

PANJAB UNIVERSITY CHANDIGARH- 160 014 INDIA)

(Estd. under the Pan jab University Act VII of 1947-enacted by the Govt. of India)



FACULTY OF SCIENCE

SYLLABI

FOR

**Post Graduate Diploma in Nutrition
and Dietetics**

(Semester System)

Examination 2022-23

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Post Graduate Diploma in Nutrition and Dietetics (Scheme of Studies)
Semester - I

Sr. no.	Subject	Credit Hours			TheoryMarks			Practical Marks			TOTAL MARKS
		T	P	TOTAL	Paper	Int. Ass.	TOTAL	Paper	Int. Ass.	TOTAL	
1	Applied Nutrition - I	3	3	6	60	15	75	40	10	50	125
2	Public Health Nutrition - I	3	3	6	60	15	75	40	10	50	125
3	Institutional Food Service Management - I	2	3	5	40	10	50	-	*50	*50	100
4	Introduction to Microbiology	2	-	2	40	10	50	-	-	-	50
5	Human Physiology	3	-	3	60	15	75	-	-	-	75
6	Food Product Development	-	2	2	-	-	-	40	10	50	50
7	Nutritional Biochemistry	2	-	2	40	10	50	-	-	-	50
8	*Seminar - I	-	2	2	-	-	-	-	*25	*25	*25
9	*Project	-	2	2	-	-	-	-	-	*S/US	*S/US
	Total	15	15	30			375			225	600

Semester - II

Sr. no.	Subject	Credit Hours			TheoryMarks			Practical Marks			TOTAL MARKS
		T	P	TOTAL	Paper	Int. Ass.	TOTAL	Paper	Int. Ass.	TOTAL	
1	Applied Nutrition - II	2	-	2	40	10	50	-	-	-	50
2	Public Health Nutrition - II	4	4	8	80	20	100	60	15	75	175
3	Institutional Food Service Management - II	2	3	5	40	10	50	-	*50	*50	100
4	Food Hygiene and Microbiology	2	-	2	40	10	50	-	-	-	50
5	Diet Therapy	4	4	8	80	20	100	60	15	75	175
6	*Diet Counseling and Computer Operation	-	3	3	-	-	-	-	*25	*25	*25
7	*Seminar - II	-	2	2	-	-	-	-	-	*25	*25
	Total	14	16	30			350			250	600

*Only internal examination/ continuous evaluation will be done and marks will be awarded internally.

NOTE: Students are required to undergo mandatory 3 months internship training in the following agencies for internship:

- Catering & Hospitality Management (CIHM, AIHM etc.)
- Government Sports Institute (SAI, NSNIS etc.)
- Government programs (ICDS, MDM and NDHM etc.)
- Quality Control Labs (National Accredited Laboratories etc.)
- Food Safety Authority (FSSAI etc.)
- Food Processing Industry (AMUL, VERKA, Mother Dairy etc.)
- NGOs (Regional, State and National level etc.)
- Health Care Centers (VLCC, Cleopatra etc.)

Any other related institute of repute

Pre requisites of obtaining diploma:

Certificate of completion of training/ internship.

Submission and presentation of internship report. The internship report will be graded as satisfactory/ unsatisfactory by the concerned department faculty.

Post Graduate Diploma in Nutrition and Dietetics

**Semester I
APPLIED NUTRITION – I
THEORY**

MARKS: 75

PAPER: 60

INTERNAL ASSESSMENT: 15

CREDITS: 3p/week

OBJECTIVES:

- 1. To elucidate the applied concepts of different areas of Foods and Nutrition.**
- 2. To acquire knowledge about the nutritional needs and concerns of specific age groups/physiological conditions.**

INSTRUCTIONS TO PAPER SETTERS:

- 1. Each theory paper will be of three hours duration.**
- 2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.**
- 3. Student will attempt one question from each unit and the compulsory question (Total of five questions)**
- 4. All questions may carry equal marks, unless specified.**

UNIT I

- 1. Minimum nutritional requirement and RDA:
Formulation of RDA and dietary
guidelines Reference man and woman**
- 2. Body composition:
Concept
Factors affecting body composition
Methods of assessment of body composition – DEXA scan, Bioelectrical impedance**

UNIT II

3. Energy in human nutrition:

Concept and Kilojoules (Kj) & Kilocalories (Kcal)

Resting energy expenditure (REE), Resting metabolic rate (RMR), Basal metabolic rate (BMR), Physical energy expenditure (PEE), Thermic effect of food (TEF)

Factors affecting

BMR Energy Balance

4. Nutritional and lifestyle management during:

Pregnancy

Lactation

UNIT III

5. Nutritional and lifestyle management during:

Infancy

Childhood

Adolescence

6. Nutritional and lifestyle management during:

Adulthood

Old age

UNIT IV

7. Basic concept of balanced diet and diet therapy: Therapeutic adaptation of normal diet

Consistency modification

Nutrient modification

8. Nutritional support and their complications: Types of Feeding

Enteral

Parenteral

Total parenteral nutrition (TPN)

9. Team approach to health care

RECOMMENDED READINGS:

Guthrie, A. H. (1986): Introductory Nutrition, 6th Ed., The C.V Mosby Company.

Swaminathan, M (1991): Essentials of Food and Nutrition, vols. I and II. Ganesh and Co. Madras.

Gopalan, C. et al., (1991): Nutritive Value of Indian Foods, Indian Council of Medical Research.

Indian Council of Medical Research (1989): Nutrient Requirements and Recommended Dietary Allowances for Indian, New Delhi.

FAO/WHO/UNU: Technical Report Series, 724 (1985) Energy and Protein Requirements, Geneva.

WHO Technical Reports Series for different Nutrients.

Joshi S. (2011): Nutrition and Dietetics, 3rd edition, Tata McGraw Hill Education Pvt. Ltd.

Manay N., Shadaksharaswamy M. (2008), Foods, Facts and Principles, 3rd Edition, New Age International (P) Ltd. Publication

Khanna K., Gupta S, Passi SJ, Seth R, Mahna R and Renu S (1997). Textbook of Nutrition and Dietetics, Elite Publishing House, New Delhi.

Jim M, Stewart Truswell A. (2007). Essentials of human nutrition. New York; Oxford.

Mahtab S Bamji. (2010). Textbook of human nutrition. Delhi : Oxford.

Stipanick, Martha H., (2006). Biochemical Physiological Molecular aspect of human nutrition. London : Elsevier.

Babasaheb and Desai. (2000). Handbook of nutrition and diet. New York.

**APPLIED NUTRITION – I
PRACTICAL**

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 3p/week

- 1. Planning & preparation of diet for Pregnancy, Lactation, Infancy (weaning foods), Childhood, Adolescent, Adulthood, Old age.**

- 2. Preparation of modified recipes in terms of Consistency**
 - Low sodium**
 - Low potassium**
 - High protein**
 - Low protein**

- 3. Demonstration of use of body composition analyzer**

- 4. Body composition analysis through Bio Electrical impedance**

**PUBLIC HEALTH NUTRITION – I
THEORY**

MARKS: 75

PAPER: 60

INTERNAL ASSESSMENT: 15

CREDITS: 3p/week

OBJECTIVES:

- 1. To understand the causes/determinants and distribution of nutrition problems in the community.**
- 2. To understand the consequences of nutritional problems.**
- 3. To be familiar with various approaches to nutrition and health interventions programs and policies.**

INSTRUCTIONS TO PAPER SETTERS:

- 1. Each theory paper will be of three hours duration.**
- 2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.**
- 3. Student will attempt one question from each unit and the compulsory question (Total of five questions)**
- 4. All questions may carry equal marks, unless specified.**

UNIT I

- 1. Concept of community:
Types of community
Factors affecting health of community**
- 2. Aim, scope and content of Public Health Nutrition**
- 3. Role of public health nutrition in national development**

UNIT II

4. Epidemiological triad:

Factors affecting malnutrition – Agent, host and environmental factors

5. Nutritional measures to overcome malnutrition:

Germination

Fortification

Supplementation

Enrichment

Parboiling

GM foods

Unconventional foods

Green revolution and white revolution

Food security

UNIT III

6. Nutrition and infection:

Interrelationship between nutrition and infection- basic concept

7. Nutritional surveillance:

Meaning

Need and importance

Objectives

8. Nutrition education:

Scope and importance

Group, individual and mass media methods and techniques

UNIT IV

9. Food and nutrition security:

Concept of food security

Factors underlying food and nutrition security

Right to food act 2009

Laws related to food safety – HACCP, FSSAI

10. National and international agencies engaged in food

and nutrition activities: National agencies:

ICMR
NIN
CSIR
CFTRI
ICAR

International agencies:

FAO
WHO
UNICEF
CARE
UNESCO

RECOMMENDED READINGS:

Gibney M.J., Margetts, B.M., Kearney, J.M. Arab, I. eds (2004) Public Health Nutrition, NS Blackwell Publishing. .

Jelliffe, D. B and Jelliffe, E.F.P. (1989) Community Nutritional Assessment, Oxford University Press.

Owen, A.Y. and Frankle, R.T. (1986) Nutrition in the Community. The Art of Delivering Services, 2nd ed. Times Mirror/Mosby.

Park.K. (2009) Park's Textbook of Preventive and Social Medicine, 20th ed. M/s BanarsidaBhanot, Jabalpur.

Wadhwa, A. and Sharma, S. (2006) Nutrition in the Community. A text book. SCN News, UN ACC/SCN Subcommittee on Nutrition.

Mahtab S Bamji. (2010). Textbook of human nutrition. Delhi : Oxford.

Swaminathan, M (1991): Essentials of Food and Nutrition, vols. I and II. Ganesh and Co. Madras.

Stipancik , Martha H.,(2006). Biochemical Physiological Molecular aspect of human nutrition. London : Elsevier.

IAP. Textbook of Pediatrics. IVth Edition. JP Publishers.

Babasaheb and Desai. (2000). Handbook of nutrition and diet. New York.

MahindruSN., (2009). Food Science and Technology: Food Safety. Vol II. New Delhi. APH Publication.

Community Nutrition: Applying Epidemiology and Contemporary Practice. New Delhi. Boston Jones. 2007.

Public Health Nutrition in Developing Countries. Part 1 and 2. Edited by Sheila ChanderVir. Woodhead Publishing India Pvt. Ltd. 2011.

**PUBLIC HEALTH NUTRITION – I
PRACTICAL**

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 3p/week

- 1. Planning and preparation of low cost nutritious recipes for:
Preschoolers
Adolescents
Pregnant and lactating women**
- 2. Planning and preparation of low cost nutritious recipes for mid-day meal program as per the Government of India guidelines**
- 3. Preparation and demonstration of nutrition education aids**
- 4. Visit to primary health care centre.**

INSTITUTIONAL FOOD SERVICE MANAGEMENT - I THEORY

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 2p/week

OBJECTIVES:

- 1. To understand the different kinds of food service units and systems.**
- 2. To understand the principles of organization and management.**
- 3. To gain knowledge in various areas of food production.**
- 4. To learn the principles of personnel management.**

INSTRUCTIONS TO PAPER SETTERS:

- 1. Each theory paper will be of three hours duration.**
- 2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.**
- 3. Student will attempt one question from each unit and the compulsory question (Total of five questions)**
- 4. All questions may carry equal marks, unless specified.**

UNIT I

1. Introduction to food service institutions:

**Development of food service institutions
in India Effect of environmental changes**

Types of institutional food service operations: Commercial and Non-commercial

2. Organization:

Concept

Types of organizations

UNIT II

3. Food Service Management:

**Approaches to management: Classical, Neo-classical, Scientific,
Quantitative, Systems, Just-in-time, Total quality management
Definition of management**

Principles of management

4. Management:

Functions of management

Tools of management

Tangible Tools: Organization chart, Job description, Job specification, Job analysis, Work schedule, Production, Service and staff analysis statements, Budget,

Benchmarking

Intangible tools: Personality, Trust, Experience, Social and interactive skills, Self-confidence, Knowledge, Communication skills, Leadership quality, Goodwill, Appreciation, Training, Decision making

UNIT III

5. Institutional meal planning:

Menu: Functions, format, display, types

Basic factors involved in meal planning

Portion size and standard serving

Use of leftover food

6. Food purchase and storage:

Purchasing methods- Wholesale, retail, market,

vendor Methods of Purchase: Formal and Informal

Storage: Types, appropriate temperature for storage

Store room: Requirements and records

UNIT IV

7. Food production:

Systems: Conventional, Convenience, Ready to eat food, Contract catering system Process of food production

Cooking techniques: Moist, Dry, Combination

8. Food services:

Types: formal and informal

Sensory evaluation of raw food and cooked food – Duo and Trio tests, Hedonic scale.

RECOMMENDED READINGS:

West B Bessie & Wood Levelle (1988) Food Service in Institutions 6th Edition Revised By Hargar FV, Shuggart SG, &Palgne Palacio June, Macmillian Publishing Company New York.

Sethi Mohini (2005) Institutional Food Management New Age International Publishers

Koontz Harold &Weihrich Heinz (2006) Essentials of Management 7th edition

Tata McGraw Hill Book Company .

Terrell E M (1971) Professional Food Preparation, Wiley publishers (New York)

Tripathi P C (2000) Personnel management 15th ed Sultan Chand, New Delhi

Dessler Gary (2007). Human Resource Mangement 11th edition.

Prentice Hall, New Jersey.

Babasaheb and Desai. (2000). Handbook of nutrition and diet. New York.

***INSTITUTIONAL FOOD SERVICE MANAGEMENT - I
PRACTICAL**

INTERNAL MARKS: 50**

CREDITS: 3p/week

Internal marks are based on

Running of cafeteria.

Visits to hospitals/ hostels/ hotels/ cafeterias.

Project reports on visits to hospitals/hotels/ Institutional cafeterias/kitchen plans.

INTRODUCTION TO MICROBIOLOGY

THEORY

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 2p/week

OBJECTIVES:

1. To study the origin of micro-organisms and their structure.
2. To understand the growth and activities of bacteria.
3. To gain knowledge of principles of various techniques used in prevention and control of micro-organisms in food.

INSTRUCTIONS TO PAPER SETTER:

1. Each theory paper will be of three hours duration.
2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.
3. Student will attempt one question from each unit and the compulsory question (Total of five questions)
4. All questions may carry equal marks, unless specified.

UNIT I

1. Discovery and history of microbiology:
Sub-disciplines of microbiology.
2. The prokaryotic cell structure:
Introduction to important micro-organisms in foods

UNIT II

3. Physical and chemical methods used in the destruction of micro-organisms :(Sterilization and disinfection).
4. Cultivation of micro-organisms:
Nutritional requirements of micro-organisms
Types of media used
Methods of isolation

UNIT III

- 5. Measurement of growth of micro organisms:
Extrinsic and intrinsic parameters affecting growth of microbes.**

- 6. Use of high and low temperature, dehydration, irradiation and preservatives in food preservation.**

UNIT IV

- 7. Contamination and spoilage of:
Cereals and Cereal products
Vegetables and fruits
Meat and meat products
Milk and milk products
Eggs and poultry
Canned food**

- 8. Microbiological safety of foods: HACCP, Microbiological Criteria.**

RECOMMENDED DEMONSTRATIONS:

Methods of isolation of bacteria: Streaking, Dilution method,

Enumeration of bacteria in food: Standard Plate Count Method, Direct Microscopic Count Method.

RECOMMENDED READINGS:

General Microbiology: Stanier, Ingraham, Wheelis, Painter (2009) Fifth Edition, Macmillan Press Ltd.

Microbiology : Pelczar(Jr.) Chan,Kraig:(2011)Fifth Edition, Tata McGraw-Hill

Microbiology-An Introduction; Tortora, Funke, Case (2011) Ninth Edition, Pearson Education, Inc.

Modern Food Microbiology: Jay (2005) Fourth Edition CBS Publishers & Distributers Pvt. Ltd.

General Microbiology Vol. II: Powar&Daginawala (2010) Edition 2010 Himalaya Publishing House.

Food Microbiology: Frazier and Westhoff (2014) Fifth Edition, McGraw Hill Edition (India) Pvt. Ltd.

A Textbook of Microbiology: Dubey and Maheshwari (2010) Revised Edition, S. Chand & Company Ltd.

HUMAN PHYSIOLOGY

THEORY

MARKS: 75

PAPER: 60

INTERNAL ASSESSMENT: 15

CREDITS: 3p/week

OBJECTIVES:

1. To provide a basic introduction to human physiology: the study of the functions of the human body and its constituent parts.
2. Apply knowledge of functional mechanisms and their regulation to explain the physiology underlying common diseases.

INSTRUCTIONS TO PAPER SETTERS:

1. Each theory paper will be of three hours duration.
2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.
3. Student will attempt one question from each unit and the compulsory question (Total of five questions)
4. All questions may carry equal marks, unless specified.

UNIT I

1. Cell structure.
2. Blood and Cardiovascular System:
Composition of blood: hemoglobin, plasma, platelets and leucocytes. Erythropoiesis and coagulation of blood.
ABO blood group and Rh blood group.
Basic structure of heart, cardiac output. Brief overview of cardiac cycle.
Blood pressure and factors affecting it Hypertension
ECG

UNIT II

3. Digestive system:

Structure

Functions and regulation of the salivary glands, stomach, pancreas, liver and the intestines.

Mechanism of digestion and absorption of carbohydrates, proteins and fats. Role of enzymes in digestion of carbohydrates, proteins and fats.

4. Excretory System:

Structure and function of kidney.

Mechanism of urine formation

Regulatory functions of the kidney. Acid Base balance.

Role of kidney in homeostasis.

Role of kidney in regulation of body temperature.

UNIT III

5. Endocrine System:

Definition, functions and kinds of hormones.

Structure and functions of the following glands:

Thyroid, parathyroid, adrenal, pancreas, pituitary and pineal gland.

6. Reproductive System:

Structure & function of male and female sex glands and organs. Ovarian and menstrual cycle.

Role of hormones in reproduction: FSH, LH, Estrogen, Progesterone, Testosterone and Human Chorionic Gonadotropic hormone (HCG). Placenta.

Physiology of pregnancy, parturition, lactation and menopause.

UNIT IV

7. Respiratory System:

Structure of respiratory system.

Mechanism of respiration and its regulation.

Oxygen and carbon dioxide transport in blood.

Lung volume and capacity

8. Nervous System:

Structure and functions of nerve and receptor cells. Transmission of nerve impulse

Synapse formation.

Autonomic Nervous System: Sympathetic and parasympathetic nervous system. Concept of neurotransmitters.

RECOMMENDED READING:

Jain, A K. (2012). Textbook of Physiology (5th ed.). Avichal Publishing Company. Vol I and Vol II.

Best and Taylor's. Physiological Basis of Medical Practice. The Williams and Wilkins Company.

Chatterjee, C.C. (1997). Human Physiology. Vol I and Vol II. Medical Allied Agency.

Ganong W.F. (2003)-Review of Medical Physiology.21st ed. McGraw Hill.

Guyton A.C. and Hall J.E.(2000)Textbook of Medical Physiology.10th ed. India:

Tortora G.J and Grabowski S.R.(2000) Principles of Anatomy and Physiology.9th ed. John Wiley and Sons.Inc.

Chaudhari S K(2000) Concise Medical Physiology.3rd Edition. Central .

West J.B.(1996) Physiological Basis of Medical Practice.12th Edition. B. I. Waverly Pvt. Ltd.

FOOD PRODUCT DEVELOPMENT PRACTICAL

MARKS: 50

PAPER: 40

INTERNAL ASSESMENT: 10

CREDITS: 2p/week

- 1. Developing and preparation of main course, snacks, ready to eat and dessert recipes for the following:**
 - Gluten free**
 - Low glycemic index**
 - Low / high fiber**
 - Low purine**

- 2. Developing and preparation of two recipes each using the following methods of cooking:**
 - Microwave**
 - cooking Baking**
 - Steaming**
 - Grilling**

NUTRITIONAL BIOCHEMISTRY

THEORY

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 2p/week

OBJECTIVES:

The course lays the foundation for an introduction to various biomolecules and understanding of various metabolic pathways.

INSTRUCTIONS TO PAPER SETTERS:

1. Each theory paper will be of three hours duration.
2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.
3. Student will attempt one question from each unit and the compulsory question (Total of five questions)
4. All questions may carry equal marks, unless specified.

Important Note: The course has been designed to lay a foundation of Nutritional Biochemistry. No structures have been taught anywhere in the course. Questions pertaining to structures are not to be given.

UNIT I

1. Classification and properties of biomolecules:
Carbohydrates- Classification and importance of Monosaccharides, Disaccharides and Polysaccharides (without structures)
Classification of lipids (without structures)
Classification of amino acids and proteins- Essential and non-essential amino acids (without structures)

UNIT II

2. Intermediary Metabolism: Overview (no structures)
Carbohydrates- Glycolysis, Gluconeogenesis, TCA cycle, Blood sugar regulation
Proteins- Urea cycle

Lipids- β -oxidation and de novo synthesis of fatty acids, ketone bodies

UNIT III

3. Enzymes:

Definition and classification of enzymes;

Coenzymes Factors affecting enzyme catalysis

4. Hormones:

Introduction to hormones

Mechanism of hormone action; Biological role of Insulin and Glucagon

UNIT IV

5. Vitamins:

Vitamins- Biochemical role

Fat soluble vitamins – A, D, E & K

Water soluble vitamins– (B1 and B2 only) and C

6. Minerals(elementary aspects):

Macrominerals– Calcium, Sodium, Potassium,

Magnesium Microminerals– Iron, Copper, Zinc, Iodine

RECOMMENDED READING:

**West ES, Todd WR, Mason HS and Van Bruggen JT: Textbook of Biochemistry, 4th
Ed. Amerind Publishing Co. Pvt. Ltd.**

**Murray RK, Granner DK, Mayes PA and Rodwell VW, (2003) Harper's
Illustrated Biochemistry, 26th ed. McGraw-Hill (Asia).**

**Nelson DL and Cox MM. (2005) Principles of Biochemistry, 4th ed. Freeman
and Company.**

Voet D and Voet JG. (2004) Biochemistry 3rd ed. John Wiley and Sons.

BergJM, TymoczkoJL and StryerL. (2002) Biochemistry 5th ed. W.H. Freeman.

***SEMINAR -I**

***INTERNAL MARKS: 25**

CREDITS: 2p/week

Seminars will be based on topics covering recent advances in the field of nutrition, community nutrition, public health and allied areas.

Semester II

**APPLIED NUTRITION – II
THEORY**

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 2p/week

OBJECTIVES:

- 1. To elucidate the applied concepts of different areas of foods and nutrition.**
- 2. To acquire knowledge about the nutritional needs and concerns of specific age groups/physiological conditions**

INSTRUCTIONS TO PAPER SETTERS:

- 1. Each theory paper will be of three hours duration.**
- 2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.**
- 3. Student will attempt one question from each unit and the compulsory question (Total of five questions)**
- 4. All questions may carry equal marks, unless specified.**

UNIT I

- 1. Dietary Fiber:**
 - Classification**
 - Properties and nutritional significance**
 - Sources**
- 2. Basic concept and functions of:**
 - Antioxidants**
 - Omega 3 and omega 6 fatty Acids**
 - Functional foods**
 - Nutraceuticals**
 - Water**

UNIT II

- 3. Energy modifications, nutritional care and lifestyle management for weight management:
Underweight and overweight**

Etiological factors

Prevention and management

**Dietary and behavioral
modification Eating disorders**

- 4. Food allergy:**

Concept

Diagnosis

Symptoms

Dietary management and elimination diets

UNIT III

- 5. Febrile conditions:**

Metabolic changes and dietary management

Modifications during acute and chronic febrile conditions

- 6. Food intolerance:**

Gluten intolerance

Lactose intolerance

UNIT IV

- 7. Dietary modifications and counseling during metabolic stress:**

Injury

Trauma

- 8. Dietary modifications and counseling during:**

Sepsis

HIV/AIDS

RECOMMENDED READINGS:

Mahan L. K. and Escott Stump S. (2008) Krause's Food & Nutrition Therapy 12th ed. Saunders-Elsevier.

Gibney MJ, Elia M, Ljungqvist&Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company.

William's Basic Nutrition and Diet Therapy. 13th Edition. Stacy Nix (2009) Elsevier Mosby.

Garrow, J.S., James, W.P.T. and Ralph, A. (2000) Human Nutrition and Dietetics.10th ed. Churchill Livingstone.

Lee RD & Neiman DC. (2009). Nutritional Assessment.. 5th edition. Brown & Benchmark.

Dorland WA Newman. (2003) Dorland's Illustrated Medical Dictionary. 30th ed. WB Saunders Co.

Jim M, Stewart Truswell A. (2007). Essentials of human nutrition. New York;

Oxford. Mahtab S Bamji. (2010). Textbook of human nutrition. Delhi : Oxford.

Stipancik , Martha H.,(2006). Biochemical Physiological Molecular aspect of human nutrition. London : Elsevier.

Babasahib and Desai. (2000). Handbook of nutrition and diet. New York.

**PUBLIC HEALTH NUTRITION – II
THEORY**

MARKS: 100

PAPER: 80

INTERNAL ASSESSMENT: 20

CREDITS: 4p/week

OBJECTIVES:

1. To understand the causes/determinants and distribution of nutrition problems in society.
2. To understand the consequences of nutritional problems.
3. To be familiar with various approaches to nutrition and health interventions programs and policies.

INSTRUCTIONS TO PAPER SETTERS:

1. Each theory paper will be of three hours duration.
2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.
3. Student will attempt one question from each unit and the compulsory question (Total of five questions)
4. All questions may carry equal marks, unless specified.

UNIT I

**1. Etiology, public health implication and preventive strategies for:
Protein energy malnutrition**

Vitamin A deficiency

Nutritional anemia

**2. Etiology, public health implication and preventive strategies for:
Iodine deficiency disorders**

Vitamin D and osteoporosis

Zinc deficiency

UNIT II

3. Objectives and operations of nutrition programs in India:

Mid-day meal program

Integrated child development services (ICDS)

Supplementary nutrition program (SNP)

Vitamin A prophylaxis program

National iodine deficiency disorder control program

(NIDDCP) National anemia prophylaxis / control program

4. Food toxins – Chemical and natural

UNIT III

5. Assessment of nutritional

status: Direct assessment:

Clinical signs – need and importance, identifying signs of PEM, vitamin A, iron deficiency and iodine deficiency

Nutritional anthropometry – need and importance, techniques for measuring height, weight, head, chest and arm circumference

Biochemical tests and biophysical methods

6. Dietary surveys:

Need and importance

**Methods of dietary
survey Interpretation**

UNIT IV

7. Indirect methods of assessment: Vital statistics

8. Growth references and standards:

Height for age

Weight for age

Weight for height

Body mass index

Mid upper arm circumference

Concept of NCHS, WHO, NFHS

Welcome trust classification

Indian academy of pediatrics (IAP) classification

RECOMMENDED READINGS:

Gibney M.J., Margetts, B.M., Kearney, J.M. Arab, I. eds (2004) Public Health Nutrition, NS Blackwell Publishing. .

Jelliffe, D. B andJelliffe, E.F.P. (1989) Community Nutritional Assessment, Oxford University Press.

Owen, A.Y. and Frankle, R.T. (1986) Nutrition in the Community. The Art of Delivering Services, 2nd ed. Times Mirror/Mosby.

Park.K. (2009) Park's Textbook of Preventive and Social Medicine, 20th ed. M/s BanarsidaBhanot, Jabalpur.

Wadhwa, A. and Sharma, S. (2006) Nutrition in the Community. A text book. SCN News, UN ACC/SCN Subcommittee on Nutrition.

Mahtab S Bamji. (2010). Textbook of human nutrition. Delhi : Oxford.

Swaminathan, M (1991): Essentials of Food and Nutrition, vols. I and II. Ganesh and Co. Madras.

Stipancik , Martha H.,(2006). Biochemical Physiological Molecular aspect of human nutrition. London : Elsevier.

IAP. Textbook of Pediatrics. IVth Edition. JP Publishers.

Babasahib and Desai. (2000). Handbook of nutrition and diet. New York.

MahindruSN., (2009). Food Science and Technology: Food Safety. Vol II. New Delhi. APH Publication.

Community Nutrition: Applying Epidemiology and Contemporary Practice. New Delhi. Boston Jones. 2007.

Public Health Nutrition in Developing Countries. Part 1 and 2.Edited by Sheila ChanderVir. Woodhead Publishing India Pvt. Ltd. 2011.

**PUBLIC HEALTH NUTRITION – II
PRACTICAL**

MARKS: 75

PAPER: 60

INTERNAL ASSESSMENT: 15

CREDITS: 4p/week

- 1. Planning and preparation of low cost nutritious recipes for:
High protein and energy
High protein
High in vitamin A
High in iron
High in calcium**
- 2. Plotting of growth chart**
- 3. Techniques for anthropometric measurements : height, weight,
mid upper arm circumference**

INSTITUTIONAL FOOD SERVICE MANAGEMENT - II THEORY

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 2p/week

OBJECTIVES:

- 1. To understand the different kinds of food service units and systems.**
- 2. To understand the principles of organization and management.**
- 3. To gain knowledge in various areas of food production.**
- 4. To learn the principles of personnel management.**

INSTRUCTIONS TO PAPER SETTERS:

- 1. Each theory paper will be of three hours duration.**
- 2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.**
- 3. Student will attempt one question from each unit and the compulsory question (Total of five questions)**
- 4. All questions may carry equal marks, unless specified.**

UNIT I

1. Personnel Management:

Definition and scope

**Approaches: Autocratic, Bureaucratic, Democratic, Scientific,
Technological Personnel policies**

Functions of a personnel manager

2. Staff employment:

Advertising

Recruiting: Process and sources-Internal and External

Selecting: Interview, tests

Employment and wages

Orientation: Importance, Types: Formal, Informal

UNIT II

3. Employee benefits:

Physical needs
Physiological needs
Social- psychological needs
Principles of employee benefits
Employee welfare schemes in India

- 4. Staff training and development:**
Training: Definition, Importance
Staff development : Principles, Process

UNIT III

- 5. Space planning and organization:**
Layout planning
Preliminary preparation: Information gathering ,
Prospects Determining basic units and equipment
Design development: Types of kitchen areas, Flow of work and work area relationship.

- 6. Catering equipment:**
Types of Equipment
Factors affecting selection of equipments
Equipment design, installation and operation
Care and maintenance of equipments

UNIT IV

- 7. Financial management:**
Importance of Financial Management in a food based
enterprise Budgets and Budgeting process
Costing: Concept, Types, Control
Records: Menu, Purchase, Store, Production, Sales, Personnel, Utilities
Cost analysis: Concept of Trial Balance, Profit and Loss Account ,Balance sheet
- 8. Food cost analysis:**
Pricing: Definition, factors affecting
Basic concepts in accountancy : Cash memo, Receipt, Pay-in-slip, Cheques, Vouchers
Books of Account: Journal, Sales Return Book, Purchases Return Book, Sales Book,
Purchase Book, Cash Book, Ledger

RECOMMENDED READINGS:

West B Bessie & Wood Levelle (1988) Food Service in Institutions 6th Edition Revised By Hargar FV, Shuggart SG, &Palgne Palacio June, Macmillian Publishing Company New York.

Sethi Mohini (2005) Institutional Food Management New Age International Publishers

Koontz Harold &Weihrich Heinz (2006) Essentials of Management 7th edition

Tata McGraw Hill Book Company .

Terrell E M (1971) Professional Food Preparation, Wiley publishers (New York)

Tripathi P C (2000) Personnel management 15th ed Sultan Chand, New Delhi

Dessler Gary (2007). Human Resource Mangement 11th edition.

Prentice Hall, New Jersey.

Babasahib and Desai. (2000). Handbook of nutrition and diet. New York.

***INSTITUTIONAL FOOD SERVICE MANAGEMENT - II
PRACTICAL**

***INTERNAL MARKS: 50**

CREDITS: 3p/week

- 1. Preparing, packaging and retailing of food products as per actual bulk orders**
- 2. Visit to food service establishments.**

FOOD HYGIENE AND MICROBIOLOGY THEORY

MARKS: 50

PAPER: 40

INTERNAL ASSESSMENT: 10

CREDITS: 2p/week

OBJECTIVES:

- 1. To gain knowledge of principles of hygiene to be observed in catering establishments.**
- 2. To understand the nature of micro-organisms involved in food borne diseases.**
- 3. To gain knowledge of micro-organisms used in food biotechnology.**

INSTRUCTIONS TO PAPER SETTER:

- 1. Each theory paper will be of three hours duration.**
- 2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.**
- 3. Student will attempt one question from each unit and the compulsory question (Total of five questions)**
- 4. All questions may carry equal marks, unless specified.**

UNIT I

- 1. The importance of hygiene in food service establishments: canteen, hostel, hotel, hospital.**
- 2. Hygienic precautions to be taken during preparation, display and service of food. Personal hygiene of food handlers.**

UNIT II

- 3. A brief introduction to environmental sanitation and public health.**
- 4. Sources of harmful micro-organisms and their methods of transmission.**

UNIT III

5. Bacterial food poisoning: Sources, characteristics, symptoms and prevention of: Botulism

Staphylococcal food poisoning

Investigation of food borne disease outbreaks.

6. Food borne infections: Elementary knowledge of Enteric Fever

Cholera

Salmonellosis

Shigellosis

Diarrhea.

UNIT IV

7. Refuse Disposal:

Methods of collection

Storage and disposal

8. Micro-organisms used in food biotechnology. Prebiotics and Probiotics.

RECOMMENDED READINGS:

Institutional Food Management: Sethi (2011) Reprint of first Edition, New Age International (P) Ltd, Publishers.

Food Safety; Theory & Practice: Knechtges (2012). Jones and Bartlett Learning, LLC, on Ascend Learning Company.

Preventive and Social Medicine: Park(2011) Twenty first edition M/S Banarsidas Bhanot Publishers

Textbook of Preventive & Social Medicine: Gupta & Mahajan (2003) Third Edition. Jaypee Brothers Medical Publishers (P) Ltd.

Food Microbiology: Frazier and Westhoff (2014) Fifth Edition, McGraw Hill Edition (India) Pvt. Ltd.

Modern Food Microbiology: Jay (2005) Fourth Edition CBS Publishers & Distributors Pvt. Ltd.

General Microbiology Vol. II: Powar & Dagainawala (2010) Edition 2010 Himalaya Publishing House.

DIET THERAPY THEORY

MARKS: 100

PAPER: 80

INTERNAL ASSESSMENT: 20

CREDITS: 4p/week

OBJECTIVES:

1. To understand the etiology, physiological and metabolic anomalies of acute and chronic disorders / diseases.
2. To understand the effect of various disorders / diseases on nutritional status, nutritional and dietary requirements.
3. To be able to recommend and provide appropriate nutrition care for prevention and treatment of various disorders / diseases.
4. To remain updated on recent advances in Medical Nutrition Therapy (MNT).

INSTRUCTIONS TO PAPER SETTERS:

1. Each theory paper will be of three hours duration.
2. Question paper will have four sections/units. Paper setter will set a total of nine questions comprising of two questions from each section and one compulsory question of short answer type covering the whole syllabus.
3. Student will attempt one question from each unit and the compulsory question (Total of five questions)
4. All questions may carry equal marks, unless specified.

UNIT I

1. Etiology , symptoms, dietary and lifestyle management of Gastro Intestinal Diseases:

Gastro Esophageal Reflux Disorder (GERD)

Peptic ulcer-gastric and duodenal

Diverticulitis

Celiac Disease, Crohns Disease

Ulcerative colitis

Constipation

Diarrhea

2. Etiology, symptoms, dietary and lifestyle management of liver and pancreatic diseases:

Fatty Liver

Hepatitis

**Cirrhosis
Pancreatitis**

UNIT II

- 3. Etiology , symptoms ,clinical and metabolic changes, diagnosis, complications, dietary and lifestyle management for :
Diabetes mellitus**
- 4. Etiology, symptoms and dietary management for:
Gout**

UNIT III

- 5. Etiology, symptoms, dietary and lifestyle management of cardiovascular diseases:
CVD and Atherosclerosis
Hyperlipidemia
Ischemic Heart Disease (IHD)
Hypertension**
- 6. Dietary and lifestyle management for:
Cancer
Role of antioxidants in cancer**

UNIT IV

- 7. Etiology, symptoms , dietary and lifestyle management of Renal Disorders :
Glomerular nephritis -acute and chronic
Nephrotic Syndrome
Renal Calculi
Dialysis**
- 8. Etiology, symptoms , dietary and lifestyle management for:
Burns
Surgery**

RECOMMENDED READINGS:

Mahan L. K. and Escott Stump S. (2008) Krause's Food & Nutrition Therapy 12th ed. Saunders-Elsevier.

Gibney MJ, Elia M, Ljungqvist&Dowsett J. (2005) Clinical Nutrition. The Nutrition Society Textbook Series. Blackwell Publishing Company.

William's Basic Nutrition and Diet Therapy. 13th Edition. Stacy Nix (2009) Elsevier Mosby.

Garrow, J.S., James, W.P.T. and Ralph, A. (2000) Human Nutrition and Dietetics.10th ed. Churchill Livingstone.

Lee RD & Neiman DC. (2009). Nutritional Assessment. 5th edition. Brown & Benchmark.

Dorland WA Newman. (2003) Dorland's Illustrated Medical Dictionary. 30th ed.

Jim M, Stewart Truswell A. (2007). Essentials of human nutrition. New York;

Oxford. Mahtab S Bamji. (2010). Textbook of human nutrition. Delhi : Oxford.

Stipancik , Martha H.,(2006). Biochemical Physiological Molecular aspect of human nutrition. London : Elsevier.

Babasahib and Desai. (2000). Handbook of nutrition and diet. New York.

Khanna K. (2011). Textbook of Nutrition and Dietetics. New Delhi. Elite.

Antia FP., (2010). Clinical Dietetics and Nutrition. Vol IV. Delhi. Oxford.

RahinaBegam M. (2009). Textbook of food nutrition and dietetics. New Delhi. Sterling Publishers.

**DIET THERAPY
PRACTICAL**

MARKS: 75

PAPER: 60

INTERNAL ASSESSMENT: 15

CREDITS: 4p/week

- 1. As related to theory - planning, preparation and serving diets for all the conditions mentioned in the theory keeping in mind the economic, regional and cultural factors.**
- 2. Students are required to undergo 3 months training in a hospital. Certificate to be obtained from the hospital.**
- 3. Reading of blood / urine reports of laboratory tests.**

***DIET COUNSELING AND COMPUTER OPERATIONS
PRACTICAL**

***INTERNAL MARKS: 25**

CREDITS: 3p/week

- 1. Operation of diet clinic and counseling**
- 2. Computer applications in use of nutrition related software**

Diet Cal

Online software/s

- 3. Report and presentation of case study.**
- 4. Presentation of visit to various institutions like
Anganwadis/Hotel Industry/Hospital/Dietetics department/NGO.**

***SEMINAR - II**

***INTERNAL MARKS: 25**

CREDITS: 2p/week

Seminars will be based on topics covering recent advances in the field of nutrition, community nutrition, public health and allied areas.