

NUTRITION AND DIETETICS SYLLABUS FOR B.Sc.

CHOICE BASED CREDIT SYSTEM (CBCS)

To be commenced from the Academic year 2025-26



**KAKATIYA UNIVERSITY
WARANGAL-506009
TELANGANA STATE**



KAKATIYA UNIVERSITY
CREDIT DISTRIBUTION FOR THE COURSE
Annexure-I (Credits)
Proposed CBCS Structure from 2025-2026 for Undergraduate Course

Courses		Papers	Total Credits	Credits for each paper/ Semester					
				B.Sc					
				I	II	III	IV	V	VI
Core Courses (DSC)	Major-1	6	30	5	5	5	5	5	5
	Major-2	6	30	5	5	5	5	5	5
	Minor-1	4	20	5	5	5	5	---	---
MIL/AEC (First language)	English	4	20	5	5	5	5	---	---
Second Language (Telugu, Hindi, Urdu etc.,)		4	20	5	5	5	5	---	---
Multi Disciplinary Course	MDC-1	1	4	---	---	---	---	4	---
SEC 1,2		2	4	---	---	---	---	2	2
SEC 3,4		2	4	---	---	---	---	2	2
Value added course (VAC)	VAC 1,2	2	6	---	---	---	---	3	3
Internships	Internship/Project	1	4	---	---	---	---	---	4
Total Credits in each semester		---	142	25	25	25	25	21	21
Total Credits in UG		---	142						

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CURRICULUM FOR NUTRITION & DIETETICS FOR B.Sc. (UG) 2025-26

Code	Semester	Course Title (Theory and Practical)	HPW	Number of Credits	Total Credits	Max. Marks		
						I.A	End Exam	Total
1 st Year	I Sem	Paper-1: Introduction to Nutrition and Dietetics (Theory)	4	4	5	20	80	100
		Introduction to Nutrition and Dietetics (Practical)	2	1		-	25	25
	II Sem	Paper-II: Nutritional Biochemistry and Human Physiology (Theory)	4	4	5	20	80	100
		Nutritional Biochemistry and Human Physiology (Practical)	2	1		-	25	25
2 nd Year	III Sem	Paper-III: Normal and Therapeutic Nutrition (Theory)	4	4	5	20	80	100
		Normal and Therapeutic Nutrition (Practical)	2	1		-	25	25
	IV Sem	Paper-IV: Diet in Disease (Theory)	4	4	5	20	80	100
		Diet in Disease (Practical)	2	1		-	25	25
3 rd Year	V Sem	Paper-V: Basic Dietetics (Theory)	4	4	5	20	80	100
		Basic Dietetics (Practical)	2	1		-	25	25
		MDC-1: Computational Biology and Bioinformatics	4	4	4	20	80	100
		SEC-1: Diet Therapy	2	2	2	10	40	50
		SEC-2: Community Nutrition	2	2	2	10	40	50
		VAC-1: Data Science for Food and Nutritional Analysis	3	3	3	15	60	75
	VI Sem	Paper-VI: Public Health Nutrition (Theory)	4	4	5	20	80	100
		Public Health Nutrition (Practical)	2	1		-	25	25
		SEC-3: Therapeutic Nutrition and Clinical Dietetics Practice	2	2	2	10	40	50
		SEC-4: Food Product Development and Sensory Evaluation	2	2	2	10	40	50
		VAC-2: AI in Nutrition	3	3	3	15	60	75
		Internship / Project	4	4	4	20	80	100
		TOTAL	58	52	52	230	1070	1300

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Sl.No	Paper	Credits
1	Major - 1	30
2	Major -2	30
3	Minor - 1	20
4	AEC (Ability Enhancement Course) - English	20
5	Second Language	20
6	MDC (Multi-Disciplinary Course) - 1	4
7	SEC (Skill Enhancement Course) – 1,2,3,4	8
8	VAC (Value Added Course) -1,2	6
9	Project	4
	TOTAL	142

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Under Graduate Courses (Under CBCS 2025-26 onwards)
B. Sc. I YEAR - SEMESTER - I

PAPER-I: INTRODUCTION TO NUTRITION & DIETETICS (Theory)

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

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

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

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

UNIT III: VEGETABLES, FRUITS & FOOD PRESERVATION

- 3.1 Vegetables - Classification, composition and nutritive value, changes during cooking, loss of nutrients during cooking, storage, factors affecting storage
- 3.2 Fruits - Classification, composition, nutritive value, storage and ripening
- 3.3 Enzymatic browning and its prevention
- 3.4 Food preservation – principles, methods- dehydration, low temperature, high temperature and preservatives.

UNIT IV: ANIMAL FOODS AND FOOD ADULTERATION

- 4.1 Milk- Composition, nutritive value, fermented and non-fermented milk products
- 4.2 Egg - Composition, nutritive value and quality ; poultry- Classification, composition and nutritive value
- 4.3 Meat -Nutritive Value and changes during cooking; fish - classification, composition and nutritive value
- 4.4 Food Adulteration- intentional and incidental

Books Recommended:

Text Books

- ❖ Srilakshmi B- Food Science, 5th Edition, New Age International Publishers, New Delhi – 110002, 2011.

Reference Books

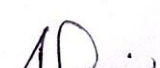
- ❖ Shakuntala Manay N - Food Facts and Principles, New Age International Publishers, New Delhi – 110002, 2005.
- ❖ Norman Potter N -Food Science, CBS Publishers and Distributors, New Delhi – 110002, 2007.


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B. Sc. I YEAR - SEMESTER - I

PAPER-I: INTRODUCTION TO NUTRITION & DIETETICS (Practical)

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 jiggery

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


Books Recommended:

- ❖ Srilakshmi B- Food Science, 5th Edition, New Age International Publishers, New Delhi – 110002, 2011.
- ❖ Longvah T. , Ananthan R. , Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.


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PAPER-II: NUTRITIONAL BIOCHEMISTRY AND HUMAN PHYSIOLOGY (Theory)

UNIT-I: MACRO NUTRIENTS

- 1.1 Carbohydrates - Composition, classification, sources, functions, deficiency and excess, glycolysis, citric acid cycle, glycogenesis, glycogenolysis and gluconeogenesis
- 1.2 Lipids - Composition, classification, sources and functions; deficiency and excess of fats; essential fatty acids, beta-oxidation and synthesis of fatty acids.
- 1.3 Proteins- Composition, classification, sources, functions, deficiency and excess, basic steps in protein synthesis
- 1.4 Amino acids- Classification - chemical and nutritional; deamination, transamination and urea cycle

UNIT II: MICRONUTRIENTS, WATER, ELECTROLYTES AND ENZYMES

- 2.1 Vitamins - Classification, sources, functions and deficiency symptoms of fat soluble and water soluble vitamins
- 2.2 Minerals - Classification, sources, functions and deficiency symptoms of macro and micro minerals
- 2.3 Water - Functions, distribution, intake and elimination, water balance Electrolytes - Concentrations in intracellular and extra cellular fluids and osmotic pressure; acid base balance
- 2.4 Enzymes – Definition, classification (IUBMB), properties, mechanism of enzyme action

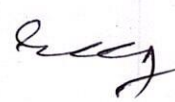
UNIT III: CELL, CIRCULATORY SYSTEM, NERVOUS SYSTEM AND ENDOCRINE SYSTEM

- 3.1 Cell- Structure & functions
- 3.2 Circulatory system- Parts & functions of heart, heart rate, cardiac cycle, cardiac output; blood pressure, Blood- Composition, coagulation and blood groups
- 3.3 Nervous system – Classification and functions
- 3.4 Hormones- Endocrine glands their secretion and functions


UNIT-IV: RESPIRATORY, DIGESTIVE AND EXCRETORY SYSTEM

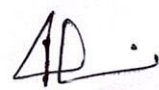
- 4.1 Respiratory system- Parts and functions, mechanism of respiration; oxygen and Carbon- di-oxide transport
- 4.2 Digestive system- Parts and functions of GI tract, digestive glands, digestion, absorption and transport
- 4.3 Excretory system - Urinary system – parts and functions, structure of nephron, formation of urine
- 4.4 Skin: functions and its role in regulation of body temperature


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Books Recommended

Text Books:

- 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.

Reference Books:

- Swaminathan N - A Handbook of Food and Nutrition, 5th edition volume 1, Bangalore printing and publishing Co.Ltd, 1986.
- Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd 2004.
- Swaminathan M, Advanced Textbook on Food and Nutrition, Vol. I, Bappco.


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B. Sc. I YEAR - SEMESTER - II

PAPER-II: NUTRITIONAL BIOCHEMISTRY AND HUMAN PHYSIOLOGY (Practical)

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 2,6 dichloro indophenol dye method
5. Determination of rancidity parameters: acid value, peroxide value
6. Estimation of hemoglobin
7. Estimation of blood glucose
8. Identification of blood group
9. Estimation of urinary glucose
10. Estimation of urinary albumin

Books Recommended

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


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B. Sc. IInd YEAR - SEMESTER - III

PAPER-III: NORMAL AND THERAPEUTIC NUTRITION (Theory)

UNIT-I : MEAL PLANNING

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

UNIT-II : NUTRITION THROUGH LIFE CYCLE

- 2.1 Infancy – Nutritional Requirement, Importance of Breastfeeding, Artificial Feeding (Comparison of various milks Vs Human Milk), Weaning and Supplementary Food
- 2.2 Pre-Schoolers and School Going Child – Nutritional Requirement and School Lunch Programmes
- 2.3 Adolescence – Nutritional Requirement, Eating Disorders
- 2.4 Geriatrics – Nutritional Requirement, Physiological changes and Dietary Modification

UNIT-III: INTRODUCTION TO THERAPEUTIC NUTRITION

- 3.1 Introduction to therapeutic nutrition, dietary supplements and adjuncts to diet therapy, therapeutic modifications of normal diets in terms of Nutrients, Consistency
- 3.2 Special feeding methods- Enteral feeding and Parenteral feeding
- 3.3 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
- 3.4 Tuberculosis - Causative Organism, Symptoms, Principles of the Diet, Dietary Modifications, Foods to be Included and Foods to be avoided


UNIT-IV: DIET IN GENETIC DISORDERS AND FOOD ALLERGY

- 4.1 Inborn Errors of Metabolism; Phenylketonuria – Definition, symptoms, Dietary management
- 4.2 Galactosemia - Definition, symptoms, Dietary management
- 4.3 Lactose Intolerance- Definition, symptoms, Dietary management
- 4.4 Food Allergy–Definition, Classification, Clinical Signs and Symptoms, Food as Allergens.


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- ❖ Antia F.P - Clinical Dietetics and Nutrition, Oxford University Press, New Delhi, 2003.
- ❖ Mahtab S. Bamji, N Prahlad Rao, Vinodini Reddy -Text book of Human Nutrition, 2nd edition, Oxford and IBH publishing Co. Pvt. Ltd, 2004.
- ❖ Swaminathan, M - Essentials of Food and Nutrition, Vol 2, Bangalore Printing and Publishers Co Ltd, Bangalore, 1985.

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B. Sc. IInd YEAR - SEMESTER - III

PAPER-III: NORMAL AND THERAPEUTIC NUTRITION (Practical)


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 conditions
 - Pregnancy
 - Lactation
4. Planning, Calculation and Preparation of Diet for Infancy -Weaning Mix
5. Planning, Calculation and Preparation of Diet for Preschoolers
6. Planning, Calculation and Preparation of Diet for School Going Child- Packed Lunch
7. Planning, Calculation and Preparation of Diet for Adolescence- Boy and Girl
8. Planning, Calculation and Preparation of Diet for Geriatrics
9. Planning, Calculation and Preparation of Diet for clear fluid, full fluid and soft diet
10. Planning, Calculation and Preparation of Diet for Fevers- typhoid, Tuberculosis

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


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B. Sc. IInd YEAR - SEMESTER - IV

PAPER-IV: DIET IN DISEASE (Theory)

UNIT I: ENERGY METABOLISM

- 1.1 Energy metabolism- Measurement of energy by direct and indirect calorimetry, determination of energy value of food by bomb calorimeter and benedicts oxy calorimeter
- 1.2 Energy balance, Factors affecting TEE - BMR, Physical Activity, SDA
- 1.3 Underweight- Definition, Causes, Principles of the Diet, Dietary Modifications, Foods to Be Included and Foods to be Avoided
- 1.4 Obesity - Definition, Causes, Assessment (BMI, Body Weight, Brokas Index), Type (Grade I, II, III, Apple and Pear shape) Complications, Principles of the Diet Dietary Modifications , Foods To Be Included And Foods To Be Avoided

UNIT II: DIET IN DIABETES AND CARDIO VASCULAR DISEASES

- 2.1 Diabetes - Definition, Causes, Types, T2DM- risk factors, Signs, Symptoms, Complications and Dietary Modifications
- 2.2 T1DM- risk factors, Signs, Symptoms, Complications and Dietary Modifications
- 2.3 Hypertension- Definition, Causes, Types, risk factors, Signs, Symptoms, Complications and Dietary Modifications
- 2.4 Atherosclerosis - Definition, Causes, risk factors, Signs, Symptoms, Complications and Dietary Modifications

UNIT III: DIET IN GASTRO – INTESTINAL DISEASES


- 3.1 Diarrhoea - Definition, causes, types, symptoms, complications and dietary Modifications, foods to be included and foods to be avoided
- 3.2 Constipation - Definition, causes, types, symptoms, complications and dietary modifications, foods to be included and foods to be avoided
- 3.3 Peptic Ulcer - Definition, causes, types, symptoms, complications and dietary modifications, foods to be included and foods to be avoided
- 3.4 Celiac disease, tropical sprue, irritable bowel syndrome, inflammatory bowel disease- Definition, Symptoms

UNIT IV: DIET IN LIVER AND PANCREATIC DISEASES

- 4.1 Hepatitis - Definition, Causes, Types, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided
- 4.2 Cirrhosis - Definition, Causes, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided
- 4.3 Gall stones - Definition, Causes, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided
- 4.4 Pancreatitis- Definition, Causes, Types, Symptoms, Complications and Dietary Modifications, Foods to Be Included and Foods to Be Avoided


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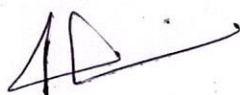
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PAPER-IV: DIET IN DISEASE (Practical)


- I. Planning, Calculation and Preparation of Diets for
 1. Underweight
 2. Obesity
- II. Planning, Calculation and Preparation of Diets for
 3. Diabetes- T2DM
 4. Hypertension
- III. Planning, Calculation and Preparation of Diets for gastro intestinal diseases
 5. Diarrhea
 6. Constipation
 7. Peptic Ulcer
- IV Planning, Calculation and Preparation of Diets for Liver diseases
 8. Hepatitis
 9. Cirrhosis
 10. Gall stones


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- ❖ Longvah T. , Ananthan R. , Bhaskarachary K. and Venkaiah K. Indian Food Composition Table, National Institute of Nutrition, Tarnaka, 2017.
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B. Sc. IIIrd YEAR - SEMESTER - V

PAPER-V: BASIC DIETETICS (Theory)

UNIT-I

- 1.1 Concept in Basic Dietetics, Nutritional Assessment
- 1.2 Nutritional Care Process
- 1.3 Modified hospital diets-Consistency and texture modifications, Nutrient modifications, Food and Nutritional labelling.
- 1.4 Nutrition and Weight Management

UNIT-II

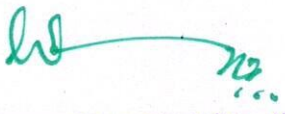
- 2.1 Diets for gastro - intestinal disorders, constipation, diarrhoea, peptic ulcer.
- 2.2 Diet for renal diseases - Nephritis, Nephrotic syndrome and renal failure.
- 2.3 Diet for obesity and cardiovascular disorders. Nutrition support in metabolic disorders.
- 2.4 Diet for Diabetes mellitus.

UNIT-III


- 3.1 Diet & nutrition in kidney diseases.
- 3.2 Nutrition in cancer. Dietary management of cancer patients
- 3.3 Nutrition in Immune system dysfunction, AIDS & Allergy.
- 3.4 Nutrition in burns and surgery.

UNIT-IV

- 4.1 Nutrition - Addictive behaviour in anorexia, nervosa, bulimia & alcoholism.
- 4.2 Feeding the patients - Psychology of feeding the patient, assessment of patient needs.
- 4.3 Feeding infants & children - problems in feeding children in hospitals.
- 4.4 Nutrition & diet clinics - Patients checkup and dietary counseling, educating the patient and followup


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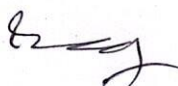

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Books Recommended

- Sri Lakshmi B., Dietetics, New Age International P. Ltd. Publishers
- Antia F.P. Clinical Dietetics and Nutrition, Oxford University Press, Delhi.
- Robinson C.H., Lawler M.R., Chenoweth, W.L. and Garwick A. E., Normal and Therapeutic Nutrition, Mac Millan Publishing Co.
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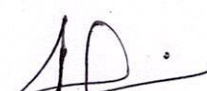
PAPER-V: BASIC DIETETICS (Practical)

1. Standardization of common food preparations.
2. Planning and preparation of Normal diet.
3. Planning and preparation of liquid diet.
4. Planning and preparation of soft diet.
5. Planning and preparation of low calorie reducing diet.
6. Planning and preparation of Bland diet for Peptic Ulcer.
7. Planning and preparation of diets for Infectious Hepatitis and Cirrhosis of liver.
8. Planning and preparation of diet for Diabetes mellitus.
9. Planning and preparation of diets for Atherosclerosis and Hypertension.
10. Planning and preparation of diets for Nephritis and Nephrotic syndrome.


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Multi-Disciplinary Course (MDC-1)

PAPER-VI: COMPUTATIONAL BIOLOGY AND BIOINFORMATICS

UNIT – I: Introduction to Computational Biology and Bioinformatics

- 1.1 Definitions and Scope of Computational Biology and Bioinformatics
- 1.2 Applications in Nutrition and Dietetics
- 1.3 Basic Concepts in Molecular Biology: DNA, RNA, Proteins
- 1.4 Introduction to Central Dogma and Gene Expression

UNIT – II: Biological Databases and Data Retrieval

- 2.1 Types of Biological Databases – Primary, Secondary, Composite
- 2.2 NCBI, EMBL, DDBJ, UniProt – Structure and Use
- 2.3 Sequence Data Retrieval – Using GenBank and FASTA formats
- 2.4 BLAST: Basic Local Alignment Search Tool – Concept and Applications

UNIT – III: Sequence Alignment and Phylogenetics

- 3.1 Pairwise Sequence Alignment – Global and Local
- 3.2 Multiple Sequence Alignment – Introduction and Tools (e.g., CLUSTALW)
- 3.3 Scoring Matrices – PAM and BLOSUM
- 3.4 Basics of Phylogenetic Tree Construction and Applications

UNIT – IV: Applications in Poultry and Biotechnology

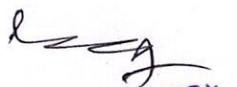
- 4.1 Use of Bioinformatics in Nutritional Disorders
- 4.2 Protein Structure Prediction – Primary to Tertiary
- 4.3 Molecular Docking and Vaccine Design – Introduction
- 4.4 Future Perspectives: AI and Machine Learning in Nutritional Bioinformatics


References


1. Lesk, Arthur M. *Introduction to Bioinformatics*. 5th ed., Oxford University Press, 2019.
2. Mount, David W. *Bioinformatics: Sequence and Genome Analysis*. 2nd ed., Cold Spring Harbor Laboratory Press, 2004.
3. Baxevanis, Andreas D., and B. F. Francis Ouellette. *Bioinformatics: A Practical Guide to the Analysis of Genes and Proteins*. 3rd ed., Wiley-Interscience, 2005.
4. Rastogi, S. C., N. Mendiratta, and P. Rastogi. *Bioinformatics: Methods and Applications – Genomics, Proteomics and Drug Discovery*. 4th ed., PHI Learning Pvt. Ltd., 2015.



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Skill Enhancement Course (SEC-1)

PAPER-VII: DIET THERAPY

UNIT-I

- 1.1 Role of dietitian: The hospital & community. Basic concepts of diet therapy.
- 1.2 Principles of diet therapy & therapeutic nutrition for changing needs. It should cover all age groups.
- 1.3 Adaptation of normal diet for changing needs.
- 1.4 Routine hospital diets - Regular diet, light diet, full liquid and tube feeding.

UNIT-II

- 1.1 Energy modifications and nutritional care for weight management: Assessment, etiology, complications, prevention and treatment of obesity and underweight.
- 1.2 Diet in disease of the endocrine pancreas: Classification, symptoms and diagnosis of diabetes mellitus. DM management through Insulin therapy.
- 1.3 Oral hypoglycaemic agents, glucose monitoring at home, dietary care and nutrition therapy, meal plan (with and without insulin), special diabetic foods and artificial sweeteners.
- 1.4 Dietary management of Hepatitis, cirrhosis, Jaundice, fatty liver, cholecystitis and cholelithiasis, Hepatic coma. Pancreatitis

UNIT-III

- 3.1 Hypertension: classification, aetiology, symptoms and dietary management.
- 3.2 Diseases of the cardiovascular system: Definition of infarct, ischemia, angina pectoris, myocardial infarction, heart attack and stroke.
- 3.3 Atherosclerosis and hyperlipidaemias – classification, symptoms, dietary and lifestyle management.
- 3.4 Prevention of cardiovascular diseases.

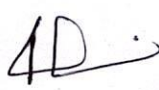
UNIT-IV

- 4.1 Renal Diseases: Etiology, symptoms and dietary management of acute and chronic Glomerulonephritis.
- 4.2 Nephrotic syndrome - dietary management.
- 4.3 Uraemia – dietary Nephrolithiasis - dietary management.
- 4.4 Use of sodium and potassium exchange list. Nephrolithiasis - dietary management. Use of sodium and potassium exchange list.


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- Kumud Khanna, Text book of Nutrition and Dietetics, Phoenix Publishing House P. Ltd. New Delhi.
- Sue Rodwell Williams, Nutrition and Diet Therapy, Times, Mirror/Mosby, College publishing, St. Louis.



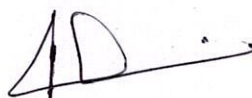
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SEC-2

PAPER-VIII: COMMUNITY NUTRITION

UNIT-I

- 1.1 Definition of Balanced diets, RDA, Factors affecting RDA, ICMR recommendations.
- 1.2 Food pyramid, my food plate.
- 1.3 Food Exchange List (raw), food composition tables.
- 1.4 Principles & objectives of meal planning. Nutrient requirement & meal planning for adults, changes in nutrient requirement according to sex, age & activity.

UNIT-II

- 2.1 Nutrient requirement & RDA for Expectant mother-physiological changes, dietary modification & complications.
- 2.2 Nutritional requirement for Lactation-general dietary guidelines & role of special foods.
- 2.3 Nutritional requirement for pregnancy women.
- 2.4 Nutritional requirement for Infancy-growth & development, breast feeding v/s artificial feeding, factors to be considered while preparing & introducing supplementary foods.

UNIT-III

- 3.1 Nutritional requirement for preschoolers-problems in feeding, factors affecting nutritional status.
- 3.2 Nutritional requirement for School going child-importance of breakfast, packed lunch & mid-daymeal programs-ICDS, SNP.
- 3.3 Nutritional requirement for Adolescence-eating disorder, anemia, anemia prophylaxis program.
- 3.4 Geriatrics-RDA & nutritional requirement during old age, physiological changes & dietary modification.

UNIT-IV

- 4.1 Assessment and management of moderate and severe malnutrition among children, Micronutrient malnutrition among preschool children.
- 4.2 Child health and morbidity, neonatal, infant and child mortality, link between mortality and malnutrition.
- 4.3 Maternal health and nutritional status, maternal mortality and issues relating to maternal health
- 4.4 Overview of maternal and child nutrition policies and programmes.


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Value Added Course (VAC-1)

PAPER-IX: DATA SCIENCE FOR FOOD AND NUTRITIONAL ANALYSIS

UNIT – I: Introduction to Data Science and Nutritional Data

- 1.1 Basics of Data Science – Concepts and Importance
- 1.2 Types of Data in Nutrition – Dietary, Anthropometric, Biochemical
- 1.3 Role of Data in Food and Nutritional Surveillance
- 1.4 Examples of Nutrition-Based Datasets (ICMR, NFHS, WHO)

UNIT – II: Data Collection and Management

- 2.1 Methods of Dietary Data Collection – Recall, Record, FFQ
- 2.2 Introduction to Microsoft Excel and Google Sheets
- 2.3 Data Entry and Basic Cleaning
- 2.4 Organizing and Storing Nutritional Data Safely

UNIT – III: Data Analysis and Interpretation

- 3.1 Basics of Descriptive Statistics – Mean, Median, Mode
- 3.2 Use of Excel for Calculating Nutrient Intake
- 3.3 Charts and Graphs – Pie, Bar, Line (Using Excel)
- 3.4 Interpretation of Nutrition Data – Identifying Trends and Deficiencies

UNIT – IV: Applications In Food Science and Nutrition

- 4.1 Food Composition Analysis using Digital Tools
- 4.2 Evaluating Diet Quality using Data
- 4.3 Introduction to RDA, EAR, and TUL – Data-based Comparisons
- 4.4 Introduction to Mobile Apps and Web Tools for Nutrition Tracking (e.g., NutriSurvey, MyFitnessPal)

SUGGESTED REFERENCES

- 1. Gopalan, C., Rama Sastri, B. V., & Balasubramanian, S. C. *Nutritive Value of Indian Foods*. Hyderabad: National Institute of Nutrition, Indian Council of Medical Research, 2017.
- 2. Deborah, J. R. *Understanding Nutrition*. 15th ed., Cengage Learning, 2018.
- 3. Montgomery, Douglas C., and George C. Runger. *Applied Statistics and Probability for Engineers*. 7th ed., Wiley, 2018.
- 4. Field, Andy. *Discovering Statistics Using IBM SPSS Statistics*. 5th ed., SAGE Publications, 2018.
- 5. Hey, Tony, et al. *The Fourth Paradigm: Data-Intensive Scientific Discovery*. Microsoft Research, 2009.



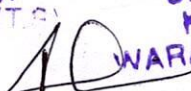
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PAPER-X: PUBLIC HEALTH NUTRITION (Theory)

UNIT-I

- 1.1 Introduction to Public Health Nutrition (PHN)-Definition and Scope, Relation between health and nutrition, productivity and development
- 1.2 Functions and Requirements and effect of deficiency of Macro nutrients-energy, protein, fat and carbohydrate
- 1.3 Functions and Requirements and effect of deficiency of micro nutrients-Vitamin A, B complex, C, D, E and K.
- 1.4 Functions and Requirements and effect of deficiency of minerals-Iron, Calcium, Zinc, Sodium, Potassium, Iodine and Fluoride.

UNIT-II

- 2.1 Introduction to Nutritional Epidemiology
- 2.2 Key components of epidemiology, Demography
- 2.3 Epidemiology and Public Health. Important epidemiological studies.
- 2.4 National and International agencies in community nutrition: FAO, WHO, UNICEF, CARE, ICMR, NIN, CFTRI, ICDS (Integrated Child Development Scheme) and Mid-day Meal Programs.

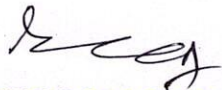
UNIT-III

- 3.1 Present Scenario of malnutrition in India
- 3.2 Causes of malnutrition-Illiteracy, poverty, social factors.
- 3.3 Implications and strategies of malnutrition
- 3.4 Assessment of nutritional status and nutritional surveillance-Anthropometry, biochemical examination, clinical examination and Dietary survey.

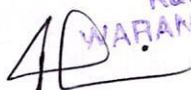
UNIT-IV

- 4.1 Research Methods specific to nutrition, Factors important in study design.
- 4.2 Indirect assessment - Food balance sheets and vital statistics. Nutrition Education-Objectives, Channels of Nutrition education in the community.
- 4.3 Methods of educating the community, Lecture and method demonstrations, Nutrition exhibitions and visual aids.
- 4.4 Fortification and enrichment of foods - Objectives of Fortification, Food fortification programmes in India.


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Books Recommended

- > Sheila CV. Public Health Nutrition in Developing Countries, Published by Wood head publishing India PVT Ltd, New Delhi.
- > Stein, N. Public Health Nutrition: Principles and Practice in community and global health, Jones and Bartlett Learning USA, 2015
- > Text book of Human Nutrition, 4th Edition, Ed. by Mahtab S. Bamji, Kamala Krishnaswamy and G.N.V. Brahmam. Oxford and IBH Publishing Co., P. Ltd. New Delhi.
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- > Gordis Leon. Epidemiology (Fifth edition) , Elsevier Saunders, 2013.
- > Barkar, D.J.P., Practical Epidemiology: Churchill pub, Livingstone, 1991
- > Public Health at the Crossroads –Achievements and Prospects. Robert Beaglehole and Ruth Bonita 2nd Edition Cambridge University Press



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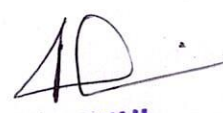
PAPER-X: PUBLIC HEALTH NUTRITION (Practical)

1. Diet and Nutrition Surveys
2. Identifying at risk and vulnerable groups.
3. Assessment of nutritional status: Anthropometry- Height, Weight, BMI
4. Assessing the dietary intakes of Adolescent girls using a diet survey
5. Community diagnosis and identification of areas of nutrition-health education.
6. Visits to observe the working of Nutrition and Health oriented Programmes-a govt. school to observe the mid day meal program
7. Visit to an ICDS (Integrated Child Development Scheme) Project Center
8. Visit to UNICEF to observe Child Nutrition Programs


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SEC-3

PAPER-XI: THERAPEUTIC NUTRITION AND CLINICAL DIETETICS PRACTICE

UNIT – I: Basic Concepts In Therapeutic Nutrition

- 1.1 Introduction to Therapeutic Nutrition and Clinical Dietetics
- 1.2 Role of Dietitian in Health Care Settings
- 1.3 Types of Diets: Regular, Soft, Liquid, Enteral, and Parenteral
- 1.4 Nutrition Care Process (NCP): Assessment, Diagnosis, Intervention, Monitoring

UNIT – II: Nutrition In Fever, Infections And Gastrointestinal Disorders

- 2.1 Dietary Management in Fever: Typhoid, Tuberculosis
- 2.2 Diet in Diarrhea, Constipation, and IBS
- 2.3 Peptic Ulcer and GERD – Nutritional Therapy
- 2.4 Dietary Management in Liver Disorders: Hepatitis, Cirrhosis

UNIT – III: Dietary Management Of Metabolic And Lifestyle Diseases


- 3.1 Diabetes Mellitus – Types and Diet Planning
- 3.2 Hypertension and Cardiovascular Diseases – DASH Diet
- 3.3 Obesity – Causes, Complications, and Dietary Management
- 3.4 Renal Disorders – Low Sodium, Low Protein Diets (Nephritis, Renal Failure)

Unit – IV: Clinical Practice And Diet Planning Skills


- 4.1 Diet History Taking and Anthropometric Assessment
- 4.2 Hospital Diet Planning – Modifications in Nutrient Consistency
- 4.3 Use of Food Exchange Lists and RDAs in Meal Planning
- 4.4 Case Studies: Preparing Diet Charts for Selected Clinical Conditions

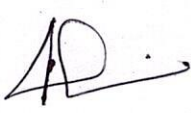
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- 3. Joshi, S. A. *Nutrition and Dietetics*. 5th ed., Tata McGraw-Hill, 2020.
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SEC-4

PAPER-XII: FOOD PRODUCT DEVELOPMENT AND SENSORY EVALUATION

UNIT – I: INTRODUCTION TO FOOD PRODUCT DEVELOPMENT

- 1.1 Need and Importance of Food Product Development
- 1.2 Types of Food Products – Convenience, Functional, Health Foods, Traditional
- 1.3 Trends and Innovation in Food Industry
- 1.4 Steps in New Product Development (NPD) – Idea to Launch

UNIT – II: INGREDIENT SELECTION AND FORMULATION

- 2.1 Criteria for Selecting Ingredients – Nutrition, Cost, Functionality
- 2.2 Standardization and Portion Size Considerations
- 2.3 Shelf-Life and Packaging Concepts in Product Development
- 2.4 Food Labeling: Basic Rules, Nutrition Facts, and Claims

UNIT – III: PRINCIPLES OF SENSORY EVALUATION


- 3.1 Definition, Importance, and Applications of Sensory Evaluation
- 3.2 Types of Sensory Tests – Ranking, Hedonic, Triangle, Paired Comparison
- 3.3 Sensory Attributes – Appearance, Flavor, Texture, Mouthfeel, Aroma
- 3.4 Setting up a Sensory Evaluation Lab – Environment, Sample Preparation

UNIT – IV: PRODUCT TESTING AND CONSUMER ACCEPTANCE

- 4.1 Conducting Sensory Trials and Recording Responses
- 4.2 Interpreting Sensory Data – Scoring Sheets and Analysis
- 4.3 Consumer Preference Studies and Product Acceptance
- 4.4 Report Preparation, Presentation, and Product Documentation


Suggested References

1. Fuller, Gordon W. *New Food Product Development: From Concept to Marketplace*. 3rd ed., CRC Press, 2011.
2. Manay, S. N., and Shadaksharaswamy, M. *Foods: Facts and Principles*. New Age International, 2004.
3. Lawless, Harry T., and Hildegarde Heymann. *Sensory Evaluation of Food: Principles and Practices*. 2nd ed., Springer, 2010.
4. Iyer, Padmini. *Food Science and Quality Control*. CBS Publishers, 2020.
5. Meilgaard, Morten, Gail Vance Civille, and B. Thomas Carr. *Sensory Evaluation Techniques*. 5th ed., CRC Press, 2015.


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NUTRITION & DIETETICS FOR B.Sc
KAKATIYA UNIVERSITY – WARANGAL - TELANGANA
Under Graduate Courses (Under CBCS 2025-26 onwards)
B. Sc. IIIrd YEAR - SEMESTER – VI
VAC-2

PAPER-XIII: AI IN NUTRITION

UNIT – I: INTRODUCTION TO AI AND NUTRITION

- 1.1 What is Artificial Intelligence? Basic Concepts and History
- 1.2 Applications of AI in Healthcare and Nutrition
- 1.3 Benefits and Limitations of AI in Dietetics
- 1.4 Ethical Considerations in AI-based Nutrition Advice

UNIT – II: AI IN DIET PLANNING AND MONITORING

- 2.1 Personalized Nutrition – AI-based Recommendations
- 2.2 AI Apps and Tools – MyFitnessPal, HealthifyMe, Cronometer
- 2.3 Use of AI in Meal Planning, Calorie Tracking, and Nutrient Analysis
- 2.4 Image-Based Food Recognition and Portion Estimation

UNIT – III: DATA-DRIVEN NUTRITION AND HEALTHCARE

- 3.1 Role of Big Data in Nutrition and Public Health
- 3.2 Predictive Models for Disease Risk (e.g., Obesity, Diabetes)
- 3.3 AI in Clinical Nutrition – Supporting Dietitians and Doctors
- 3.4 AI in Food Allergy and Intolerance Detection


UNIT – IV: FUTURE TRENDS AND CASE STUDIES

- 4.1 AI in Nutrigenomics and Precision Nutrition
- 4.2 Chatbots and Virtual Dietitians – How They Work
- 4.3 AI in Food Safety and Labeling
- 4.4 Case Studies: Use of AI in Community Health and Wellness Programs

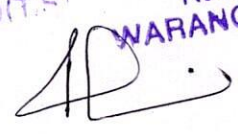
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1. He, Jiang, et al. *Artificial Intelligence in Healthcare*. Academic Press, 2020.
2. Madakam, Somayya, et al. *Artificial Intelligence for Sustainable Development: Applications and Use Cases*. CRC Press, 2023.
3. Ghosh, Abhijit. *Artificial Intelligence in Nutrition and Dietetics*. AI Books India, 2021.
4. Gopalan, C., et al. *Nutritive Value of Indian Foods*. National Institute of Nutrition, ICMR, 2017.
5. Topol, Eric. *Deep Medicine: How Artificial Intelligence Can Make Healthcare Human Again*. Basic Books, 2019.


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Annexure – I (Credits)
Proposed CBCS Structure from 2025-26 for Under Graduate Courses

Courses		Papers	Total Credits	Credits for each paper / Semester						Credits for each paper / Semester						Credits for each paper / Semester					
				BA						B.Com.						B.Sc.					
				I	II	III	IV	V	VI	I	II	III	IV	V	VI	I	II	III	IV	V	VI
Core Courses DSC	Major-1	6	30	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Major -2	6	30	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
	Minor-1	4	20	5	5	5	5	-	-	5	5	5	5	-	-	5	5	5	5	-	-
MIL/AEC (First Language)	English	4	20	5	5	5	5	-	-	5	5	5	5	-	-	5	5	5	5	-	-
Second Language (Telugu, Hindi, Urdu, etc.)		4	20	5	5	5	5	-	-	5	5	5	5	-	-	5	5	5	5	-	-
Multi- Disciplinary Course	MDC 1	1	4	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	4	-
Sec 1, 2		2	4					2	2					2	2					2	2
Sec 3, 4		2	4					2	2					2	2					2	2
Value added course (VAC)	VAC 1, 2	2	6	-	-	-	-	3	3	-	-	-	-	3	3	-	-	-	-	3	3
Internships	Internship / Project	1	4	-	-	-	-	-	4	-	-	-	-	-	4	-	-	-	-	-	4
Total Credits in each semester			142	25	25	25	25	21	21	25	25	25	25	21	21	25	25	25	25	21	21
Total Credits in UG				142						142						142					
Credits under Non-CGPA (Community engagement and service)		NSS /NCC /sports / Extra curricular	6	Upto 6 (2 in each year)						Upto 6 (2 in each year)						Upto 6 (2 in each year)					
		IKS	4	Upto 4 (2 in each, after I & II years)						Upto 4 (2 in each, after I & II years)						Upto 4 (2 in each, after I & II years)					

