" A" Re-accredited By NAAC
(2014) with CGPA-3.16

Revised Syllabus For

P.G. Diploma
In
Nutrition and Dietetics

Syllabus to be implemented from June 2015-16 onwards.

P.G. Diploma
In
Nutrition and Dietetics

1. Nomenclature of the Degree:
The nomenclature of the degree awarded shall be Post Graduation Diploma in Nutrition and Dietetics.

2. Eligibility for Admission:
The eligibility for admission to the P. G. Diploma Course in Nutrition and Dietetics shall be B.Sc. in Home Science with specialization in Foods and Nutrition or B.Sc. or B.F.T.M. or M.B.B.S. or B.H.M.S. or B.A.M.S. or B. Pharmacy or Bachelor of Physiotherapy or
B. Tech. (Food Technology) or equivalent degrees.

3. Intake capacity:
The intake capacity is 30 students.

4. Duration to complete the Course:
The candidate who fails to complete the course within a period of one academic year should complete the course within four years from the date of joining the course.

5. Attendance:
A candidate shall not be allowed to appear for the final examination of the University unless she/he has kept a term in the college and produces a certificate from the Principal of the college.

a) Of having completed the minimum units in theory and practical as prescribed in the syllabus.

b) Of having attended 80% of the total period devoted to Practical/orals/seminar/displays/workshop/project work and other related activities.

c) Of having submitted the required no. of tutorials seminars and assignment.

Standard of Passing

To pass the examination a candidate must obtain 40% of marks in each paper. The minimum standard of passing in each theory paper of 80 marks shall be 32 and for practical paper of 50 marks shall be 20. The class for P.G. Diploma will be awarded as follows.

40 - 49% - Pass Class
50-59 % - Second Class
60-69% - First Class
70% and above- First Class with Distinction

STAFF REQUIREMENT AND QUALIFICATION

Staff	Qualification
Assistant Professor -	A) Master of Science (MSc.) with Specialization in the following 1. Dietetics and Food Service Management 2. Nutrition and Dietetics 3. Clinical Nutrition 4. And Equivalent degrees B) The minimum requirements of a good academic record, 55% marks (or an equivalent grade in a point scale wherever grading system is followed) at the master's level and qualifying in the National Eligibility Test (NET), or an accredited test (State Level Eligibility Test - SLET/SET), shall remain for the appointment of Assistant Professors.

P.G. Diploma in Nutrition and Dietetics

Sr. no.	Subject	Total theory marks		Total Period /Practical per week	Total Marks
		Written Theory	Internal		
1	Clinical Nutrition	80	20	2	100
2	Nutritional Biochemistry	80	20	2	100
3	Dietetics and Diet Counseling	80	20	2	100
4	Human Physiology	80	20	2	100
5	Public Nutrition	80	20	2	100
6	Food Service Management	80	20	2	100
7	Lab Course I	-	-	3	50
8	Lab Course II	-	-	3	50
9	Dissertation and Seminar	-	100 (80+20)	2	100 (80+20)
	Total	480	120	20	800

Compulsory internship of 2 months.

Note: - 1 period is of 60 minute

Workload

Sr no	Subject	Theory	Practical	Total
1	Clinical Nutrition	2	-	2
2	Nutritional Biochemistry	2	-	2
3	Dietetics and Diet Counseling	2	-	2
4	Human Physiology	2	-	2
5	Public Nutrition	2	-	2
6	Food Service Management	2	-	2
7	Lab Course I	-	3	3
8	Lab Course II	-	3	3
9	Dissertation and Seminar	-	2	2
	Total	12	08	20

EXAMINATION PATTERN

Theory: - 100 Marks
External Assessment: - 80 Marks
Internal Assessment: - 20 Marks

Nature of Theory Examination

Objective Questions: **10 Marks**
• Fill in the blanks.
• Match the following
• True or False

Short Notes: **20 Marks**

Subjective Questions: **50 Marks**

Solve any five questions out of seven.

Nature of Practical Examination

Practical Paper: **50 Marks**
- **Journals:** **10 Marks**
- **Viva:** **10 Marks**
- **Experiment:** **30 Marks**

Dissertation and Seminar **100 Marks**
- **Dissertation** **80 Marks**
  - **Report** **60 Marks**
  - **Viva** **20 Marks**
- **Seminar** **20 Marks**
  - **Report** **10 Marks**
  - **Presentation** **10 Marks**

Post Graduate Diploma in Nutrition and Dietetics
Subject: CLINICAL NUTRITION

Objectives:-
To enable the students:
1] To obtain knowledge regarding metabolic processes of normal and diseases organs and tissues
2] To be familiar with dietary modifications based on physiological changes occurring in disease conditions
3] To be aware of recent advances in the area of clinical nutrition

1. PEDIATRIC NUTRITION:
Growth and Development
Nutritional Considerations of LBW Infants
Nutritional Considerations of Children
Nutritional Concerns
Childhood Obesity
Under nutrition

2. AGEING AND OSTEOPOROSIS:
Physiological changes
Bone health
Osteoporosis
Rheumatoid Arthritis
Nutritional Support

3. NUTRIENT AND DRUG INTERACTIONS:
Basic Concept
Effect of Nutrition on Drugs
Drug Effects on Nutritional Status

4. FOOD INTOLERANCES AND FOOD ALLERGY:
Adverse food reactions
Treatment and Management
Prevention

5.NUTRITION IN EATING DISORDERS
Introduction
Anorexia Nervosa
Bulimia Nervosa
Binge Eating Disorders

6. NUTRITION AND DENTAL HEALTH
Structure, development and maturation
Dental caries
Recent advances in role of Nutrition in dental health

7. NUTRITION AND NEUROLOGICAL DISORDERS

Parkinson's disease
Alzheimer's disease
Epilepsy
Migraine
Multiple Sclerosis
Neurotrauma
Spine trauma
Feeding problems of patients with neurological disorders.

8. NUTRITION IN CANCER:

Risk factors
Metabolic Alterations and Nutritional Problems related to Cancer
Nutritional requirements of Cancer patients related to Cancer Therapy
Cancer Prevention

REFERENCES:

1. Mahan L. K. and Escott- Stump, S. (2000): "Krause's Food, Nutrition and Diet Therapy", 11th Edition, W.B. Saunders Ltd.
2. Shils, M. E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
3. Garrow, J.S., James, W.P.T. and Ralph, A.. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone.
4. Guyton, A.C. and Hall, J. E. (1999): Textbook of Medical Physiology, 9th Edition, W.B. Saunders Co.
5. Antia F.P (1986): Clinical Dietetics and Nutrition, Bombay, 3rd edition, Oxford University Press.
6 Walker, W.A. and Watkins, J.B. (Ed) (1985): Nutrition in Pediatrics, Boston, Little Brown and Co.
7. Davis J. and Sherer, K. (1994): Applied Nutrition and Diet Therapy for Nurses, 2nd Edition, W.B. Saunders Co.

JOURNALS AND OTHER REFERENCE SERIES:

1. Nutrition update series
2. World review of nutrition and dietetics
3. Journal of the American dietetic association
4. American journal of clinical nutrition
5. European journal of clinical nutrition
6. Nutrition reviews.

Post Graduate Diploma in Nutrition and Dietetics
Subject: NUTRITIONAL BIOCHEMISTRY

Objectives:
To enable students to:
1) Learn the role of nutrients in foods and deficiency diseases.
2) Understand the metabolism of nutrients in health and diseases
3.)Understand the regulation of metabolism

I) Carbohydrates
Definition, classification, biological role of carbohydrates
Metabolism- Digestion and absorption ,Glycolysis, Krebs cycle, Electron Transport Chain,Gluconeogenesis, Glycogenesis, Glycogenolysis,HMP pathway
Disorders related to Carbohydrate metabolism.

2) Proteins
Definition, classification, biological role of amino acids and proteins
Biological value of protein,
Metabolism- Digestion and absorption,Transamination, Deamination, Metabolism of Ammonia, Urea cycle ,
Disorders related to Protein/amino acid metabolism.

3) Lipids
Definition, classification, biological role of fatty acids and lipids
Metabolism- Digestion and absorption ,Oxidation of Fatty acids, Metabolism of lipoproteins and ketone bodies and their significance ,Cholesterol metabolism
Disorders related to Lipid metabolism.

4) Vitamins
Definition, classification, functions and role of vitamins in metabolism, deficiency diseases.

5) Minerals
Definition, classification, functions and role of minerals in metabolism, deficiency diseases.

6) Water and Electrolyte balance -
Water and Electrolyte balance and related disorders

7)Acid Base balance Acid Base balance- Role of buffers, lungs and kidney in maintaining acid base and related disorders

8) Enzymes - Definition, Classification, mechanism of enzyme action, specificity of enzymes, types of enzymes, Factors affecting enzyme activity,Coenzymes ,Enzymes in clinical diagnosis.

References:

- Dasgupta, S. K., Biochemistry Vol. I; n & III, Mc Millan Co. of India Limited
- Das, Debajyoti, Biochemistry 2nd ed., 1980, Academic Publishers, India.
- Harper, H. A. etal, A review of physiological chemistry, Los Altos,Lange medical publications, 1985.
- Lehninger, A. L., Principles of Biochemistry
- Orten J. M. & Newhaus O. V, Human Biochemistry, C. V Mosby
- Co. S1. Lois, JSA 1982.
- Chatterjea. Textbook of Medical Biochemistry
- Biochemistry,U Satyanarayna, U.Chakrapani 4th edition,

Post Graduate Diploma in Nutrition and Dietetics
Subject: DIETETICS AND DIET COUNSELLING

Objectives:-
The course will enable the students:
1] To understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patient needs.
2] To know the effect of the various diseases on nutritional status and nutritional and dietary requirements.
3] To be able to recommend and provide appropriate nutritional care for prevention/ and treatment of the various diseases.

1. THERAPEUTIC DIETS:
Basic Concept
Therapeutic Adaptation of Normal Diet
Factors Considered
Routine Hospital Diets
Mode of feeding methods
Role of dietitian in the Hospital and Community
Patient Care and Counseling

2. DIET IN FEVER:
Nutrition and Infection
Metabolic changes during Infection
Typhoid fever
Tuberculosis
HIV Infection and AIDS

3. DIET IN WEIGHT IMBALANCE AND COUNSELING:
Obesity and Underweight
- Causes
- Health Risk
- Dietary Treatment
- Psychotherapy

4. DIET IN DISEASES OF GASTRO INTESTINAL TRACT AND COUNSELING:
Upper GI Tract Disorders
- Disorders of Esophagus
- Disorders of Stomach

Lower GI Tract Disorders
- Common Intestinal Disorders
- Disorders of Small Intestine
- Intestinal Brush Border Enzyme Deficiencies
- Inflammatory Bowel Diseases, Disorders of Large Intestine

5. DIET IN LIVER DISEASES AND COUNSELING:
Hepatitis
Cirrhosis of Liver
Hepatic coma
Diseases of Gall Bladder
Diseases of Pancreas

6. DIET IN KIDNEY DISEASES AND COUNSELING:
Glomerulonephritis
Nephrotic Syndrome
Acute Renal Failure,
Chronic Renal Failure
End Stage Liver Diseases
Urolithiasis

7. DISEASES OF METABOLIC DISORDER AND COUNSELING:
Diabetes Mellitus
Gout

8. DIET IN CARDIOVASCULAR DISEASES & COUNSELING:
Coronary Heart Diseases (CHD)
Prevalence
Risk Factors
Pathophysiology
Dyslipidemia
Atherosclerosis
Hypertension
Angina Pectoris
Myocardial infarction
Congestive Cardiac Failure

Reference: -
1. Mahan L. K. and Escott- Stump, S. (2000): "Krause's Food, Nutrition and Diet Therapy", 11th Edition, W.B. Saunders Ltd.
2. Shils, M. E., Olson, J.A., Shike, M. and Ross, A.C. (1999): Modern Nutrition in Health and Disease, 9th Edition, Williams and Wilkins.
3. Crampton E.W. and L. E. Lloyd (1915): Fundamentals of Nutrition, San Francisco, W. H. Freeman.
4. 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. Garrow, J. S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics, 10th Edition, Churchill Livingstone.

Post Graduate Diploma in Nutrition and Dietetics
Subject: HUMAN PHYSIOLOGY

Objectives:-
To enable students to understand the:
1. Structure of the cell, various tissues organs of the body
2. Different systems of the body and their functions
3.Regulation of the body function.

1. Digestive System
Brief study of the anatomical organization of the digestive tract and process of digestion, absorption and assimilation of food

2. Circulatory System
Heart Structure and working of heart, Determination of Blood pressure, Cardiac cycle, cardiac output, heart rate Lymphatic system-Composition & Formation, organs involved, functions of lymph

3. Hematology
Introduction to blood,Composition and functions of blood, Mechanism of blood coagulation, blood group systems

4.. Defense mechanisms of the body
First line, second and third line of defence, active immunity, passive immunity,
Factors affecting immunity

5. Respiratory System
Basic anatomy of the respiratory system, Process of respiration, Disorders

6.Urinary System
- Structure and functions of organs of urinary system, Composition of normal and abnormal urine

7.Endocrine system
Definition, Classification, Mechanism of action, functions and disorders of hormones of pituitary gland, thyroid gland, parathyroid gland, adrenal gland and pancreas

8. Nervous system
Structure of Neuron, Transmission of nerve impulse
Organs of Central Nervous system & their functions
Peripheral Nervous system
Autonomous system
Reflex action

References:-

1. L Antony, C.A (1963), 'Text Book of Anatomy and Physiology', the c.v. Moshy 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, Elementary (1961), 'Human Physiology', New York, John Willey and Sons, Inc.7. Green, H.(1972), 'An Introduction to Human Physiology' London, Oxford University Press
7. K Sembulingam, Prem Sembulingam. Essentials of Medical Physiology.

Post Graduate Diploma in Nutrition and Dietetics
Subject: PUBLIC NUTRITION

Objectives:-
To enable the students:
1] To focus on the promotion of good health through nutrition and the primary prevention of nutrition related problems
2] To deal with nutritional epidemiology.
3] To be aware of public policies relevant to nutrition.

1. PUBLIC NUTRITION:
Concept
Scope
Future projections
Health care
Role of public nutritionists in health care delivery

2. NUTRITIONAL PROBLEMS IN INDIA:
Protein Energy Malnutrition
Micronutrient Deficiencies
Vitamin Deficiencies

3. ASSESSMENT OF NUTRITIONAL STATUS:
Population sampling
Anthropometry
Clinical assessment
Biochemical assessment
Dietary assessment

4. NUTRITION MONITORING AND NUTRITION SURVEILLANCE
Nutrition Monitoring and its Current programmes
Nutrition Surveillance System

5. NATIONAL NUTRITION PROGRAMMES:
Integrated Child Development Services (ICDS) Programme
Nutrient Deficiency Control Programme
Supplementary Feeding Programme
Food Security Programme

6. STRATEGIES TO COMBAT NATIONAL NUTRITIONAL PROBLEMS
Introduction
Diet or food based strategies
Nutrient based strategies
Immunization

7. NUTRITION AND HEALTH EDUCATION:

Definition
Importance
Channels of nutrition education
Nutrition education methods
Planning for Nutrition and Health Education
Techniques of Nutrition Education
Role of Nutrition Education Programs in eradication of malnutrition

REFERENCES:

1. Beaton GH and Bengoa JM. Nutrition in Preventive Medicine. WHO (1976).
2. FAO/WHO. Preparation and use of food based dietary guidelines. Report of a joint FAO/WHO consultation: Nicosia, Cyprus. Nutrition Programme, WHO, Geneva (1996).
3. Michael J. Gibney, Barrie M. Margetts, John M. Kearney, Lenore Arab. Public Health Nutrition. Blackwell Publishing Company (2004).
4. National Nutrition Policy. Department of Women and child Development, Ministry of Human Resource Development, New Delhi, Government of India, 1993.
5. Park K. and Bhanot B. Preventive and Social Medicine. 16th Edition (2000).

Post Graduate Diploma in Nutrition and Dietetics

Subject: FOOD SERVICE MANAGEMENT

Objectives:-
To enable the students:
1. To develop food service management skills,
2. To develop professional approach backed by special skills, knowledge and vigilance at every stage of food service operation'
3. To acquire specific knowledge about training and/ or developing manpower in food service unit.

1. FOOD SERVICE MANAGEMENT:
Types of Food service establishments
Principles of Management
Functions of Management
Planning of a layout

2. MENU PLANNING:
Importance of menu planning
Types of menu planning
Steps in menu planning and its evaluation

3. FOOD PURCHASING AND STOREROOM MANAGEMENT:
Mode of purchasing
Methods of purchasing
Receiving
Storage Space
Storage Room Management

4. FOOD PRODUCTION- PLANNING AND CONTROL
Production Forecasting
Production Scheduling
Production Control
Standardized Recipes

5. QUANTITY FOOD PRODUCTION:
Basic cookery procedures
Types of Equipments

6. FOOD DELIVERY AND SERVICE SYSTEMS:
Methods of food delivery systems
Centralized and decentralized
Types of food service systems

7. PERSONNEL MANAGEMENT

Leadership
Functions and qualities of leadership
Manpower Planning,
Recruitment and Selection,
Placement and Induction,
Performance Appraisal,
Training and development.

8. FOOD HYGIENE AND SANITATION:

Sanitation in food services
3E's of safety
Food safety
Hygienic food handling

Reference:

1. Lockwood, Andrew: Quality Management in Hospitality: Best Practice in Action London, Casell, 1996.
2. Kumar, H L: Personnel Management in hotel and catering industry. New Delhi: Metropolitan, 1986.
3. Agarwal, Anand: Personnel Management: an overview. Bombay: jaico pulb, 1984.
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.
6. Rao, P Subba: Personnel and human resource management. Mumbai: Himalaya, 2002.
7. Lillicrap, D R: Food and beverage service. London: Edward Arnold, c1985.
8. Powers, T F & Powers, J M: Food service operations: planning and control. New York: John Wiley, c 1984.

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Lab Course I

1. Standardized recipes.

2. Preparation of therapeutic diets - clear liquid diet, full fluid, soft and normal diet.

3. Diet in fever.

4. Diet in gastro intestinal diseases.

5. Diet in liver diseases.

6. Diet in cardiovascular diseases.

7. Diet in kidney diseases.

8. Diet in disease of metabolic disorder such as Diabetes mellitus and gout.

.9. Formulation of Nutritional messages.

Lab Course II

1.Estimation of serum calcium

2. Estimation of Blood Glucose.

3. Estimation of Blood Urea.

4. Estimation of Serum Creatinine.

5. Estimation of Bilirubin.

6. Estimation of Serum protein.

7. Estimation of Hemoglobin.

8. Urine analysis.

9. Estimation of SGOT.

10. Estimation of SGPT.

EQUVALANCE FOR PGDND COURSE

Sr. No.	Old Course	Sr. No.	New Course
1	Clinical Nutrition	1	Clinical Nutrition
2	Nutritional Biochemistry	2	Nutritional Biochemistry
3	Dietetics and Diet Counseling	3	Dietetics and Diet Counseling
4	Human Physiology	4	Human Physiology
5	Public Nutrition	5	Public Nutrition
6	Food Service Management	6	Food Service Management
7	Lab Course I	7	Lab Course I
8	Lab Course II	8	Lab Course II
9	Dissertation and Seminar	9	Dissertation and Seminar