Ordinance and Regulations P.G. Diploma in Nutrition and Dietetics

1. **Nomenclature of the Degree**

The nomenclature of the degree awarded shall be P. G. Diploma in Nutrition and Dietetics.

2. **Eligibility for Admission**

The eligibility for admission to the P. G. Diploma Course in Nutrition at Dietetics. shall be B.Sc. in Home Science with specialization in Foods and Nutrition and General Home Science/General Science B Group/ B.F. T.M./ M.B.B.S. / B.H.M.S./ B.A.M.S./ B.Pharmacy

3. **Mode of Admission**

Admission for P.G. Diploma in Nutrition and Dietetics shall be based on purely on merit basis. The intake capacity be 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.

6. **Fee Structure:**

	Fee/Year	**Amount**
1.	Admission	100.00
2.	Registration	200.00
3.	Tuition Fees	12,000.00
4.	Library	500.00
5.	Lab. Fees	1000.00
6.	Eligibility	200.00
7.	Library Deposit	500.00
8.	University fees	500.00
9.	Other	300.00
10.	Gymkhana/Sports	200.00
11.	College Development	1000.00
12.	University Administration Charges	825.00
	Total	**17,325.00**

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	Nutritional Biochemistry	80	20	2	100
2	Food Microbiology	80	20	2	100
3	Human Physiology	80	20	2	100
4	Dietetics & Diet Counseling	80	20	2	100
5	Clinical & Community Nutrition	80	20	2	100
6	Food Production Costing & Hospital& Mgt.	80	20	2	100
7	Practical 1	-	-	3	50
8.	Practical 2	-	-	3	50
9.	Project			2	100
	Grand 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.	Nutritional Biochemistry	2	-	2
2.	Food Microbiology	2	-	2
3.	Human Physiology	2	-	2
4.	Dietetics & Diet Counseling	2	-	2
5.	Clinical & Community Nutrition	2	-	2
6.	Food Production Costing & Hospital Management	2	-	2
7.	Practical 1	-	3	3
8.	Practical 2	-	3	3
9.	Project	-	2	2
10.	Total	12	8	20

Note:- Practical batch of 15 students.

STAFF REQUIREMENT AND QUALIFICATION

Sr. No.	Staff	Qualification	Scale of pay
	Lecturer Academic qualification	M. Sc. With specialization in the following Food Science and Nutrition -- Dietetics -- Biochemistry -- Microbiology a) Good academic record with at least 55% of marks . b) Cleared the eligibility test (NET/SET) conducted by UGC, CSIR or similar test accredited by UGC.	8,000-13,500

EXAMINATION PATTERN

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

External Marks Distribution

Objective Questions: **10 Marks**

- Fill in the blanks.
- Match the following
- True or False
- Answer in one sentence.

Short Notes : **20 Marks**

Subjective Questions **50 Marks**

Solve any five questions out of seven

Internal Mark Distribution

Attendance;	5 Marks
Home Assignments:	5 Marks
Class test Seminar :	10 Marks

Practical Paper : **50 Marks**

Journals:	10 Marks
Viva:	10 Marks
Experiment:	30 Marks

Project Case Study : **80 Marks**

. Implant training :	50 Marks
. Project:	25 Marks
. Viva:	25 Marks

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

Theory :-

I) Carbohydrates
Definition., classification, physical and chemical properties, sources ,biological role, metabolism, deficiency diseases, inborn errors of carbohydrate metabolism. Nutritional aspects of carbohydrate.

2) 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.

3) Lipids
Definition, classification, physical and chemical properties, sources, biological role, metabolism, and inborn errors of lipid metabolism. Nutritional aspects of lipids.

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) Enzymes Definition, classification, mechanism of enzyme action., enzyme specificity, enzyme activity, factors affecting enzyme activity, uses of enzymes, enzymes in clinical diagnosis

7) Nucleic acids DNA & RNA, structure & function. metabolism. genetic disorders. e.g. cancer, autoimmune diseases

8) Role of Hormones

9) Interrelation between Nutrients.

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

FOOD MICROBIOLOGY

Objectives:-

To enable students to:

1] Be familiar with morphological cultural and biochemical activities bacteria.

2] Gain knowledge about the importance of micro-organisms in food industry.

Theory:

1] History of Food Microbiology

2] Micro-organisms.
Importance of Microorganisms, General classification, study of the morphological, cultural characteristics and bio-chemical activities of bacteria.

3] Growth curve of typical bacterial cell, Growth requirement of bacteria, sterilization by physical and chemical methods.

4] Different sources of contamination, intrinsic and
extrinsic parameters of Food which effect Microbial growth.
b. General principles underlying Food spoilage, chemical changes caused by Microorganism
c. Spoilage changes in different Food stuffs in brief.

5] Microbiology of Water - number and kinds of Microorganisms present, test for contamination of bacteria.

6] Food Hazards, Food Poisoning, Food borne, Diseases, Food intoxication, Study of causative agent, symptoms of disease, prevention, control and vaccination.

7] Microbes in fermented Food - Alcoholic beverages, Indigenous fermented foods like Idli, Dosa, Kaman Dhokla, Bread, Soya Bean Fermented Foods and other oriented fermented foods.

Reference:

1] Geooge J. Banwart 'Basic Food Microbiology', Delhi, CBS Publishers and distributors.

2] Anantanarayan CKJ Panikar, 'Text Book of Microbiology' Origent Longman.

3] James M. Jay 'Modern Food Microbiology' New Delhi, CBS Publishers and distributors.

4] Reeta Arora'Microbiology and diseases', New Delhi, Anmol Publications Pvt. Ltd.

5] Frazier W.e. (1974), 'Food Microbiology' New Delhi Iind edition Tata Mc Graw Hill

6] Pelczar Micheal J. JR and Robert D. (1974) , Reid Microbiology' Iind edition Tata Me Graw Hill.

HUMAN PHYSIOLOGY

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 was1 products.
3. Physiological changes at different stages of life and
4. Importance of hormonal and nervous regulation of the body function.

Theory :-

1. Definition of anatomy physiology, general anatomy of human body.
2. Protoplasm Chemical, Physical and physiological properties of protoplasm.
3. 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
4. Tissues Structure and functions of various types of tissues. Organs and organ systems anintegrated approach.

5. Digestive System

   Brief study of the anatomical organization of the digestive tract and process of dige absorption and assimilation of food.

6. 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.

7. Defense Mechanisms of the body
   Localization of infection; Inflammation, Active and Passive immunity, Introduction to T -lymphocytes and B-Iymphocytes; Immunization, Failure of immunity, DiGeorge syndrome, Common Variable Immuno deficiency syndrome (CVID), Acquired Immuno deficiency syndrome (AIDS).

8. Respiratory System
   Basic anatomy of the respiratory system. Process of respiration-Transport and exchange of oxygen and carbon dioxide in the body.

9. Excretory System
   Excretory organs- Structure and functions of Kidneys, Formation of urine composition of urine, Role of Skin and Liver in excretion.

10. Body Fluids, Water and Electrolytic Balance.

11. 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.

12. Endrocrine 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.

13. 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.

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.

DIETETICS AND DIET COUNSELLING

Objectives:-

To enable students to:

1] Know the importance of therapeutic diet.

2] Knowledge about dietary control of different diseases.

Theory:-

1. 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.

2. Routine Hospital diets
   Regular diet, light diet, soft diet, full liquid diet, clear liquid diet and tube feedings

3. Therapeutic adaptation of normal diet.

4. Feeding infants and children
   Problems in feeding in the Hospital.

5. Feeding the patient
   Psychology of feeding the patient, assessment of patients need.

6. Nutrition and diet clinics.
   Patients check up and counseling, education of the patient and follow- up.

7 Diet in fevers, typhoid fever, influences and tuberculosis, Rheumatic fever & Counseling.

8. Disease of Gastro Intestinal tract
   Constipation dysentery diarrhea, colitis.

9. Diet in Cancer & Counselling
   Risk factors, general reaction, nutritional problems, nutritional requirements, Role of food in prevention of Cancer.

10. Diet in Liver Diseases. & Counseling
    Cirrhosis, hepatitis, hepatic coma, diseases of gall bladder, pancreatitis,

11. Diet in Cardiovascular diseases& Counseling
    Atherosclerosis, coronary heart disease, lipidaemia, hypertension, congestive heart failure, myocardial infarction.

12. Diet in kidney diseases& Counseling
Nrphrits, Acute chronic and reneal failure, renal calculi.

13. Diseases of metabolic disorder.
Arthritis, Diabetes mellitus and Gout.

14. Diseases of Nervous system. & Counseling
Polyneuropathy, burning feet syndrome, anorexia nervosa and epiplisy.

15. Diseases of Endocrine disorders. & Counseling
Hypothyroidism, Hyperthyroidism, hypocalcimia

16. Anemia

Reference: -

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 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. Jelliffee B.B. 'Assessment of Community Nutriion Status'

CLINICAL AND COMMUNITY NUTRITION

Objectives :-

To enable the students to :
1] Know the importance of RDA
2] Know the dietary modification for disease condition.

Theory :-

1. 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.

2. 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.

3. Nutritional requirements for expectant and nourishing mother, dietary modification, - dietary problems, complications of pregnancy and Indian nourishing mother.

4. Geriatric Nutrition:
   Nutritional requirement, physiological changes, Nutritional changes, Nutritional problems during old age.

5. Nutritional problems in India
   Anemia, overweight, underweight, vito A- deficiency, PEM, goiter, thiamin deficiency.

6. Food selection purchase, storage, Food handling, sanitation and hygiene

7. Assessment of nutritional status by Population sampling, Anthropometry, Biophysical assessment, Radiographic examination, Nutritional adequacy of diet consumed, Clinical assessment, Biochemical assessment.

8. Diet survey methods
   Population sampling & duration of survey, diet survey methods, Questionnaire, Food list method, Interview method, Food inventory of log book method, Weightment of raw food, Weightment of cooked food, Analysis of cooked food method, Adult consumption units

9. Nutrition and Health Education
   Definition. importance. channels of nutrition education. nutrition education methods. planning for Nutrition and Health Education. Techniques of Nutrition Education. Evaluation of Nutritional Programmes. Role of *Nutrition* Education Programmes *in* eradication of malnutrition.
10. Role of National & International Agencies to overcome malnutrition (ICDS.UNICEF , WHO,F AO,ICAR.)

11. Food fads & fallacies.

12. Applied Nutritional Programmes ANP.MMP.SNPJCDS.FWPJPP.BNP.

References :

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 0, (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

Objectives:-

To enable the students to :
1. Develop excellent communication skills to disseminate knowledge.
2. Develop entrepreneurship skills.

Theory:-

1] Foundation Ingredients:-
Carbohydrates, fats, Proteins, Minerals, Vitamins, Seasonings, Flavorings, Liquids, Thickening agents, Fats & Oils, Sweetening & Raisings agents.

2] Various cooking methods & Culinary terms (Western & Indian) :-

3] Principles of cooking food with special application to fish, egg, meat, vegetables, cheese, pulses & cereals.

4] Salads: - Importance, types, common salad dressing.

5] Soups: - Importance, types

6] Seasoning & flavoring

7] Menu & Meal planning, rules for compilation of menu.

8] Standardization of recipes & portion control.

9] a] Food Production Management – establishing purchase specification, volume forecasting, dealing with suppliers, receiving methods, stores organization, inventory control of stock, imienting portion control, yield testing standard recipes.
b] Quantity Food Production :- Objectives of food preparation, working methods, cooking methods, food preservation, food spoilage.

10] Service Management
a) Table Service, dining room management.
b) Delivery and service of food in different systems.

11] Development of new recipes and modified recipes.

12] 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.

13) Leadership, motivation and communication .

a) Dietitian as a leader, leadership qualities that a dietitian should possess, styles of leadership and their effect on subordinates.

b) 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.

14) Staffing and Personnel Management:
Manpower Planning, Recruitment, Selection, Induction, Performance Appraisal, Training Development,.

15) Planning and Equipment Purchase, Layout Design:

a) 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.

b) Factors affecting selection of equipment, features of equipment, installation operation and performance, care, maintenance and replacement.

c) Layout Design - space allowances, design development, space relationships, flow of traffic.

Reference :

1. Thangum Philip – (1994) Modern Cookery for Teaching and Trade (Volume 1 & 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 – (4^{th} Ed.) – Food Service in Institutions - New York, John Willey & Sons,
5. Mohini Sethi & Surjeeet Mathan – (1993) – Catering Management & Integrated Approach, Bombay, Willey Eastern. Ltd.

PRACTICAL 1

1. Weights and measures
2. Preparation of therapeutic diets -liquid diet, full fluid, solid and semisolid 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 arthritis, diabetes and gout.
9. Diet in cancer
10. Diet in Aids.
11. Quantity cookery

PRACTICAL 2

1. Anthropometric measurements
2. Clinical assessment of subjects
3. Growth monitoring
4. Nutrition Education
   - Teaching aids
   - Nutrition messages
   - Street plays
5. Planning, preparation and Demonstration of Low cost nutrient rich recipes
6. Estimation of Blood Glucose
7. Estimation of Blood Urea.
8. Estimation of Serum Creatinine
9. Estimation of Bilirubin
10. Estimation of Serum protein
11. Estimation of Hemoglobin
12. Urine analysis
13. Preparation of Culture media
14. Culture methods
15. Gram Staining
16. Adulteration of various food samples