

**MRSPTU POST GRADUATE DIPLOMA IN NUTRITION AND DIETETICS
SYLLABUS 2022 BATCH ONWARDS**

Total Credits= 14

Semester I		Contact Hours			Max Marks		Total Marks	Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.		
GNADS1-101	Nutritional Biochemistry	4	0	0	40	60	100	4
GNADS1-102	Dietetics & Diet Counseling	4	0	0	40	60	100	4
GNADS1-103	Human Physiology	4	0	0	40	60	100	4
GNADS1-104	Basic Nutrition and Physiology Lab	0	0	4	60	40	100	2
Total		-	-	-	180	220	400	14

Total Credits= 24

Semester II		Contact Hours			Max Marks		Total Marks	Credits
Subject Code	Subject Name	L	T	P	Int.	Ext.		
GNADS1-201	Clinical & Community Nutrition	4	0	0	40	60	100	4
GNADS1-202	Food Production Costing & Hospital Management	4	0	0	40	60	100	4
GNADS1-203	Practical-II	0	0	4	60	40	100	2
GNADS1-204	Research Project	0	0	2	60	40	100	2
GNADS1-205	Training	0	0	24	60	40	100	12
Total		-	-	-	260	240	500	24

Overall Marks / Credits

Semester	Marks	Credits
1 st	400	14
2 nd	500	24
Total	900	38

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NUTRITIONAL BIOCHEMISTRY		
Subject Code: GNADS1-101	L T P C	Duration: 60 (Hrs.)
	4 0 0 4	
<p>Course Objectives</p> <ol style="list-style-type: none"> 1. To creating the awareness about different macro molecules and their nutritional aspects. 2. To imparting knowledge about various disease caused by deficiency of macro molecules. 3. To familiarize the students about different types of enzymes and their respective role in different food. 4. To memorizing the numerous nucleic acids, their structure & functions <p>Course Outcomes</p> <ol style="list-style-type: none"> 1. Imparting knowledge about various disease caused by deficiency of macro molecules. 2. Familiarizing the students about different types of enzymes and their respective role in different food. 3. Understanding of nucleic acids, their structure & functions 4. Creating awareness about different macro molecules and their nutritional aspects. 		
UNIT-I (15 Hours)		
<p>Carbohydrates: Definition., classification, physical and chemical properties, sources, biological role, metabolism, deficiency diseases, inborn errors of carbohydrate metabolism. Nutritional aspects of carbohydrate.</p> <p>Proteins: Definition, classification, physical and chemical properties, sources, biological role, biological value of protein., protein metabolism, protein deficiency diseases, and inborn errors of protein metabolism.</p>		
UNIT-II (15 Hours)		
<p>Lipids: Definition, classification, physical and chemical properties, sources, biological role, metabolism, and inborn errors of lipid metabolism. Nutritional aspects of lipids.</p> <p>Vitamins: Definition, classification, characteristics, absorption & role of vitamins in metabolism, deficiency diseases.</p>		
UNIT-III (15 Hours)		
<p>Minerals: Definition., types, absorption & role of minerals, minerals deficiency diseases.</p> <p>Enzymes: Definition, classification, mechanism of enzyme action., enzyme specificity, enzyme activity, factors affecting enzyme activity, uses of enzymes, enzymes in clinical diagnosis.</p>		
UNIT-IV (15 Hours)		
<p>Nucleic acids: DNA & RNA, structure & function. metabolism. genetic disorders. e.g., cancer, autoimmune diseases, Role of hormones, interrelation between nutrients.</p>		
<p>Recommended Text Books / Reference Books:</p> <ol style="list-style-type: none"> 1. Yadav S. 'Food Chemistry' New Delhi, Anmol Publications Pvt. Ltd. 2. Meyer 'Food Chemistry' New Delhi, C. B. S. Publications & distributors 3. Lubert Stryer 'Biochemistry' 4. Lehninger A. L. (1990) 'Principles of Biochemistry' New Delhi - CBS Publisher and Distributor. 		

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5. Potter N. N. (1987), 'Food Science, New Delhi, CBS Publication and Distributor
6. Sukumar De. (1997), 'Outlines of Dairy Technology' New Delhi, Oxford University Press.
7. Syed et al (1997), 'Experimental Methods in Food Engineering', New Delhi, CBS
8. Yadav S. 'Food Chemistry' New Delhi, Anmol Publications Pvt. Ltd.
9. Meyer 'Food Chemistry' New Delhi, C. B. S. Publications & distributors
10. Lubert Stryer 'Biochemistry'
11. Lehninger A. L. (1990) 'Principles of Biochemistry' New Delhi - CBS Publisher and Distributor.
12. Potter N. N. (1987), 'Food Science, New Delhi, CBS Publication and Distributor
13. Sukumar De. (1997), 'Outlines of Dairy Technology' New Delhi, Oxford University Press.
14. Syed et al (1997), 'Experimental Methods in Food Engineering', New Delhi, CBS

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DIETETICS AND DIET COUNSELLING		
Subject Code: GNADS1-102	L T P C	Duration: 60 (Hrs.)
	4 0 0 4	
<p>Course Objectives</p> <ol style="list-style-type: none"> 1. To understand the concept of therapeutic diets. 2. To impart the knowledge regarding dietary requirements in diseased conditions. 3. To familiarize the students with clinical issues associated with vital organs of the body. 4. To analyse the psychology of the patient and providing counselling. <p>Course Outcomes</p> <ol style="list-style-type: none"> 1. Understanding the concept of therapeutic diets. 2. Imparting the knowledge regarding dietary requirements in diseased conditions. 3. Familiarizing with clinical issues associated with vital organs of the body. 4. Analysing the psychology of the patient and providing counselling. 		
UNIT-I (15 Hours)		
<p>Introduction to therapeutic diets: Basic concepts, principles, factors considered, classification, special feeding methods, pre and post-operative diet. Role of dietitian, the Hospital and Community. Routine Hospital diets: Regular diet, light diet, soft diet, full liquid diet, clear liquid diet and tube feedings. Therapeutic adaptation of normal diet.</p>		
UNIT-II (15 Hours)		
<p>Feeding infants and children Problems in feeding in the Hospital. Feeding the patient, Psychology of feeding the patient, assessment of patients needs. Nutrition and diet clinics. Patients check-up and counselling, education of the patient and follow-up. Diet in fevers, typhoid fever, influences and tuberculosis, Rheumatic fever & Counselling.</p>		
UNIT-III (15 Hours)		
<p>Disease of Gastro Intestinal tract, Constipation dysentery diarrhoea, colitis. Diet in Cancer & Counselling: Risk factors, general reaction, nutritional problems, nutritional requirements, Role of food in prevention of Cancer. Diet in Liver Diseases. & Counselling Cirrhosis, hepatitis, hepatic coma, diseases of gall bladder, pancreatitis, Diet in Cardiovascular diseases& Counselling Atherosclerosis, coronary heart disease, lipidaemia, hypertension, congestive heart failure, myocardial infarction</p>		
UNIT-IV (15 Hours)		
<p>Diet in kidney diseases& Counselling, Nephritis, Acute chronic and renal failure, renal calculi. Diseases of metabolic disorder. Arthritis, Diabetes mellitus and Gout. Diseases of Nervous system. & Counselling Polyneuropathy, burning feet syndrome, anorexia nervosa and epilepsy. Diseases of Endocrine disorders. & Counseling Hypothyroidism, Hyperthyroidism, hypocalcemia, Anemia.</p>		

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Recommended Text Books / Reference Books:

1. Joshi S. A. 'Nutrition and Dietetics', New Delhi, Tata Mc Graw Hill Publishing Co. Ltd.
2. Robinson 'Nonnal and Therapeutic Nutrition' New Delhi, Tata Mc Graw Hill Publishing Co. Ltd.
3. Crampton E.W. and L. E. Lloyd (1915), 'Fundamentals of Nutrition', San Francisco
4. W. H. Freeman Davidson S.R, Passmore and IF. Brock (1986), 'Human Nutrition and Dietetics' London Churchill, Livingstone
5. Antia F.P (1986), 'Clinical Dietetics and Nutrition', Bombay, 3rd edition, Oxford University Press.
6. Jelliffee B.B. 'Assessment of Community Nutriion Status'

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HUMAN PHYSIOLOGY		
Subject Code: GNADS1-103	L T P C	Duration: 60 (Hrs.)
	4 0 0 4	
<p>Course Objectives</p> <ol style="list-style-type: none"> 1. To Impart knowledge on the cell structure and its various functions. 2. To understand the role of kidney in electrolyte balance and mechanism of urine formation. 3. To create the awareness about physiology of the digestive system. 4. To analyse the functions if endocrine glands and their associated syndromes. <p>Course Outcomes</p> <ol style="list-style-type: none"> 1. Imparting knowledge on the cell structure and its various functions. 2. Understanding the role of kidney in electrolyte balance and mechanism of urine formation. 3. Creating the awareness about physiology of the digestive system. 4. Analysing the functions if endocrine glands and their associated syndromes. 		
UNIT-I (15 Hours)		
<p>Definition of anatomy physiology, general anatomy of human body. Protoplasm Chemical, Physical and physiological properties of protoplasm. Animal Cell: Structure, composition and function of Cell membrane. Structure and functions of Mitochondria, Endoplasmic reticulum, Ribosomes, Gol apparatus and Lysosomes; Structure of Nuclear envelope and its functions; Nucleolus - structure and function Concept of Euchromatin, Heterochromatin; Barr body, Tissues Structure and functions of various types of tissues. Organs and organ systems an integrated approach.</p>		
UNIT-II (15 Hours)		
<p>Digestive System. Brief study of the anatomical organization of the digestive tract and process of dige absorption and assimilation of food. Circulatory System: Heart Structure and working of heart-Blood vessels, lymph vessels and their functions. Lymphatic system Concept of circulation at tissue level. Composition and functions of blood and lymph. Mechanism of blood coagulation- blood grouping and blood transfusion. Defence Mechanisms of the body: Localization of infection; Inflammation, Active and Passive immunity, Introduction to T -lymphocytes and B-Lymphocyte's; Immunization, Failure of immunity, DiGeorge syndrome, Common Variable Immune deficiency syndrome (CVID), Acquired Immune deficiency syndrome (AIDS).</p>		
UNIT-III (15 Hours)		
<p>Respiratory System: Basic anatomy of the respiratory system. Process of respiration-Transport and exchange of oxygen and carbon dioxide in the body. Excretory System: Excretory organs- Structure and functions of Kidneys, Formation of urine composition of urine, Role of Skin and Liver in excretion. Body Fluids, Water and Electrolytic Balance. Nervous system: Physiology of the nerve cell, Parts of the Central Nervous System and functions. Origin and propagation of nerve impulse, Synaptic transmission, neurotransmitters, Parts of Brain and their functions, Spinal cord-structure and function, Importance of Automatic nervous system.</p>		

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UNIT-IV (15 Hours)

Endocrine Glands: Structure and endocrine functions of - Hypothalamus Pituitary gland Thyroid gland, Pancreas (Islets), Adrenal gland, Testis, Ovary, General introduction to mode of hormones on target cells. Reproductive System. Anatomy and functions of male reproductive organs, Anatomy and functions of Female reproductive organs. Menstrual cycle, Conception, Parturition. Contraception, Menopause and associated physiological problems.

Recommended Text Books / Reference Books:

1. L Antony, C.A (1963), 'Text Book of Anatomy and Physiology', The c.v. Mosby Co., Saint Louis
2. Bell G.H., Davidson, J.N., and Scarborough H. (1972) 'Textbook of Physiology and Biochemistry' London E.S. Livingston Ltd.
3. Best. C.H., and Taylor, R. B. (1965) 'The Living Body', London, Chapman & Hall Ltd.
4. Best. c.H., and Taylor. R.B. (1975), 'The Physiological Basis for Medical Practice' Calcutta , The Williams and Wilkinson Scientific Book Agency.
5. Guytons, AC. (1966), 'Text book of Medical Physiology', London, W.B. Saundes & Co.
6. Rogers, T.S, Elementry (1961), 'Human Physiology', New York, John Willey and Sons, Inc.
7. Green, IH. (1972), 'An Introduction to Human Physiology' London, Oxford University Press.

**MRSPTU POST GRADUATE DIPLOMA IN NUTRITION AND DIETETICS
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BASIC NUTRITION AND PHYSIOLOGY LAB

Subject Code: GNADS1-104

L T P C

Duration: 60 (Hrs.)

0 0 4 2

Course Objectives

1. To develop understanding of basic physiological principles and the mechanisms fundamental to homeostasis.
2. To aware students about physiological adaptation at various stages of life including in early life, older age and in response to exercise.
3. To develop ability in students about practical skills to measure metabolic rate, VO₂ max and body composition and understand the use and limitations of these methods.
4. To determine various physiological parameters.

Course Outcomes

1. Familiarizing students about basic physiological principles and the mechanisms fundamental to homeostasis.
2. Creating awareness about physiological adaptation at various stages of life including in early life, older age and in response to exercise.
3. Understanding about practical skills to measure metabolic rate, VO₂ max and body composition, and understand the use and limitations of these methods.
4. Analysing various physiological parameters.

PRACTICALS

1. Weights and measures
2. Preparation of therapeutic diets -liquid diet, full fluid, solid and semisolid diet.
3. Preparation of normal diets
4. Preparation of Routine diets
5. Estimation of Blood Glucose
6. Estimation of Blood Urea.
7. Diet for infants
8. Diet for pregnant ladies
9. Diet for lactating women
10. Estimation of haemoglobin
11. To determine blood group
12. Estimation of Serum Creatinine
13. Estimation of Bilirubin
14. Estimation of Serum protein

SEMESTER SECOND

**MRSPTU POST GRADUATE DIPLOMA IN NUTRITION AND DIETETICS
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CLINICAL AND COMMUNITY NUTRITION		
Subject Code: GNADS1-201	L T P C	Duration: 60 Hrs.)
	4 0 0 4	
<p>Course Objectives</p> <ol style="list-style-type: none"> 1. To understand the principles of food and nutrition and concept of balanced diet and meal planning. 2. To familiarize with the nutritional requirements for infancy, pre-school, school going and adolescents and adult hood. 3. To create awareness regarding food handling, storage, sanitation and hygiene. 4. To analyse the role of nutrition education programmes and National and International agencies to overcome malnutrition. 		
<p>Course Outcomes</p> <ol style="list-style-type: none"> 1. Understanding the principles of food and nutrition and concept of balanced diet and meal planning. 2. Familiarizing with the nutritional requirements for infancy, pre-school, school going and adolescents and adult hood. 3. Creating awareness regarding food handling, storage, sanitation and hygiene. 4. Analysing the role of nutrition education programmes and National and International agencies to overcome malnutrition. 		
UNIT-I (15 Hours)		
<p>Introduction to Nutrition, Principles of Foods and Nutrition, Food groups, Diet and balanced diet, Meal planning, meal pattern, selection of adequate diet, BDA, RDA of different age groups, use of Food exchange list.</p> <p>Nutritional requirements for infancy, pre-school, school going and adolescents and adult hood. Factors affecting nutritional status, Nutritional problems, Packed lunch, and school lunch programmes, Food habits.</p>		
UNIT-II (15 Hours)		
<p>Nutritional requirements for expectant and nourishing mother, dietary modification, - dietary problems, complications of pregnancy and Indian nourishing mother. Geriatric Nutrition: Nutritional requirement, physiological changes, Nutritional changes, Nutritional problems during old age. Nutritional problems in India. Anaemia, overweight, underweight, vitamins A, deficiency, PEM, goitre, thiamine deficiency.</p>		
UNIT-III (15 Hours)		
<p>Food selection purchase, storage, Food handling, sanitation and hygiene. Assessment of nutritional status by Population sampling, Anthropometry, Biophysical assessment, Radiographic examination, Nutritional adequacy of diet consumed, Clinical assessment, Biochemical assessment. Diet survey methods: Population sampling & duration of survey, diet survey methods, Questionnaire, Food list method, Interview method, Food inventory of log book method, Weighing of raw food and cooked food, Analysis of cooked food method, Adult consumption unit.</p>		
UNIT-IV (15 Hours)		
<p>Nutrition and health education: Definition, Importance, channels of nutrition education methods, Planning for nutrition and health education, Techniques of nutrition education.</p> <p>Evaluation of nutritional programmes: Role of nutrition education programmes in eradication of malnutrition. Role of National and International agencies to overcome malnutrition (ICDS, UNICEF, WHO, FAO, ICAR). Food fads and fallacies. Applied nutrition programmes ANP. MMP, SNPJCDS, FWPJPP, BNP.</p>		

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Recommended Text Books / Reference Books:

1. Swaminthan M. 'Essentials of Food and Nutrition', Bangalore, printing and Publishing Co. Ltd.
2. Srilakshmi B. 'Dietetics' New Delhi, Newage International publishing Co. Ltd.
3. Joshi S. 'Nutriton and Dietetics' New Delhi, Tata McGraw Hill Publishing Co. Ltd.
4. Crampton E.W. and L.E.Lloyd, (1915), 'Fundanentals of Nutrition' W.H.Freeman, San Francisco.
5. Davidson S.R, Passmore and J.F. Brock, (1986), 'Human Nutrition and Dietetics' London 8th edition, Churchill, Livingstone.
6. Antia F.P, (1986), 'Clinical Dietetics and Nutrition' 3rd edition, Bombay Oxford University Press.
7. Devadas R.P. (1972) 'Nutrition in Tamil Nadu Sangam' Publishers.
8. Meyer J,Human (1972) 'Nutrition Charles Thomas'
9. *King* M. and Morley O, (1976), 'Nutrition for Developing Countries, Oxford University Press.
10. Lowenberg E.M. Todhunter N.E. Wilson Eva D Savage and Jane R. (1970), 'Food and Man Wiley' Eastern Pvt. Ltd.
11. Wesna D. (1981). 'Where There is No Doctor', The Voluntary Health Association of India.
12. Rajalakshmi R. (1981), 'Applied Nutrition Oxford & IDH Publishers'.
13. ICMR, 'Technical Report Series'.
14. Applied Nutritional Programmes ANP.MMP.SNPJCDS.FWPJPP.BNP.

FOOD PRODUCTION, COSTING AND HOSPITAL MANAGEMENT

Subject Code: GNADS1-202

L T P C

Duration: 60 (Hrs.)

4 0 0 4

Course Objectives

1. To understand role of basic ingredients and cooking methodologies in food production.
2. To familiarize with the concept of food production management and delivery and service of food in different systems.
3. To create awareness about staffing and personnel management.
4. To impart the knowledge about different theories of motivation and relationship between motivation and performance.

Course Outcomes

1. Understand the role of basic ingredients and cooking methodologies in food production.
2. Familiarizing with the concept of food production management and delivery and service of food in different systems.
3. Creating awareness about staffing and personnel management.
4. Impart knowledge about different theories of motivation and relationship between motivation and performance.

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UNIT-I (15 Hours)

Foundation Ingredients; Carbohydrates, fats, Proteins, Minerals, Vitamins, Seasonings, Flavorings, Liquids, Thickening agents, Fats & Oils, Sweetening & Raisings agents.
Various cooking methods & Culinary terms (Western & Indian): Principles of cooking food with special application to fish, egg, meat, vegetables, cheese, pulses & cereals. Salads: - Importance, types, common salad dressing. Soups: - Importance, types, Seasoning & flavoring
Menu & Meal planning, rules for compilation of menu. Standardization of recipes & portion control.

UNIT-II (15 Hours)

Food Production Management: Establishing purchase specification, volume forecasting, dealing with suppliers, receiving methods, stores organization, inventory control of stock, yield testing standard recipes. Quantity Food Production: Objectives of food preparation, working methods, cooking methods, food preservation, food spoilage. Service Management: Table Service, dining room management.
Delivery and service of food in different systems. Development of new recipes and modified recipes.

UNIT-III (15 Hours)

Organization: Organizational Chart, Organizational Charts of Dietary/food service department, line of staff, authority, responsibility, power, delegation of authority, centralization and decentralization of food service
Leadership, motivation and communication. Dietitian as a leader, leadership qualities that a dietitian should possess, styles of leadership and their effect on subordinates. Relation between motivation and performance, Maslow's Theory of Motivation, Fredrik Hedburg Motivation – Hygieno Theory, Application of Above theories to motivate subordinates' communication, need for communication, process of communication, upward, downward and lateral communication, barriers to effective communication, listening.

UNIT-IV (15 Hours)

Staffing and Personnel Management: Manpower Planning, Recruitment, Selection, Induction, Performance Appraisal, Training Development. Planning and Equipment Purchase.
Layout Design: Physical Plant – Floor Planning and Layout, Physical features necessary for efficient and sanitary food service area, design and construction of building equipments and its installation, wall and floor surfaces, lighting and ventilation, cost, quality and quantity. Factors affecting selection of equipment, features of equipment, installation operation and performance, care, maintenance and replacement.
Layout Design - space allowances, design development, space relationships, flow of traffic.

Recommended Text Books / Reference Books:

1. Thangum Philip (1994) Modern Cookery for Teaching and Trade (Volume I & II), Bombay Orient Langman's.
2. Shankuntala Mane (1987) – Food Facts and Principles , Bombay, Willey Eastern Ltd.,
3. Angela Kay (1978) – Shining Cook Book, London Octopus Books Ltd.
4. B. B. Weste & L. Wood – (4th Ed.) – Food Service in Institutions - New York, John Willey & Sons,
5. Mohini Sethi & Surjeeet Mathan (1993) – Catering Management & Integrated Approach, Bombay, Willey Eastern. Ltd.

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PRACTICAL-II		
Subject Code: GNADS1-203	L T P C	Duration: 60 (Hrs.)
	0 0 4 2	
Course objectives <ol style="list-style-type: none">1. To impart knowledge of Anthropometric measurements.2. To understand the planning, preparation and demonstration of low-cost nutrient rich recipes.3. To familiarize about preparation of culture media and culture methods.4. To create awareness about adulteration in various food samples.		
Course outcomes <ol style="list-style-type: none">1. Imparting knowledge of Anthropometric measurements.2. Understanding the planning, preparation and demonstration of low-cost nutrient rich recipes.3. Familiarizing about preparation of culture media and culture methods.4. Creating awareness about adulteration in various food samples.		
PRACTICALS		
<ol style="list-style-type: none">1. Anthropometric measurements2. Clinical assessment of subjects3. Growth monitoring4. Nutrition Education<ul style="list-style-type: none">- Teaching aids- Nutrition messages- Street plays5. Planning, preparation and demonstration of low-cost nutrient rich recipes6. Preparation of culture media7. Culture methods8. Gram Staining9. Adulteration of various food samples		