SHIVAJI UNIVERSITY, KOLHAPUR.

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Accredited By NAAC
2009

P.G. Diploma
in
Nutrition and Dietetics

Syllabus to be implemented from June 2012 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 General Home Science or B.Sc. B Group or B.F.T.M. or M.B.B.S. or B.H.M.S. or B.A.M.S. or B.Pharmacy.

3. Mode of Admission

Admission for P.G. Diploma in Nutrition and Dietetics shall be based purely on merit basis. 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 Practicals/orals/seminar/displays/workshop/project work and other related activities.

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

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

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**	**-**	**-**	**2**	**100 (80+20)**
	Total	**480**	**120**	**20**	**800**

Compulsory internship of 3 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	Practical I	-	3	3
8	Practical II	-	3	3
9	Dissertation	-	2	2
	Total	12	08	20

Note: - Practical batch of 15 students.

EXAMINATION PATTERN

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

Distribution of the External Marks

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.

Distribution of the Internal Mark

- **Attendance:** **5 Marks**
- **Home Assignments:** **5 Marks**
- **Class test:** **10 Marks**

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

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

Post Graduate Diploma in Nutrition & Dietetics
Subject: CLINICAL NUTRITION
Paper I

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 AND CANCER

Carcinogenesis and Mutagenesis
Development of cancer
Metabolic alterations during cancer
Recent development in Nutrition and cancer

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 in patients with neurological disorders.

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 & Dietetics
Subject: NUTRITIONAL BIOCHEMISTRY
Paper II

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

I) Carbohydrates
Definition, classification, physical and chemical properties, sources, biological role, metabolism, deficiency diseases, inborn errors and other metabolic disorders.

.2) Proteins
Definition, classification, physical and chemical properties, sources, biological role, Biological value of protein, protein metabolism, protein deficiency diseases, and inborn errors and other metabolic disorders.

3) Lipids
Definition, classification, physical and chemical properties, sources, biological role, metabolism, and inborn errors and other metabolic disorders.

4) Vitamins
Definition, classification, characteristics, absorption & role of vitamins in metabolism, deficiency diseases.

5) Minerals
Definition, types, absorption & role of minerals, minerals deficiency diseases.

6) Hormones-
Definition, Classification, Mechanism of action, Biochemical functions and disorders

7) Acid Base balance-
Mechanism and disorders

8) Interrelation between Nutrients
Interrelation between carbohydrates, proteins and fats
Interconversion between carbohydrates, proteins and fats
Regulation of metabolic pathway

References:

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.
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 etal (1997), Experimental Methods in Food Engineering', New Delhi, CBS

Post Graduate Diploma in Nutrition & Dietetics
Subject: DIETETICS AND DIET COUNSELLING
Paper III

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 CANCER & COUNSELING:
Risk factors
Metabolic Alterations and Nutritional Problems related to Cancer
Nutritional requirements of Cancer patients related to Cancer Therapy
Cancer Prevention

9. 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 & Dietetics
Subject: HUMAN PHYSIOLOGY
Paper IV

Objectives:-
To enable students to understand the:
1. Structure of the cell, various tissues and organs of the body and their functions.
2. Different systems of the body and their functions with special reference to the digestion, absorption, transport and uptake of nutrients and elimination of waste products.
3. Physiological changes at different stages of life and
4. Importance of hormonal and nervous regulation of the body function.

1. Organization of human body
Definition of anatomy, physiology, general anatomy of human body. Cell, Tissues - Structure and functions of various types of tissues, systems
.
2. Digestive System
Brief study of the anatomical organization of the digestive tract and process of digestion, absorption and assimilation of food, Disorders

3. Circulatory System
Heart Structure and working of heart, Blood pressure, Cardiac cycle, cardiac output, heart rate

4 Hematology
Composition and functions of blood. Mechanism of blood coagulation, blood group systems

5. Lymphatic system.-Composition & Formation, organs involved, functions of lymph, disorders

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

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

9. Excretory System
Excretory organs- Structure and functions of Kidneys, Formation of urine Composition of urine, Disorders.

10. Nervous system

Physiology of the nerve cell, Parts of the Central Nervous System and functions. Origin and propagation of nerve impulse, Synaptic transmission, neurotransmitters, Disorders

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, Elementry (1961), 'Human Physiology', New York, John Willey and Sons, Inc.
7. Green, lH.(1972), 'An Introduction to Human Physiology' London, Oxford University Press.

Post Graduate Diploma in Nutrition & Dietetics
Subject: PUBLIC NUTRITION
Paper V

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 & Dietetics
Subject: FOOD SERVICE MANAGEMENT
Paper VI

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. Weights and measures

2. 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. Diet in cancer

Lab Course II

1. Anthropometric measurements

2. Nutrition Education
 -Teaching aids
 -Nutrition messages

3. Estimation of Blood Glucose

4. Estimation of Blood Urea.

5. Estimation of Serum Creatinine.

6. Estimation of Bilirubin.

7. Estimation of Serum protein

8. Estimation of Hemoglobin

9. Urine analysis

10. Estimation of SGOT

11. Estimation of SGPT

EQUVALANCE FOR PGDND Course

Sr. No.	Old Course	Sr. No.	New Course
1	Nutritional Biochemistry	1	Nutritional Biochemistry
2	Food Microbiology	2	Food Service Management
3	Human Physiology	3	Human Physiology
4	Dietetics & Diet Counseling	4	Dietetics and Diet Counseling
5	Clinical & Community Nutrition	5	Clinical Nutrition Public Nutrition
6	Food Production, Costing & Hospital& Mgt.	6	Food Service Management
7	Practical 1	7	Lab Course I
8	Practical 2	8	Lab Course II
9	Project	9	Dissertation and Seminar