500 094.

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

UNIT III: DIET IN GASTRO – INTESTINAL DISEASES **15 hours**

1. Digestive system- Parts and functions of GI tract, digestive glands, digestion, absorption and transport of proteins, lipids and carbohydrates.
2. Diarrhoea - Definition, causes, types, symptoms, complications and dietary modifications, foods to be included and avoided
3. Constipation - Definition, causes, types, symptoms, complications and dietary modifications, foods to be included and avoided
4. Peptic Ulcer - Definition, causes, types, symptoms, complications and dietary modifications, foods to be included and avoided
5. Other GI disorders - Celiac disease, inflammatory bowel disease (ulcerative colitis, Crohn's and short gut syndrome)- Definition, Symptoms

UNIT IV: DIET IN LIVER AND BILIARY DISORDERS **15 hours**

1. Hepatitis - Definition, Causes, Types, Symptoms, Complications and Dietary Modifications, foods to be included and avoided.
2. NAFLD (Non-Alcoholic Fatty Liver Disease) - Definition, Causes, Symptoms, Complications and Dietary Modifications, foods to be included and avoided.
3. Cirrhosis - Definition, Causes, Symptoms, Complications and Dietary Modifications, foods to be included and avoided.
4. Gallstones - Definition, Causes, Symptoms, Complications and Dietary Modifications, foods to be included and avoided.
5. Pancreatitis - Definition, Causes, Types, Symptoms, Complications and Dietary Modifications, foods to be included and avoided.

REFERENCES:

1. Srilakshmi B – Dietetics, 5th edition, New Age International publishers, 2002.
2. Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 2003.
3. Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd, 2004.
4. Swaminathan, M - Essentials of Food and Nutrition, Vol 2, Bangalore Printing and Publishers Co Ltd, Bangalore, 1985.

COURSE OUTCOMES:

At the end of the course students will be able to:

ND436.CO1 Interpret and implement the knowledge of energy metabolism in underweight and obesity management.
ND436.CO2 Formulate diets for diabetes and cardiovascular disorders.
ND436.CO3 Apply the knowledge in suggesting dietary modifications for various gastrointestinal disorders.
ND436.CO4 Implement the dietary modifications in liver and biliary disorders.

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University
Department of Biochemistry& Nutrition

PROGRAM NAME: BCNDC (BIOCHEMISTRY, NUTRITION & DIETETICS, CHEMISTRY)
(Academic year 2023-24)

COURSE NAME: DIET IN DISEASE

PAPER CODE: ND436P **PPW: 3**
YEAR/SEMESTER: II/IV **NO. OF CREDITS: 1**

COURSE OBJECTIVE:

COb1 To familiarize students in planning, calculating, and preparing diets for weight abnormalities, diabetes and hypertension.
COb2 To train in planning, calculating and preparing diets for gastrointestinal, liver and biliary disorders.

Planning, Calculation and Preparation of Diets for

1. Underweight
2. Obesity
3. Diabetes- T2DM
4. Hypertension
5. Diarrhoea
6. Constipation
7. Peptic Ulcer
8. Hepatitis
9. Cirrhosis
10. Pancreatitis

REFERENCES:

1. Srilakshmi B – Dietetics, 5th edition, New Age International publishers, 2002.
2. Longvah T., Ananthan R., Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.
3. Indian Dietetic Association, Clinical Dietetics Manual 2nd Edition

COURSE OUTCOMES:

At the end of the course students will be able to:
ND436P.CO1 Identify and implement the intricacies of diet planning for underweight, obesity, diabetes and hypertension.
ND436P.CO2 Implement the knowledge in diet planning for gastrointestinal, liver and biliary disorders.

A. Lai Jade 28/4/23

Prof. Bhanoori Manjula, Ph.D.,
Department of Biochemistry
University College of Science
Osmania University
Hyderabad - 500 007, TS

Head, Dept. of Biochemistry & Nutrition
Bhavan's Vivekananda College,
Sainikpuri, Secunderabad - 500 094.

17

Bharatiya Vidya Bhavan

BHAVAN'S VIVEKANANDA COLLEGE
OF SCIENCE, HUMANITIES & COMMERCE
Sainikpuri, Secunderabad – 500094
(Reaccredited with 'A' grade by NAAC)
Autonomous College - Affiliated to Osmania University
Department of Biochemistry & Nutrition

(Academic year 2023-24)

COURSE NAME: STRATEGIES FOR WEIGHT MANAGEMENT

PAPER CODE: SE436A **PPW: 2**
YEAR/SEMESTER: II/IV **NO. OF CREDITS: 2**

COURSE OBJECTIVE: To discuss the role of nutrition in weight management

UNIT-WISE COURSE OBJECTIVES:

COb1 To explain various strategies in determining and managing weight gain.
COb2 To discuss diets for weight loss.

UNIT I: STRATEGIES FOR WEIGHT MANAGEMENT 15 hours

1. Assessment of weight – anthropometry, body composition, Concept of BMI.
2. Determination of Energy needs and Factors affecting fuel utilization (lifestyle, hormonal and evaluation of physical activity issues)
3. Strategies for weight loss and weight maintenance – Diet therapy and types of physical activity. Role of yoga in weight maintenance.
4. Stress management, Pharmacotherapy, Weight loss surgery

UNIT II: DIETS FOR WEIGHT LOSS 15 hours

1. Translating RDA into Daily food intake, guidelines for planning weight managing diets.
2. VLCD (Very low calorie diet) precautions and complications, General Motor's Weight loss program, commercial meal supplements.
3. Low Carbohydrate Diets: Atkins Diet, Zone diet and South beach Diet - precautions and complications.
4. Ketogenic diet and Intermittent Fasting- precautions and complications.