

SHIVAJI UNIVERSITY, KOLHAPUR.



Accredited By NAAC with 'A' Grade

Syllabus For

P.G. Diploma In Nutrition and Dietetics

(Syllabus to be implemented from June, 2018 onwards.)

P.G. Diploma In Nutrition and Dietetics 2018-19

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 Bachelor of Food Technology and Management (BFTM), B.Sc. Food Technology and Management, B.Sc. in Home Science with specialization in Foods and Nutrition, B.Sc. Home Science (General), B. Sc. Food Science and Quality Control, B.Sc. Biochemistry, B.Sc. Chemistry, B.Sc. Microbiology, B.Sc. Biomedical Sciences, B.Sc. Biotechnology and B.Sc. Zoology or B. Voc. Food Processing and Management (with 12th science).

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 Three 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	<p>- A) Master of Science (MSc.) with Specialization in the following</p> <ol style="list-style-type: none">1. Dietetics and Food Service Management2. Nutrition and Dietetics3. Clinical Nutrition4. And Equivalent degrees <p>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>

P.G. Diploma in Nutrition and Dietetics Course Structure

Sr. no.	Subject	Distribution of Marks			Total Periods per week	Total Marks
		External Theory	External Practical	Internal		
1	Nutritional Biochemistry	80	-	20	2	100
2	Dietetics and Diet Counseling	80	-	20	4	100
3	Human Physiology	80	-	20	2	100
4	Public Nutrition	80	-	20	2	100
5	Institutional Food Management	80	-	20	2	100
6	Lab Course I	-	50	25	4	75
7	Lab Course II	-	50	25	2	75
8	Field Work	-	-	50	2	50
9	Dissertation and Seminar	-	50	50 (25+25)	2	100
	Total	400	150	250	22	800

- **Hospital Internship:** The duration of the Course shall be one academic year followed immediately by 2 months Internship in Multi-specialty Hospitals. No candidate who has passed the examination shall be awarded the Diploma unless she has undergone the Internship in an Institution. For a period of at least two months in hospitals, students are expected to collect five case histories and submit a report.
- **Field Work:** Students must submit reports on their observations in the institution visited.
- **The practical examination for Lab Course I shall be conducted over a period of 2 days for 3 hours each and Lab Course II shall be conducted for 3 hours only.**

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.
- Explain the term.

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 75 Marks**
 - **Internal assessment 25 Marks**
 - **External Assessment 50 Marks**
- **Seminar 25 Marks**
 - **Report 10 Marks**
 - **Presentation 15 Marks**

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

Total workload: 60

Sr. No.	TOPICS	No of Periods
1	Chemistry and Metabolism of Carbohydrates <ul style="list-style-type: none"> • Definition • Classification • Biological role • Metabolism - Digestion and absorption, Glycolysis, Krebs cycle, Electron Transport System, Gluconeogenesis, Glycogenesis, Glycogenolysis, HMP pathway, Galactose Metabolism, Fructose Metabolism, • Disorders related to Carbohydrate metabolism. 	10
2	Chemistry and Metabolism of Lipids <ul style="list-style-type: none"> • 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, • Metabolism of Adipose Tissue, • Disorders Related to Lipid Metabolism. 	10
3	Chemistry and Metabolism of Proteins <ul style="list-style-type: none"> • Definition • Classification • Biological Role of Amino Acids and Proteins Biological Value of Protein • Metabolism -Digestion and Absorption, Transamination, Deamination, Metabolism of Ammonia, Urea Cycle 	10

	<ul style="list-style-type: none"> Disorders Related To Protein/Amino Acid Metabolism. 	
4	Vitamins <ul style="list-style-type: none"> Definition Classification Absorption and Role of Vitamins in Metabolism Deficiency Diseases. 	05
5	Minerals <ul style="list-style-type: none"> Definition Types Absorption and Function and Role of Minerals in Metabolism Deficiency Diseases. 	05
6	Water and Electrolyte balance <ul style="list-style-type: none"> Functions of Water Distribution of Body Water Water Intake And Water Output Electrolyte Composition of Body Fluids Regulation of Electrolyte Balance Dehydration and Over hydration 	05
7	Acid Base balance <ul style="list-style-type: none"> Role of Buffers Lungs and Kidney in Maintaining Acid Base Balance and Related Disorders 	03
8	Organ Function Tests <ul style="list-style-type: none"> Liver Function Tests Kidney Function Tests Gastric Function Tests Pancreatic Function Tests Thyroid Function Tests 	07
9	Hormones <ul style="list-style-type: none"> Definition Classification Mechanism of Action Hormones of Hypothalamus, Pituitary Gland, Thyroid Gland, Adrenal Gland, Gonads and Gastrointestinal Hormones 	05

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. et al, 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.
- Chatterjee Textbook of Medical Biochemistry
- Biochemistry, U Satyanarayana, 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.

Total workload: 120

SR. NO.	TOPICS	No. of PERIODS
1.	THERAPEUTIC DIETS: <ul style="list-style-type: none"> • 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 	05
2.	DIET IN WEIGHT IMBALANCE AND COUNSELING: <ul style="list-style-type: none"> • Obesity and Underweight Causes Health Risk Dietary Treatment Psychotherapy 	08
3.	DIET, NUTRIENT AND DRUG INTERACTION: <ul style="list-style-type: none"> • Effect of drugs on ingestion, digestion, absorption and metabolism of nutrients. • Effect of food, nutrients and nutritional status on drug dosage and efficacy. 	05
4.	DIET IN FEVER: <ul style="list-style-type: none"> • Nutrition and Infection • Metabolic changes during Infection • Typhoid fever • Tuberculosis • HIV Infection and AIDS 	08
5.	ANEMIA <ul style="list-style-type: none"> • Resulting from Acute Hemorrhage 	08

	<ul style="list-style-type: none"> • Nutritional anemia • Sickle cell anemia • Thalassemia • Pathogenesis and dietary management in the above conditions 	
6.	FOOD INTOLERANCES AND FOOD ALLERGY: <ul style="list-style-type: none"> • Adverse food reactions • Treatment and Management • Prevention 	06
7.	DIET IN DISEASES OF GASTRO INTESTINAL TRACT AND COUNSELING: <ul style="list-style-type: none"> • Upper GI Tract Disorders <ul style="list-style-type: none"> Disorders of Esophagus Disorders of Stomach • Lower GI Tract Disorders <ul style="list-style-type: none"> Common Intestinal Disorders Disorders of Small Intestine • Intestinal Brush Border Enzyme Deficiencies • Inflammatory Bowel Diseases • Disorders of Large Intestine 	13
8.	DIET IN LIVER DISEASES AND COUNSELING: <ul style="list-style-type: none"> • Hepatitis • Cirrhosis of Liver • Hepatic coma • Diseases of Gall Bladder • Diseases of Pancreas 	10
9.	DIET IN KIDNEY DISEASES AND COUNSELING: <ul style="list-style-type: none"> • Glomerulonephritis • Nephrotic Syndrome • Acute Renal Failure, • Chronic Renal Failure • End Stage Renal Diseases • Urolithiasis 	10
10.	NUTRITION IN EATING DISORDERS <ul style="list-style-type: none"> • Introduction • Anorexia Nervosa • Bulimia Nervosa • Binge Eating Disorders 	05
11.	NUTRITION AND NEUROLOGICAL DISORDERS <ul style="list-style-type: none"> • Parkinson's disease 	08

	<ul style="list-style-type: none"> • Alzheimer’s disease • Epilepsy • Migraine • Multiple Sclerosis • Neurotrauma • Spine trauma • Feeding problems of patients with neurological disorders 	
12.	DISEASES OF METABOLIC DISORDER AND COUNSELING: <ul style="list-style-type: none"> • Diabetes Mellitus • Gout 	11
13.	DIET IN CARDIOVASCULAR DISEASES AND COUNSELING: <ul style="list-style-type: none"> • Coronary Heart Diseases (CHD) <ul style="list-style-type: none"> ▪ Prevalence ▪ Risk Factors ▪ Pathophysiology • Dyslipidemia • Atherosclerosis • Hypertension • Angina Pectoris • Myocardial infarction • Congestive Cardiac Failure 	12
14.	DIET IN CANCER AND COUNSELING: <ul style="list-style-type: none"> • Risk factors • Metabolic Alterations and Nutritional Problems related to Cancer • Nutritional requirements of Cancer patients related to Cancer Therapy • Cancer Prevention 	11

Reference: -

1. Mahan L. K., Escott- Stump, S. and Raymond J. L. (2012): “Krause’s Food and the Nutrition Care Process”, 13th Edition, Elsevier.
2. Ross, A.C., Caballero B., Cousins R. J., Tucker K.L. and Ziegler T. (2014) Modern Nutrition in Health and Disease. Wolters Kluwer Health/ Lippincott Williams and Wilkins. Ed 11th
3. Garrow, J. S., James, W.P.T. and Ralph, A. (2000): Human Nutrition and Dietetics. 10th Edition, Churchill Livingstone.
4. Nix Staci (2013) William’s Basic Nutrition and Diet Therapy. Elsevier Ed. 14th.

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.

Total workload: 60

Sr. No.	TOPICS	No. of periods
1.	ORGANIZATION OF HUMAN BODY <ul style="list-style-type: none"> • General anatomy of human body • Structure of cell • Tissues -Structure and functions of various types of tissues • Introduction to various systems • Skeletal system, • Cavities of body 	04
2.	DIGESTIVE SYSTEM <ul style="list-style-type: none"> • Brief study of the anatomical organization of the digestive tract • Process of digestion, absorption and assimilation of food 	08
3.	CIRCULATORY SYSTEM <ul style="list-style-type: none"> • Heart Structure and working of heart • Determination of Blood pressure • Cardiac cycle • Cardiac output, Heart rate • Lymphatic system-Composition and Formation, Organs involved, functions of lymph 	08
4	HEMATOLOGY <ul style="list-style-type: none"> • Composition and functions of blood • Mechanism of blood coagulation • Blood group systems 	06
5	DEFENSE MECHANISMS OF THE BODY <ul style="list-style-type: none"> • First Line, Second And Third Line Of Defense • Active Immunity • Passive Immunity 	08

	<ul style="list-style-type: none"> • Factors Affecting Immunity 	
6	RESPIRATORY SYSTEM <ul style="list-style-type: none"> • Basic anatomy of the Respiratory System • Process of Respiration • Disorders 	06
7	URINARY SYSTEM <ul style="list-style-type: none"> • Structure and functions of organs of urinary system • Composition of normal and abnormal urine 	08
8.	NERVOUS SYSTEM <ul style="list-style-type: none"> • Structure of Neuron • Transmission of nerve Impulse • Organs of Central nervous system and their functions • Peripheral Nervous system • Autonomous Nervous system • Reflex Action 	08
9.	REPRODUCTIVE SYSTEM <ul style="list-style-type: none"> • Introduction • Male Reproductive System • Female Reproductive System 	04

References:-

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, 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.

TOTAL WORKLOAD: 60

Sr. No.	TOPICS	No. of PERIODS
1	Public Nutrition: <ul style="list-style-type: none"> • Concept • Scope • Future Projections • Health Care • Role Of Public Nutritionists In Health Care Delivery 	04
2.	Nutritional Problems in India: <ul style="list-style-type: none"> • Protein Energy Malnutrition • Micronutrient Deficiencies • Vitamin Deficiencies 	08
3.	Population Dynamics: <ul style="list-style-type: none"> • Demography, Demographic Transition and Demographic Cycle • Population Structure • Vital Statistics and Implications of Vital Statistics in Population Growth • Population Policy • Relationship between Fertility, Nutrition and Quality of Life 	08
4.	Assessment of Nutritional Status: <ul style="list-style-type: none"> • Population Sampling • Anthropometry • Clinical Assessment • Biochemical Assessment • Dietary Assessment 	10
5.	Nutrition Monitoring And Nutrition Surveillance <ul style="list-style-type: none"> • Nutrition Monitoring And Its Current Programmes • Nutrition Surveillance System 	06

6.	Nutrition Policy and Programmes: <ul style="list-style-type: none"> • Integrated Child Development Services (ICDS) Programme • Nutrient Deficiency Control Programme • Supplementary Feeding Programme • Food Security Programme • Self-Employment and Wage Employment Schemes 	08
7.	Strategies to Combat National Nutritional Problems <ul style="list-style-type: none"> • Introduction • Diet Or Food Based Strategies • Nutrient Based Strategies • Immunization 	08
8.	Nutrition and Health Education: <ul style="list-style-type: none"> • Definition • Importance • Nutrition Education Methods • Teaching aids used in Nutrition Education • Mass communication media used in Nutrition Education • Nutrition Education through Educational Institutions • Role Of Nutrition Education Programs In Eradication Of Malnutrition 	08

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. Gibney M. J., Margetts B. M., Kearney J. M. and Arab L. Public Health Nutrition. Blackwell Publishing Company (2013).
4. National Nutrition Policy. Department of Women and child Development. Ministry of Human Resource Development, New Delhi, Government of India, 1993.
5. Park.K. (2017) Park's Textbook of Preventive and Social Medicine, 24th ed. M/s Banarsida Bhanot, Jabalpur.
6. Jelliffe, D. B and Jelliffe, E.F.P. (1989) Community Nutritional Assessment, Oxford University Press.
7. Wadhwa, A. and Sharma, S. (2003) Nutrition in the Community - A text book SCN News, UN ACC/SCN Subcommittee on Nutrition

Post Graduate Diploma in Nutrition and Dietetics

Subject: INSTITUTIONAL FOOD 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.

Total workload: 60

Sr. No.	TOPICS	No of PERIODS
1	Institutional Food Management <ul style="list-style-type: none">• Evolution of food service industry• Principles of Management• Functions of Management• Organization Chart• Leadership	10
2	Management of Spaces <ul style="list-style-type: none">• Kitchen Spaces• Storage Spaces• Service Spaces	06
3	Equipment <ul style="list-style-type: none">• Catering Equipment• Selection of Equipment• Equipment Design, Installation and Operation• Purchasing Equipment• Care and Maintenance of Equipment	10
4	Food Management <ul style="list-style-type: none">• Characteristic of foods• Food Purchasing• Menu Planning• Food Production• Food Service• Dishwashing	12
5	Financial Management <ul style="list-style-type: none">• Definition and Scope	08

	<ul style="list-style-type: none"> • Cost Concepts • Cost Control • Pricing 	
6	Personnel Management <ul style="list-style-type: none"> • Introduction • Recruitment, Selection and Induction • Training and Development 	08
7	Hygiene, Sanitation and Safety <ul style="list-style-type: none"> • Hygiene and Sanitation • Safety • Food Standards in India 	06

Reference:

1. Sethi Mohini. 2nd Edition. (2016) Institutional Food Management, New Age International Publishers.
2. Sethi M. and Malhan S.– 3rd Edition (2015) – Catering Management An Integrated Approach. New Age International Publishers.
3. Arora R. K. (2007). Food Service and Catering Management. A.P.H. Publishing Corporation, New Delhi.
4. Kinton R. and Ceserani V. (1992). The Theory of Catering. ELBS with Hodder and Stoughton.
5. Scanlon N.L. (2007). Catering Management. John Wiley and Sons, Inc.

Lab Course I

Total workload: 120

Sr. No.	Practical	No. of Periods
1.	Standardization of portion sizes for different food preparations.	08
2.	Routine Hospital Diets <ul style="list-style-type: none"> • To plan a Clear Liquid diet. • To plan a Full Liquid Diet. • To plan a Soft Diet. 	12
3.	Diet In Weight Imbalance And Counseling: <ul style="list-style-type: none"> • To plan a diet for Obesity. • To plan a diet for Underweight. 	08
4.	Diet In Fever: <ul style="list-style-type: none"> • To plan a diet for Typhoid fever. • To plan a diet for Tuberculosis. • To plan a diet for HIV Infection and AIDS. 	12
5.	To plan a diet for Nutritional Anemia	04
6.	Diet in Diseases of Gastro Intestinal Tract and Counseling: <ul style="list-style-type: none"> • To plan a diet for Peptic Ulcer. • To plan a diet for Lactose Intolerance. • To plan a diet for Coeliac Disease. • To plan a diet for Constipation. • To plan a diet for Diarrhea. • To plan a diet for Uncreative Colitis. 	20
7.	Diet In Liver Diseases And Counseling: <ul style="list-style-type: none"> • To plan a diet for Hepatitis. • To plan a diet for Cirrhosis of Liver. • To plan a diet for Hepatic coma. • To plan a diet for Cholelithiasis and Cholecystitis. • To plan a diet for Pancreatitis. 	14
8.	Diet in Kidney Diseases and Counseling: <ul style="list-style-type: none"> • To plan a diet for Nephrotic Syndrome. • To plan a diet for Acute Renal Failure. • To plan a diet for End Stage Renal Diseases. 	14

	<ul style="list-style-type: none"> • To plan a diet for Urolithiasis. 	
9.	Diseases of Metabolic Disorder and Counseling: <ul style="list-style-type: none"> • To plan a diet for IDDM. • To plan a diet for NIDDM. • To plan a diet for Gout. 	12
10.	Diet in Cardiovascular Diseases and Counseling: <ul style="list-style-type: none"> • To plan a diet for Dyslipidemia. • To plan a diet for Hypertension. • To plan a diet for Myocardial infarction. 	12
11.	To plan a diet for Cancer.	04

Lab Course II

Total workload: 60

Sr. No.	Practical	No of Periods
1.	Quantity Cooking: Basic Principles <ul style="list-style-type: none"> • Market Survey • Analysis of the relationship between the purchased amount, edible portion and cooked weight of foodstuffs • Standardized Recipe 	12
2.	Planning Meals for Institutional Feeding: <ul style="list-style-type: none"> • Planning a Mid-Day Snack for preschool Children. • Planning Meals for College Canteen • Planning meals for College Hostel Mess • Planning meals for Working Women Hostel. 	14
3.	Planning and Organization for Industrial Catering: <ul style="list-style-type: none"> • Planning Meals for Industrial Canteen. • Planning Meals for Railway Base Kitchen. 	08
4.	Catering for Special Occasions and Events: <ul style="list-style-type: none"> • Planning Meals for a Birthday party. • Planning Meals for a Cocktail party. • Planning Meals for a Convention/ Conference. 	10
5.	Preparation of Prospectus for Setting Up A Food Service Unit: <ul style="list-style-type: none"> • Visit to a food service establishment to study its planning and functioning • Preparing a planning prospectus to set up a food service unit 	06

EQUIVALANCE FOR PGDND COURSE

Sr. No.	Old Course	Sr. No.	New Course
1	Clinical Nutrition	1	Field Work
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	Institutional Food 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