School of Health Sciences

CSJM University, Kanpur

Ordinance & Syllabus

for

B.Sc. in Human Nutrition

(B.Sc.-HN)

Academic Programme

Ordinance according to

NEP-2020

Duration: 3 years (Six Semesters)

B.Sc. in Human Nutrition (B.SC.-HN)

ORDINANCE

Chapter

"A"

Preamble:

The Bachelor of Science in Human Nutrition is the health profession concerned with the scientific application of nutrition principles to promote optimal health, prevent disease, and enhance quality of life. From the fundamental understanding of nutrient metabolism to the complex interactions between diet, genes, and environment, this program explores the vital role of nutrition in human health. Modern nutrition science encompasses a wide array of disciplines, including clinical nutrition, community nutrition, sports nutrition, and public health nutrition.

Nutrition professionals employ evidence-based practices to assess nutritional needs, design personalized diets, and develop effective interventions. They work across various settings, including hospitals, communities, industries, and research institutions.

Human nutrition is central to healthcare, influencing the prevention, treatment, and management of diseases. It is the cornerstone of health promotion, disease prevention, and treatment. As the global burden of non-communicable diseases rises, the importance of human nutrition has increased dramatically, demanding competent professionals to translate scientific knowledge into practical applications.

Title of the Programme: The Programme shall be called "B.Sc. in Human Nutrition".

Objectives of the Programme:

At the completion of this course, the student should –

1. To make student will understand the importance of food and meaning of nutrition.
2. To enable the student to understand the role of nutrition in human life.
3. To learn and gain knowledge about basics innutrition.
4. To acquire knowledge about functions of food, RDA, food sources of nutrients
5. To enable students to develop a thorough understanding of nutrition and the ability to communicate those principles to the public.
6. To enable student to learn about nutrients in food, how the body uses them, and the relationship between diet, health, and disease.
7. To learn to apply therapeutic diets to treat disease.
8. To gain knowledge and skills to respond to the diverse needs of patients, families and careers within a variety of settings.
9. To learn about balanced lifestyle and improve people's diets, while helping them to keep a healthy weight, boost their immune system.

Programme Outcome:

1. The students will acquire knowledge qualitative and quantitative estimation of the nutrients in food.
2. The student will know about the metabolic condition of the life style related diseases.
3. The student will be able to explain the risk factors for degenerative diseases and toward the management of the several disease conditions.
4. The student will be able to apply nutrition knowledge, plan and counsel the patients.
5. The student will be able to develop skills in planning, calculating, modifying the nutrient requirements and in preparation of therapeutic diets, acquire skills in diet counselling and feeding of patients.

Programme Specific Outcome:

1. To develop skill and confidence to make informed decisions about healthy diet in health and Disease.
2. To learn composition and chemistry of different foods and changes that occur during cooking/processing of foods.
3. To apply the knowledge of food microbiology, sanitation and hygiene in food production and service.
4. To study the fundamentals of the science of nutrition in relation to macro and micronutrients.
5. To understand the working and management of the dietary departments of the various organizations.

B.Sc. in Human Nutrition (B.Sc.-HN)

1. B.Sc.-Human Nutrition degree will be under the **Faculty of Medicine** of C.S.J.M. University, Kanpur.

2. **Duration of Course:**
   - B.Sc.-Human Nutrition course will be a full-time course.
   - Duration will be Three years (06 Semesters).

3. **No. of Seats :**
   40 (forty)

4-Admission.

Eligibility Criteria:
For admission in this course candidate has to pass 10 + 2 (Any stream) conducted by any Board.

Mode of Admission:
As per the University Norms.

5. **Medium of instruction:**
   English shall be the medium of instruction in the class and in the University examination.

6. **Method of Teaching:**
   The method of teaching adopted shall be a combination of lectures, demonstrations and practicals by the full time faculty, visiting or part time or guest faculty.
7. **Examination:**
   As per the University norms
   Duration of Examination:
   Each theory paper shall be of three-hour duration OR as per the University norms.

8. **Attendance to appear in the end semester examination:**
   The permission to appear in end semester examination shall be granted to such candidate only who has fulfilled the condition of 75% attendance in each subjectseparately in theory and practical as per the university rule.
   Regarding attendance requirements students will have to fulfill the condition of 75% attendance. 15% relaxation in attendance, in exceptional circumstances can be made by the Vice Chancellor on the recommendation of the Director/Coordinator/Head of the Institute/Department.

CHHATRAPATI SHAHU JI MAHARAJ UNIVERSITY, KANPUR

STRUCTURE OF SYLLABUS FOR THE

PROGRAM: B.Sc. SUBJECT: HUMAN NUTRITION

Syllabus Developed by			
Name of BoS Convenors / BoS Members	**Designation**	**Department**	**College/University**
Prof. Sanjay Kala	Principal	Dean, Faculty of Medicine	GSVM Medical College, Kanpur
Prof. Dolly Rastogi	Professor	Physiology	GSVM Medical College, Kanpur
Prof. Parvez Khan	Head	Ophthalmology	GSVM Medical College, Kanpur
Prof. Sanjay Kumar	Head	Orthopaedics	GSVM Medical College, Kanpur
Prof. MP Mishra	Ex. Director	JK Cancer Institute	GSVM Medical College, Kanpur
Dr. Chayanika Kala	Associate Professor	Pathology	GSVM Medical College, Kanpur
Dr. Ashok Verma	Head & Associate Professor	Radiology	GSVM Medical College, Kanpur
Dr. Digvijay Sharma	Director	School of Health Sciences	CSJM University, Kanpur
Dr. Munish Rastogi	Assistant Director	School of Health Sciences	CSJM University, Kanpur
Dr. Versha Prasad	Assistant Professor	School of Health Sciences	CSJM University, Kanpur
Dr. Ram Kishor	Assistant Professor	School of Health Sciences	CSJM University, Kanpur

I YEAR / I SEM						
COURSE CODE	**TYPE**	**COURSE TITLE**	**MIN CREDITS**	**CIA**	**ESE**	**MAX. MARKS**
BHN25101	CORE	Fundamentals of Nutrition	4	25	75	100
BHN25102	CORE	Human Physiology-I	4	25	75	100
BHN25103	CORE	Basics Dietetics	4	25	75	100
BHN25104	Practical	Fundamentals of Nutrition	2	25	75	100
BHN25105	Practical	Human Physiology-I	2	25	75	100
BHN25106	Practical	Basics Dietetics	2	25	75	100
		Basics Computer and Information Sciences*	2			
		Communication and Soft Skills*	2			
	TOTAL		**22**			**600**
I YEAR / II SEM						
BHN25201	CORE	Family Meal Management	4	25	75	100
BHN25202	CORE	Human Physiology-II	4	25	75	100
BHN25203	CORE	Nutritional Biochemistry	4	25	75	100
BHN25204	CORE	First Aid and Emergency care	4	25	75	100
BHN25205	Practical	Family Meal Management	2	25	75	100
BHN25206	Practical	Human Physiology-II	2	25	75	100
BHN25207	Practical	Nutritional Biochemistry	2	25	75	100
	TOTAL		**22**			**700**

II YEAR / III SEM						
COURSE CODE	**TYPE**	**COURSE TITLE**	**MIN CREDITS**	**CIA**	**ESE**	**MAX. MARKS**
BHN25301	CORE	Food Science-I	4	25	75	100
BHN25302	CORE	Community Nutrition-I	4	25	75	100
BHN25303	CORE	Advanced Nutrition	4	25	75	100
BHN25304	CORE	General Microbiology	4	25	75	100
BHN25305	Practical	Food Science-I	2	25	75	100
BHN25306	Practical	Community Nutrition-I	2	25	75	100
BHN25307	Practical	Advanced Nutrition	2	25	75	100
BHN25308	Practical	General Microbiology	2	25	75	100
BHN25309	Practical	Diet Survey	6	-	-	100
	TOTAL		**30**			**900**
II YEAR / IV SEM						
BHN25401	CORE	Food Science-II	4	25	75	100
BHN25402	CORE	Community Nutrition-II	4	25	75	100
BHN25403	CORE	Nutrition for Health Fitness	4	25	75	100
BHN25404	Practical	Food Science-II	2	25	75	100
BHN25405	Practical	Community Nutrition-II	2	25	75	100
BHN25406	Practical	Nutrition for Health Fitness	2	25	75	100
BHN25407	Practical	Field Visit	6	-	-	100
	TOTAL		**24**			**700**

III YEAR / V SEM						
COURSE CODE	**TYPE**	**COURSE TITLE**	**MIN CREDITS**	**CIA**	**ESE**	**MAX. MARKS**
BHN25501	CORE	Food Institutional Management	4	25	75	100
BHN25502	CORE	Advanced Dietetics-I	4	25	75	100
BHN25503	ELECTIVE	Diet Therapy	4	25	75	100
BYOG 101		Foundations of Yoga				
BHN25504	Practical	Food Institutional Management	2	25	75	100
BHN25505	Practical	Advanced Dietetics-I	2	25	75	100
BHN25506	Practical	Clinical Training	6	-	-	100
	TOTAL		**22**			**600**
III YEAR / VI SEM						
BHN25601	CORE	Food Quality Analysis	4	25	75	100
BHN25602	CORE	Advanced Dietetics-II	4	25	75	100
BHN25603	Practical	Food Quality Analysis	2	25	75	100
BHN25604	Practical	Advanced Dietetics-II	2	25	75	100
BHN25605	Practical	Project work	8	-	-	100
	TOTAL		**20**			**500**
	Grand Total		**140**			**4000**

*** Not Included in University Exam**

INTERNAL ASSESSMENT

- It will be for theory and practical both.
- It will be done through the whole semester.
- Candidate must obtain at least 40% marks in theory and practicals separately in internal assessment to be eligible for the semester university examination.

- **Internal assessment (Theory)** will be done as follows:

a)	Mid-term/ class test etc.	= 10 marks
b)	Assignments/Project/Quiz/ Presentations etc.	= 10 marks
c)	Attendance	= 05 marks
	Total	**= 25 marks**

- **Internal assessment (Practical)** will be done as follows:

a)	Laboratory Manual/Assignments/Class test etc.	= 10 marks
b)	Day to day performance/continuous evaluation/record etc	= 10 marks
c)	Attendance	= 05 marks
	Total	**= 25 marks**

CRITERIA FOR PASSING

1. As per the University Norms.

DIVISION:

2. As per the University Norms.

DEGREE:

3. The degree of B.Sc. in Human Nutrition course of the University shall be conferredon the candidates who have pursued the prescribed course of study for not less than six semesters and have passed examinations as prescribed under the relevant scheme.

COURSE OF STUDY

B.Sc. in Human Nutrition (First Semester)

S.N.	COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
1	BHN25101	CORE	Fundamentals of Nutrition	60
2	BHN25102	CORE	Human Physiology-I	60
3	BHN25103	CORE	Basics Dietetics	60
4	BHN25104	Practical	Fundamentals of Nutrition	60
5	BHN25105	Practical	Human Physiology-I	60
6	BHN25106	Practical	Basics Dietetics	60
			Basics Computer and Information Sciences*	40
			Communication and Soft Skills*	40
		TOTAL		**440**

B.Sc. in Human Nutrition (Second Semester)

S.N.	COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
1	BHN25201	CORE	Family Meal Management	60
2	BHN25202	CORE	Human Physiology-II	60
3	BHN25203	CORE	Nutritional Biochemistry	60
4	BHN25204	CORE	First Aid and Emergency care	60
5	BHN25205	Practical	Family Meal Management	60
6	BHN25206	Practical	Human Physiology-II	60
7	BHN25207	Practical	Nutritional Biochemistry	60
		TOTAL		**420**

B.Sc. in Human Nutrition (Third Semester)

S.N.	COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
1	BHN25301	CORE	Food Science-I	60
2	BHN25302	CORE	Community Nutrition-I	60
3	BHN25303	CORE	Advanced Nutrition	60
4	BHN25304	CORE	General Microbiology	60
5	BHN25305	Practical	Food Science-I	60
6	BHN25306	Practical	Community Nutrition-I	60
7	BHN25307	Practical	Advanced Nutrition	60
8	BHN25308	Practical	General Microbiology	60
9	BHN25309	Practical	Diet Survey	120
		TOTAL		**600**

B.Sc. in Human Nutrition (Fourth Semester)

S.N.	COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
1	BHN25401	CORE	Food Science-II	60
2	BHN25402	CORE	Community Nutrition-II	60
3	BHN25403	CORE	Nutrition for Health Fitness	60
4	BHN25404	Practical	Food Science-II	60
5	BHN25405	Practical	Community Nutrition-II	60
6	BHN25406	Practical	Nutrition for Health Fitness	60
7	BHN25407	Practical	Field Visit	120
		TOTAL		**480**

B.Sc. in Human Nutrition (Fifth Semester)

S.N.	COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
1	BHN25501	CORE	Food Institutional Management	60
2	BHN25502	CORE	Advanced Dietetics-I	60
3	BHN25503	ELECTIVE	Diet Therapy	60
4	BYOG 101		Foundations of Yoga	
5	BHN25504	Practical	Food Institutional Management	60
6	BHN25505	Practical	Advanced Dietetics-I	60
7	BHN25506	Practical	Clinical Training	120
		TOTAL		**420**

B.Sc. in Human Nutrition (Sixth Semester)

S.N.	COURSE CODE	TYPE	COURSE TITLE	Teaching Hours
1	BHN25601	CORE	Food Quality Analysis	60
2	BHN25602	CORE	Advanced Dietetics-II	60
3	BHN25603	Practical	Food Quality Analysis	60
4	BHN25604	Practical	Advanced Dietetics-II	60
5	BHN25605	Practical	Project work	120
		TOTAL		**360**

*** Not Included in University Exam**

B.Sc.-Human Nutrition-First Semester
SUBJECT CODE – BHN25101
FUNDAMENTALS OF NUTRITION
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To understand the functions and role of nutrients, their requirements and the effect ofdeficiency and excess (in brief)

Course Outcomes

1. The student will be able to apply basic nutrition knowledge in making foods choices andobtaining an adequate diet.
2. The student gains competence in connecting the role of various nutrients in maintaininghealth.

THEORY

1. Definition of food, nutrition, health, Dimension of health and function of food-Physical,social and mental health.
2. Food guide – Basic food groups, my plate
3. Carbohydrates: Classification, functions, Digestion& absorption, food sources, storage inbody, deficiency diseases.
4. Proteins – Classification, composition, functions, digestion and absorption, food sources,storage in body, essential & non-essential amino acids, functions, Protein deficiency.
5. Fats & oils: Classification, composition, saturated and unsaturated fatty acids, functions,digestion and absorption, food sources, storage in body, deficiency.
6. Water - as a nutrient, function, sources, requirement, water balance & effect of deficiency.
7. Minerals - macro & micronutrients. - Functions, sources. Bioavailability and deficiency ofCalcium, Iron, Iodine, Sodium & Potassium (in very brief)
8. Vitamins (water & fat soluble) - definition, classification & functions.

TEXT BOOKS

1. Antia F.P., Philip Abraham, Clinical Dietetics and Nutrition, Oxford University Press; 4thedition.2000
2. Passmore R. and Davidson S. (1986) Human nutrition and Dietitics. Liming stonepublishers.2000
3. Robinson C.H. Careme, Chenometh W.L., Garmick A.E. 16th edition Normal Therapeuticnutrient. Publish by Mc Millan Company New York.1986

REFERENCE BOOKS

1. Kathleen Mahan L., Sylnia Escott-Stump, Krause's food, nutrition and diet therapy(11thedition). Saunders company, London.2000

B.Sc.-Human Nutrition-First Semester
SUBJECT CODE - BHN25102
HUMAN PHYSIOLOGY-I
Min. Hrs. – Theory: 60 hrs.

Course Objective

1. Students will be able to learn the terminology of the subject.
2. Provide basic knowledge of cells, tissues, blood and to understand anatomy and physiologyof human body.

Course Outcome

1. This subject will develop and understanding of the structure and function of organs andorgan systems in normal human body.

THEORY

1. **Cell** -Morphology, Structure and function of cell organelles
2. **Blood** - Introduction-composition & function of blood, Blood cells, Blood groups, Coagulation Factors,
3. **Cardiovascular System**-Cardiac cycle- definition, phases of cardiac cycle, cardiac output, blood pressure, hypertension, radial pulse.
4. **Respiratory System -** Mechanics of respiration, Ventilation, Functions, Lungs volumes and capacities.
5. **Muscles**- classification, structure, properties, Excitation contraction coupling
6. **Nerve** –structure and function of neurons, classification, properties
   - Resting membrane potential & Action potential their ionic basis
   - All or None phenomenon
   - Neuromuscular transmission

TEXT BOOKS

1. Chatterjee CC; Text Book of Physiology – Vol I & II.2000
2. Chaudhuri SK; Concise Medical Physiology. New Central Book Agency (P) Ltd, 2000.
3. Guyton AC, Hall JE; Text book of Medical Physiology.9th Ed. Prism Books (Pvt.) Ltd.Bangalore.1999

REFERENCE BOOKS

1.Wilson; Anatomy and Physiology in Health and Illness. Edinburgh, Churchill Livingstone.1998
2.WinWord; Sear's Anatomy and Physiology for Nurses. London, Edward Arno.1999
3.Koeppen BM and Stanton BA: Berne and Levy Physiology, 7th Ed. Elsevier.2017
4. Rhoades R and Pflanzer R Human Physiology, 4th ed. Thomson.2003
5. Eroschenko VP di Fore's Atlas of Histology, di Fiore's Atlas of Histology with FunctionalCorrelations, 11th Edition. Lippincott Williams & Wilkins.2007
6. McLaughlin D, Stamford J and White D: Bios Instant Notes on Human Physiology,1st Ed.Taylor & Francis,2006

B.Sc.-Human Nutrition-First Semester
SUBJECT CODE – BHN25103
BASICS DIETETICS
Min. Hrs. – Theory: 60 hrs

Course Objectives

1. To understand the foundation sciences which underpin therapeutic dietetic practice, the principles of disease prevention and health promotion, the principles of therapeutic intervention practice.
2. To understand the organization, management and provision of healthcare both in the hospital and in primary care.

Course Outcomes

1. The student will be able to understand the transition of diet from clear liquid to full-liquid to soft and then normal.
2. The student will be able to study and understand the Diet and its principles.
3. The student will be able to identify three routes used to deliver nutrients to clients and potential complications with these routes.

THEORY

1. **Basic Concepts of Diet Therapy**-Nutrition Care Process: Definition of MNT
2. **Nutritional Assessment** (ABCD), Nutritional Diagnosis, Nutrition Intervention, Monitoring & Evaluation of Nutritional Care
3. **Modifications of the Normal Diet**-General or Regular, Adequate or House Diet, Soft Diet, Liquid Diets- Clear Liquid Diet, Full Liquid Diet
4. **Mode of Feeding-** Enteral or Oral Route**-** Enteral (via) tube feeding- Parenteral – Peripheral Vein Feeding, Total Parental Nutrition (TPN)
5. **Nutrition for Weight Management, Assessment of obesity –** BMI, Waist Hip-Ratios, Skin folds Thickness, Etiology – Genetic Factors, Physiological Factors, Behavioral factors, Treatment – Dietary Management, Fad diets and their consequences
6. **Underweight**– Etiology, Health hazards, Treatments.
7. **Nutrition during Febrile Disorders:**

a) Classification of fevers
b) Metabolism in fever
c) General Dietary Considerations
d) Acute & chronic fevers -Typhoid &Tuberculosis

TEXT BOOKS

1. Antia, F.P: Clinical Nutrition and Dietetics, Oxford University Press, Delhi,2000
2. Srilakshmi, B;Dietetics, New Age International(P) Limited Publishers, New Delhi,2019
3. Williams's: Nutrition and diet Therapy.6th edition. Times Mirror/Mosby College Publishing, St.Louis,1988

REFERENCE BOOKS

1. Mahan, L.K., Arlin, M.T.: Krause's Food, Nutrition and Diet therapy, 11th edition, W.B.Saunders Company, London.1965
2. Robinson,C.H;Lawler,M.R.Chenoweth,W.L;and Garwick,A.E:Normal and Therapeutic Nutrition; Published by Mc Millan Company New York.1978
3. Shubhangini A Joshi: Nutrition and Dietetics 2nd edition, Tata Mc Graw-Hill Publishing Company Limited, New Delhi.2018

B.Sc.-Human Nutrition-First Semester
SUBJECT CODE – BHN25104
FUNDAMENTALS OF NUTRITION
Min. Hrs. – Practical: 60 hrs.

1. Weights and measures.
2. Introduction to Recommended Dietary Allowances/Nutritive value of foods.
3. Preparation of essential macro (protein, fibre) and micronutrient (calcium, iron vitamin C, Aand B) rich recipe, calculation of nutritive value and cost per serving.
4. Visit to analytical lab for demonstration of protein and fat estimation.

B.Sc.-Human Nutrition-First Semester
SUBJECT CODE - BHN25105
HUMAN PHYSIOLOGY-I
Min. Hrs. –Practical: 60 hrs.

1. Microscope & its uses.
2. Microscopic appearance of prepared slides.
3. Examination of pulse, BP and respiratory rate.
4. Elicitation of Reflexes & jerks.

B.Sc.-Human Nutrition-First Semester

SUBJECT CODE – BHN25106

BASICS DIETETICS
Min. Hrs. –Practical: 60 hrs.

1. Preparation of Clear Fluid diet, Full fluid Diet and Soft Diet
2. Diet plan for Obese and Overweight
3. Diet plan for Under weight
4. Diet plan for Typhoid and Tuberculosis

B.Sc.-Human Nutrition-First Semester

BASIC COMPUTERS AND INFORMATION SCIENCE

The students will be able to appreciate the role of computer technology. The course has focus on computer organization, computer operating system and software, and MS windows, Word processing, Excel data worksheet and PowerPoint presentation. Topics to be covered under the subject are as follows:

1. Introduction to computer: Introduction, characteristics of computer, block diagram of computer, generations of computer, computer languages.
2. Input output devices: Input devices(keyboard, point and draw devices, data scanning devices, digitizer, electronic card reader, voice recognition devices, vision-input devices), output devices(monitors, pointers, plotters, screen image projector, voice response systems).
3. Processor and memory: The Central Processing Unit (CPU), main memory.
4. Storage Devices: Sequential and direct access devices, magnetic tape, magnetic disk, optical disk, mass storage devices.
5. Introduction of windows: History, features, desktop, taskbar, icons on the desktop, operation with folder, creating shortcuts, operation with windows (opening, closing, moving, resizing, minimizing and maximizing, etc.).
6. Introduction to MS-Word: introduction, components of a word window, creating, opening and inserting files, editing a document file, page setting and formatting the text, saving the document, spell checking, printing the document file, creating and editing of table, mail merge.
7. Introduction to Excel: introduction, about worksheet, entering information, saving workbooks and formatting, printing the worksheet, creating graphs.
8. Introduction to power-point: introduction, creating and manipulating presentation, views, formatting and enhancing text, slide with graphs.
9. Introduction of Operating System: introduction, operating system concepts, types of operating system.
10. Computer networks: introduction, types of network (LAN, MAN, WAN, Internet, Intranet), network topologies (star, ring, bus, mesh, tree, hybrid), components of network.
11. Internet and its Applications: definition, brief history, basic services (E-Mail, File Transfer Protocol, telnet, the World Wide Web (WWW)), www browsers, use of the internet.
12. Application of Computers in clinical settings.

B.Sc.-Human Nutrition-First Semester
COMMUNICATION AND SOFT SKILLS

Major topics to be covered under Communication course —

1. Basic Language Skills: Grammar and Usage.
2. Business Communication Skills. With focus on speaking - Conversations, discussions, dialogues, short presentations, pronunciation.
3. Teaching the different methods of writing like letters, E-mails, report, case study, collecting the patient data etc. Basic compositions, journals, with a focus on paragraph form and organization.
4. Basic concepts & principles of good communication
5. Special characteristics of health communication
6. Types & process of communication
   Barriers of communication & how to overcome Introduction to Quality and Patient Safety.

B.Sc.-Human Nutrition-Second Semester

SUBJECT CODE – BHN25201

FAMILY MEAL MANAGEMENT

Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To determine physiological changes at different stages of lifecycle.
2. To discuss, contrast and evaluate the roles of nutrition within the complex processes ofpregnancy, lactation, child development and ageing.
3. To discuss the impact of socioeconomic, cultural and psychological factors on food andnutrition behaviour.

Course Outcomes

1. The student will learn and apply the latest in research-based nutrient needs of infants,children, adolescents, adults, pregnant and lactating females.
2. The student gains competence on meeting nutrition needs and establishing dietary patternsto promote optimum health and reducing the impact of chronic diseases in the elderly.

THEORY

1. **Nutrition in pregnancy** - Physiological changes in pregnancy, nutritional requirements. Foodselection, complications of pregnancy.
2. **Nutrition during lactation** - Physiology of lactation, nutritional requirements.
3. **Nutrition during infancy** - growth & development, nutritional requirements, breast feeding,infant formula, introduction to supplementary foods.
4. **Nutrition during early childhood (Toddler/Preschool)**- Growth & nutrient need, nutritionrelated problems, feeding patterns.
5. **Nutrition of school children**- Nutritional requirement, importance of snacks, school lunch.
6. **Nutrition during adolescence** - Growth & nutrient needs, food choices, eating habits, factorinfluencing needs.
7. **Nutrition during adulthood** - Nutritional requirements, feeding pattern.
8. **Geriatric nutrition**- Factors affecting food intake and nutrient use, nutrient needs, nutritionrelated problems.

TEXT BOOKS

1. Shubhangini A Joshi: Nutrition and Dietetics2nd edition, Tata Mc Graw-Hill PublishingCompany Limited, New Delhi.
2. Srilakshmi. B.: Dietetics,5th edition, New Age International(P) Limited Publishers, New Delhi

REFERENCE BOOKS

1. Vincent Hegarty©, Decisions in Nutrition. Times Mirror/Mosby College Publishing, St. Louis.Williams's: Nutrition and diet Therapy.6th edition. Times Mirror/Mosby College Publishing, St.Louis,2000
2. Antia, F.P.: Clinical Nutrition and Dietetics, Oxford University Press, Delhi,1999
3. Gordon M Ward law Perspectives in Nutrition 4th ed. WCB/Mcgraw Hill. Internationaledition.1999
4. Mahan, L.K., Arlin, M.T.: Krause's Food, Nutrition and Diet therapy, 11th edition, W.B.Saunders Company, London.2000
5. Passmore, R and Davidson S.Human Nutrition and Dietetics. Living stone Publishers.1988
6. Robinson, C.H; Lawler, M.R. Chenoweth, W.L; and Garwick, A.E(1986):Normal and Therapeutic Nutrition,17th Ed., Mac Millan Publishing Co,1986
7. Shil's M E, Alfon J A, Shike M Modern Nutrition In health and Diseases 8th ed.1994

B.Sc.-Human Nutrition-Second Semester
SUBJECT CODE - BHN25202
HUMAN PHYSIOLOGY-II
Min. Hrs. – Theory: 60 hrs.

Course Objective

1. To provide knowledge about terminology and comprehensive knowledge of Physiology.

Course Outcome

2. The student will be able to understand about Human Physiology.

THEORY

1. **Endocrinology**-Endocrine glands, their hormones and functions (in brief).
2. **Excretion system** -Structure of nephron, Physiology of kidney and urine formation, Glomerular filtration rate, clearance, Tubular function
3. **Central Nervous System**- Introduction, central and peripheral nervous system, functions of nervous system, Parts, Sliding Filament Theory, Neuro Muscular Junction, Wallerian Degeneration, Motor Nervous system - Upper motor neuron system & lower motor neuron system. Sensory nervous system, Hypothalamus, Special senses- eye, ear, nose, mouth
4. **Reproductive System**-Structure and functions of male & female reproductive organs, menstruation, puberty, menopause, fertilization and development of fertilized ovum, placenta and its function.
5. **Digestive System-** Digestion & absorption of nutrients, Gastro intestinal secretions & their regulation, Functions of Liver &Stomach.

TEXT BOOKS

1. Chatterjee CC; Text Book of Physiology – Vol I & II.2000
2. Chaudhuri SK; Concise Medical Physiology. New Central Book Agency (P) Ltd.1998
3. Guyton AC, Hall JE; Text book of Medical Physiology.9th Ed. Prism Books (Pvt.) Ltd. Bangalore.1977

REFERENCE BOOKS

1. Wilson; Anatomy and Physiology in Health and Illness. Edinburgh, Churchill Livingstone.2000
2. WinWord; Sear's Anatomy and Physiology for Nurses. London, Edward Arno.1965
3. Koeppen BM and Stanton BA: Berne and Levy Physiology, 7th Ed. Elsevier,2017
4. Rhoades R and Pflanzer R: Human Physiology, 4th ed. Thomson.2003
5. Eroschenko VP: di Fore's Atlas of Histology, di Fiore's Atlas of Histology with Functional Correlations, 11th Edition. Lippincott Williams & Wilkins.2007
6. McLaughlin D, Stamford J and White D : Bios Instant Notes on Human Physiology,1st Ed. Taylor & Francis,2006

B.Sc.-Human Nutrition-Second Semester
SUBJECT CODE - BHN25203
NUTRITIONAL BIOCHEMISTRY
Min. Hrs. – Theory: 60 hrs.

COURSE OBJECTIVES : This course provides the knowledge and skills in fundamental organic chemistry and introductory biochemistry that are essential for further studies It covers basic biochemical, cellular, biological and microbiological processes, basic chemical reactions in the prokaryotic and eukaryotic cells, the structure of biological molecules, introduction to the nutrients i.e. carbohydrates, fats, enzymes, nucleic acids and amino acids.

COURSE LEARNING OUTCOMES: At the end of the course, the candidate will able to –

1. Describe structures & functions of cell in brief.
2. Describe biochemistry of connective tissues.
3. Discuss acid base balance.
4. Define nutrition, balance diet & nutritional disorders.
5. Describe Nucleotide and Nucleic acid Chemistry
6. Discuss role of enzymes.
7. Describe Carbohydrate Chemistry, Amino-acid Chemistry & Vitamins.
8. Discuss Carbohydrate Metabolism, Lipid Metabolism, Amino acid and Protein Metabolism.

THEORY

Topics to be covered:

1. Nutrition: RDA, BMR, SDA, caloric requirement and balanced diet.
2. Carbohydrates: Definition, classification and general functions. Carbohydrate Metabolism - Glycolysis, T.C.A cycle.
3. Lipids: Definition, classifications and general functions. Essential fatty acids and their importance, Cholesterol, Lipoproteins. Metabolism-β–Oxidation of fatty acids, fatty liver and ketosis.
4. Amino Acids : Definition, classification, essential and non essential aminoacids.
5. Proteins: Definition, classification, and Bio-medical Importance. Metabolism: Formation and fate of ammonia, Urea cycle and its significance.
6. Study of hemoglobin and myoglobin with their functions.
7. Enzymes: Definition, classification with examples, Factors affecting enzyme action, isoenzyme and co-enzyme, Clinical importance of enzymes.
8. Vitamins: Definition, classification and functions, dietary source, daily requirement and deficiency disorders.
9. Bio medical waste management:-
   a. Definition of Biomedical Waste
   b. Waste minimization
   c. BMW – Segregation, collection, transportation, treatment and disposal (including color coding)
   d. Liquid BMW, Radioactive waste, Metals / Chemicals / Drug waste
   e. BMW Management & methods of disinfection
   f. Modern technology for handling BMW
   g. Use of Personal protective equipment (PPE)
   h. Monitoring & controlling of cross infection (Protective devices)

TEXT BOOKS

1. V.N. Raje (2018). Biochemistry and Clinical Pathology, 3rd Ed., CBS Publication.
2. Dr. S.K. Gupta (2019). Text book of Medical Biochemistry, 2nd Ed., APC Publisher.
3. Praful B. Godkar & Darshan P. Godkar (2014). Text Book of Medical Laboratory Technology, Clinical Laboratory Science & Molecular Diagnosis, 3rd Ed., Bhalani Publishing House.
4. DM Vasudevan (2023). Text Book of Biochemistry for Medical Students, 10th Ed., Jaypee Publisher.
5. M.N. Chatterjea and Rana Shinde (2018). Textbook of Medical Biochemistry, 8th Ed., Jaypee Publisher.

REFERENCE BOOKS

1. Nelson, D. L., & Cox, M. M. (2017). *Lehninger principles of biochemistry,* 7th ed., W.H. Freeman.
2. Voet, D., Voet, J. G., & Pratt, C. W. (2016). Fundamentals of biochemistry, (5th ed.). John Wiley & Sons.

B.Sc.-Human Nutrition-Second Semester
SUBJECT CODE - BHN25204
FIRST AID AND EMERGENCY CARE
Min. Hrs. – Theory: 60 hrs.

Course Objective

1. To acquire knowledge about Basic First Aid & Emergency Care.
2. Identify and take appropriate measures including disinfection and sterilization for the preventionof diseases in the hospital and community.

Course Outcome

1. The student will able to understand the basic concept First Aid and Emergency Care**.**

THEORY

1. **Introduction of First Aid**-Definition, aims and importance of First Aid. Rules/General Principles of First Aid Concepts of Emergency
2. **Procedure and Techniques in First Aid**-Preparation of First Aid kit, Dressing bandaging and splinting Transportation of injured patient
3. **CPR-**Mouth to mouth, Sylvester, Schafer, External Cardiac Massage
4. **First Aid in Emergency-**Asphyxia, Drowning, Shock, Wound and bleeding, Injuries of the Soft and dense tissue Injury of joint and bone, Falls, Hanging Foreign body ear, ear and nose and throat Burns and Scalds
   Poisoning – Ingestion, inhalation, bite and stings
5. **Assessing a Casualty and vitals parameters-**Assessing the sick or injured, Mechanisms of injury Primary Survey, Secondary survey
   Head-to-toe examination, monitoring vital sings Community Emergencies and Community Resources Fire, Explosion, Floods, Earth-Quakes and Famines Role of PT in disaster management
6. **Community Resources-Police, Ambulance Services-**Voluntary agencies-local-state, national and International
7. **Emergency Management**
   Principle of Emergency care, Triage
   Airways obstruction, Basic knowledge of First aid and management of burn
   Basic Knowledge of First Aid for medical and surgical emergency
   Basic knowledge of first aid management of heat stroke
   Emergency Disaster Management
   Basic knowledge of first aid management of snake bite and poisoning
   Natural calamities – Flood, earthquake, volcanic eruptions
   Mam made disaster – Explosion, War, Fire Accidents
8. **The Unconscious Casualty**
   Breathing and circulation, Life-saving priorities
   Unconscious adult, Unconscious child, Unconscious infant, how to use an AED
9. **Techniques and Equipment**
   Removing clothing, removing headgear, casualty handling, First Aid materials, dressing,
   Cold compresses, Principles of bandaging, Roller bandages, Tubular gauze bandages, square
   Knots, hand and foot cover, Arm sling, Elevation sling, improvised slings.
10. **BLS and ACLS**
    BLS guideline for adult and pediatrics
    CPR techniques, choking, ACLS basic guidelines

TEXT BOOKS

1.First Aid and Emergency Care Paperback by SN liamson. – 1 January 2012

2.Text Book of First Aid and Emergency Nursing (Paperback, C. Manivannan, T. LathaManivannan)2000

REFERENCE BOOKS

1.First Aid and Emergency Care, 2/Ed. N.C. Jain,2000

B.Sc.-Human Nutrition-Second Semester

SUBJECT CODE – BHN25205

FAMILY MEAL MANAGEMENT

Min. Hrs. –Practical: 60 hrs.

1. Planning and preparation of a balanced diet for a pregnant woman.
2. Planning and preparation of a balanced diet for a lactating woman.
3. Preparation of weaning foods.
4. Planning and preparation of a balanced diet for pre-school child.
5. Preparation of packed lunch for school going child.
6. Planning and preparation of a balanced diet for adolescent.
7. Planning of meals for adult belonging to different income group.
8. Planning meal for senior citizen.
9. Project work with proper diet plan based on survey.

B.Sc.-Human Nutrition-Second Semester
SUBJECT CODE - BHN25206
HUMAN
PHYSIOLOGY-II
Min. Hrs. –Practical: 60 hrs.

1. Elicitation of Reflexes & jerks.
2. Estimation of Hb, RBC, WBC, TLC, DLC & ESR.

B.Sc.-Human Nutrition-Second Semester
SUBJECT CODE - BHN25207
NUTRITIONAL BIOCHEMISTRY
Min. Hrs. –Practical: 60 hrs.

1. Urine analysis – normal & abnormal constituents of urine.
2. Glucose tolerance test & Glycosylated hemoglobin.

B.Sc.-Human Nutrition-Third Semester

SUBJECT CODE – BHN25301

FOOD SCIENCE-I
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To know the role of food in health.
2. To know the chief nutrition provided by each category of five food groups.

Course Outcomes

1. The student will be able to apply basic nutrition knowledge in making foods choices andobtaining an adequate diet.

THEORY

1. **Cereal**-Definition, Structure, and composition, Nutritive value, Processing- Milling, polishing. parboiling, flaking, parching, roasting, products of cereals, breakfast cereals, role pf cereals in cookery.
2. **Pulses**: composition and nutritional value, processing of pulses- soaking, germination, milling, decortication, fermentation, toxicants naturally occurring in pulses, role of pulses in cookery.
3. **Milk and milk products**: Definition, types of milk, Composition and nutritive value of milk, processing of milk, and milk products.
4. **Fats and Oils-**Composition and Nutritive value of fat, Refining and Processing of fats, specific types of fat, role of fat in cookery.
5. **Nuts and Oil seeds:** Nutritive Value, Classification & importance
6. Current trends in food science.

TEXT BOOKS

1.Norman N Potter, Joseph H Hotchkiss : Food science Technology,1990
2.Srilakshmi B : Food Science. New Age International Publishers, New Delhi,2019

REFERENCE BOOKS

1. Arora K., Gupta K.V.,: Theory of cooking 1988
2. Bennen Marion : Introductory foods ,1986
3. Lavies. : Food commodities. Heinemann Ltd, London ,1985
2. Lowe Bella : Experimental cookery,1987
3. Peckham : Foundation of food preparation ,1965

B.Sc.-Human Nutrition-Third Semester
SUBJECT CODE – BHN25302
COMMUNITY NUTRITION-I
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. Understand the concept of health from the individual and community perspective.
2. Understand the common nutritional problems of the community their causes, symptoms,treatment and prevention.
3. To know the schemes, programs and policies of Government of India to Combat Malnutrition.
4. To study direct and indirect methods of nutritional assessment.

Course Outcomes

1. The students will have a clear understanding about the concept of health care delivery atdifferent levels in a community.
2. The students will be able to describe the major causes and impact of communicable andnon-communicable diseases and their pathology.
3. Defining, assessing, and understanding the health status of population, determinants ofhealth and illness and factors contributing to health promotion and disease prevention.

THEORY

1. **Concept of Community**- types of community, factors affecting health of the community. Health Care- Levels of health care- Primary Health Care- Primary health care, health care delivery, National immunization schedule,
2. **Role of public nutritionist in health care**
3. **Nutrition and health in National development.**
4. **Malnutrition**- meaning. Factors contributing to malnutrition, PEM, over nutrition.
5. **Nutritional disorders**- Epidemiology, clinical features, prevention and dietary treatment for Protein Energy malnutrition, nutritional anaemias & vitamin deficiency disorders.
6. **Methods of assessing nutritional status:** Sampling techniques, Identifications of risk groups, Direct assessment -Anthropometric-Definition, types, parameters, advantages and limitations, Clinical Estimation-Definition, types, parameters, advantages and limitation, Biochemical estimation- Definition, types, parameters, advantages and limitations, Diet surveys- Definition, types, parameters, advantages and limitations, Indirect assessment- ecological parameters and vital statistics

TEXT BOOKS

1. Bamji SM, Rao NP and Reddy V, Text book of human nutrition, oxford and IBH publishing co.,New Delhi.2009
2. Gopalan C, Combating under nutrition-basic issues and practical approaches, Nutrition Foundation of India.2019

REFERENCE BOOKS

1. Gopalan C, Women and nutrition in India, NFI, New Delhi.2019
2. Jelliffe D.D. The assessment of Nutritional Status of the Community. WHO, monographseries.1975
3. Michael.J.G,Barrie.M.M:Public health nutrition, Blackwell publishing.1986
4. Nweze Eunice Nnakwe., Community Nutrition – planning health promotion and diseaseprevention., Jones And Bartlett publishers.1996
5. Park.K, Park's textbook of preventive and social medicine.,12th edition/S Banarsidasbhanot publishers.1996
6. Reddy V, Prahlad Rao N, Sastry G and Nath KK, Nutrition trends in India, Hyderabad,NIN.1989

B.Sc.-Human Nutrition-Third Semester
SUBJECT CODE – BHN25303
ADVANCED NUTRITION
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To understand the concept of BMR and the factors affecting energy requirement functionsand role of nutrients, their requirements and the effect.
2. To study the role of functional foods, nutraceuticals and Organic foods.

Course Outcomes

3. The student will be able to understand the concept of BMR and the factors affecting energyrequirement functions and role of nutrients, their requirements and the effect.
4. The student will be able to understand the role of functional foods, nutraceuticals andOrganic foods**.**

THEORY

1. **Estimating energy requirement for individuals and groups-** Food groups, Balanced diet.
2. **Exchange list, Energy requirements**: -Factors affecting energy requirements, BMR - activity, age, climate, diet induced thermogenesis (SDA), Physiological conditions. RDA (ICMR) - RDA, function, uses
3. **Electrolytes:** Electrolyte- Sodium, Chloride, Potassium- sources and disorder due to theirdeficiency/ excess intake.
4. **Functional foods -Phytonutrients:** Phytates, Tannins and Polyphenols, their sources andfunctions.
5. **Nutraceuticals and Organic Foods.**
6. **Effect of cooking & heat processing on the nutritive value of foods.**
7. **Processed supplementary foods**
8. **Food Sanitation in hygiene**

TEXT BOOKS

1. Antia F.P., Philip Abraham, Clinical Dietetics and Nutrition, Oxford University Press.
2. William S.R., Nutrition and Diet Therapy fourth edition C.V. Mos Company.1999
3. Robinson C.H. Careme, Chenometh W.L., Garmick A.E. Normal Therapeutic nutrient. Publishby Mc Millan Company New York,1986

REFERENCE BOOKS

1. Kathleen Mahan L., Sylnia Escott-Stump, Krause's food, nutrition and diet therapy.Saunders company, London.1998
2. Passmore R. and Davidson S. Human nutrition and Dietetics. Liming stone publishers.1997
3. Shil's M.E., Alfon J.A., Shike M, Modern nutrition in health and diseases,1998

B.Sc.-Human Nutrition-Third Semester
SUBJECT CODE – BHN25304
GENERAL MICROBIOLOGY
Min. Hrs. – Theory: 60 hrs.

Objectives:

1. To provide knowledge of bacteria, Sterilization etc.

THEORY

1. **General characters and classification of Bacteria.**
2. **Characteristics of Bacteria**
   Morphology- Shape, Capsule, Flagella, Inclusion, Granule, Spore.
3. **Growth and Maintenance of Microbes**

Bacterial division, Batch Culture, Continuous culture, bacterial growth- total count, viable count, bacterial nutrition, oxygen requirement, CO_2 requirement, temperature, pH, light.

4. **Sterilization and Disinfection.**

Physical agents- Sunlight, Temperature less than 100^0C, Temperature at 100^0C, steam at atmospheric pressure and steam under pressure, irradiation, filtration.

Chemical Agents- Alcohol, aldehyde, Dyes, Halogens, Phenols, Ethylene oxide.

5. **Culture Media**

Definition, uses, basic requirements, classification, Agar, Peptone, Transport Media, Sugar Media, Anaerobic Media, Containers of Media, Forms of Media

6. **Staining Methods**
   Simple, Grams staining, Ziehl-Neelsen staining or AFB staining, Negative Impregnation
7. **Collection and Transportation of Specimen**

General Principles, Containers, Rejection, Samples- Urine, Faeces, Sputum, Pus, Body fluids, Swab, Blood.

8. **Care and Handling of Laboratory Animals**

Fluid, Diet, Cleanliness, Cages, ventilation, Temperature, Humidity, handling of Animals, Prevention of disease.

9. **Disposal of Laboratory/Hospital Waste**

Non-infectious waste, Infected sharp waste disposal, infected non-sharp waste disposal.

REFERENCE BOOKS

1. Essentials of Food microbiology John Garbutt,1995
2. College microbiology S.Sundara Rajan.1994
3. Micrbiology Schaums Outlines I E ALCAMO Tata Mc Graw –Hill Publishing Company Ltd NewDelhi,2000

B.Sc.-Human Nutrition-Third Semester

SUBJECT CODE – BHN25305

FOOD SCIENCE-I
Min. Hrs. –Practical: 60 hrs.

1. Cereal cookery
2. Pulse Cookery
3. Milk cookery

B.Sc.-Human Nutrition-Third Semester
SUBJECT CODE – BHN25306
COMMUNITY NUTRITION-I
Min. Hrs. –Practical: 60 hrs.

1. Measure the height, weight, mid-arm circumference (MUAC) of 10 college going girls and comment on their nutritional status.
2. Conduct dietary recall (24 hrs) on an adolescent girl and comment on her nutritional status
3. Plan and prepare suitable low cost recipe for adolescent girls/rural women/school going children/pregnant woman/lactating woman.
4. Develop relevant aids for health education- for adolescent girls/rural women/school going children/pregnant woman/lactating woman, using following aids: Poster, Charts-bar chart, pie chart, tree chart, pictorial chart, pull chart, flip chart, overlay chart, Flash cards, Flannel graph, Demonstration

B.Sc.-Human Nutrition-Third Semester
SUBJECT CODE – BHN25307
ADVANCED NUTRITION
Min. Hrs. –Practical: 60 hrs.

1. General concepts of weights and measures. Eye estimation of raw and cooked foods
2. Preparation of food from different food groups and their significance in relation to health.
3. Preparation of supplementary food for different age group and their nutritional significance
4. Planning and preparation of low cost diet for Grade I and Grade II malnourished child

B.Sc.-Human Nutrition-Third Semester
SUBJECT CODE – BHN25308
GENERAL MICROBIOLOGY
Min. Hrs. –Practical: 60 hrs.

1. Preparation of swabs/sterile tubes & bottles.
2. Preparation of smear.
3. Staining.: Gram & Ziehl -Neelsen staining.
4. Identification of Culture media.
5. Identification of instruments.
6. Identification of common microbes.

B.Sc.-Human Nutrition-Third Semester
SUBJECT CODE – BHN25309
DIET SURVEY
Practical: 120 hrs.

1. The students shall do the diet survey of patients suffering from various diseases.
2. They shall maintain Logbook regarding it. At the end of the semester their Logbooks will be evaluated by the faculty concerned

B.Sc.-Human Nutrition-Fourth Semester

SUBJECT CODE – BHN25401

FOOD SCIENCE-II

Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To know the role of food in health.
2. To know the chief nutrition provided by eggs, meat and meat products.
3. To know the chief nutrition provided by sugar and sugar related products.
4. To study the function and role of spices in cookery.
5. To study different types of beverages**.**

THEORY

Course Outcomes

6. The student will be able to apply basic nutrition knowledge in making foods choices and obtaining an adequate diet.

1. **Egg**-Egg-Structure, Composition and Nutritive value of egg, Assessment methods for the quality of egg, Role of egg in Cookery, Preservation of egg.
2. **Meat and meat Products**-Definition of meat, classes of meat, Composition and Nutritive value of meat, Post-Partum changes, ageing, Tenderization, Curing, Cutting and Grading of meat and other fleshy foods, Role of meat in Cookery.
3. **Sugars and Sugar Related Products**-Nutritive value and Composition, Properties, Role ofSugar in Cookery, Artificial Sweeteners.
4. **Spices and Condiments**-General function of Spices, Specific Spices, and Role of Spices in Cookery.
5. **Beverages and Appetizers**-Classification, Coffee, Chicory, Tea, Types of tea.
6. **Fruits and vegetables**: Classifications, composition and nutritive value, role of fruits and vegetables in cookery, changes during cooking, effect of heat, acid and alkali, storage,

TEXT BOOKS

1.Srilakshmi B: Food Science. New Age International Publishers, New Delhi.2019
2.Norman N Potter, Joseph H Hotchkiss: Food science Technology,2000

REFERENCE BOOKS

1. Arora K., Gupta K.V., Theory of cooking 1988
2. Bennen Marion : Introductory foods ,1986
3. Lavies. : Food commodities. Heinemann Ltd, London ,1985
4. Lowe Bella : Experimental cookery,1987
5. Peckham : Foundation of food preparation ,1965

B.Sc.-Human Nutrition-Fourth Semester

SUBJECT CODE – BHN25402

COMMUNITY NUTRITION-II

Min. Hrs. – Theory: 60 hrs.

Course Objective

1. Understand the concept of health from the individual and community perspective.
2. Understand the common nutritional problems of the community their causes, symptoms, treatment and prevention.
3. To know the schemes, programs and policies of Government of India to Combat Malnutrition.
4. Understand the modern methods of nutritional quality of food.

Course Outcomes

1. Defining, assessing, and understanding the health status of population, determinants of health and illness and factors contributing to health promotion and disease prevention.
2. The students will be able to understand the concept of Nutrition Security and get familiarizedwith the various approaches and strategies for combating malnutrition.

THEORY

1. **Assessment of Nutritional Status by**
   a) Anthropometric measurement
   b) Biochemical Method
   c) Clinical Method
   d) Dietary method

2. Prevalence, Etiology biochemical and metabolic changes in Vitamin A deficiency, Protein Energy Malnutrition, Anaemia, Iodine deficiency disorders

3. **Nutritional and infection relationship**: Immunization and its importance,

4. **National and International agencies in uplifting the nutritional status** -WHO, UNICEF, CARE, ICMR, ICAR, CSIR, CFTRI. Various nutrition related welfare programs, ICDS, SLP, MDM

5. **Community nutrition program planning** - Identification of problem, analysis of causes, resources constraints, selection of interventions, setting a strategy, implementations and evaluation of the program.

TEXT BOOKS

1. Bamji SM, Rao NP and Reddy V, Text book of human nutrition, oxford and IBH publishing co. NewDelhi.1999
2. Gopalan Combating under nutrition-basic issues and practical approaches, Nutrition Foundationof India.2000

REFERENCE BOOKS

1. Gopalan C,Women and nutrition in India, NFI,New Delhi.2019

2. Jelliffe D.D. The assessment of Nutritional Status of the Community. WHO, monographseries.1987

3. Michael.J.G,Barrie.M.M:Public health nutrition, Blackwell publishing.1988

4. Nweze Eunice Nnakwe.,Community Nutrition – planning health promotion and diseaseprevention., Jones And Bartlett publishers.1986

5.Park.K,Park's textbook of preventive and social medicine.,12th edition.M/S Banarsidas bhanotpublishers.1998

6. Reddy V, Prahlad RaoN, Sastry G and Nath KK, Nutrition trends in India, Hyderabad NIN,1993

B.Sc. Human Nutrition-Fourth Semester

NUTRITION FOR HEALTH FITNESS
COURSE CODE- BHN25403

Min. Hrs. – Theory: 60 Hrs.

COURSE OBECTIVE

1. To enable the student to know the recent technique and metabolism, health and specific fitness inter-relationship

COURSE LEARNING OUTCOME

2. Student will be able to understand the definition, components of specific fitness and health status and significance of physical fitness and nutrition.

COURSE CONTENT

1. Definition, components of specific fitness and health status. Energy input & output, diet and exercise, types of exercise physical fitness & health inter- relationship.
2. Nutrition in sports: Sports specific requirements, diet manipulation, pre-game and post-game meal.
3. Significance of physical fitness and nutrition in prevention and management of weight control.
4. Alternative systems for health and fitness like Ayurveda, Yoga, Meditation. Yogic concepts in diet.

TEXT BOOKS:

1. Mahan, L.K. & Ecott-Stump. S. (2000): Krause's Food, Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
2. Sizer, F. & Whitney, E. (2000): Nutrition – Concepts & Controversies, 8th Edition, Wadsworth. Thomson Learning.
3. Whitney, E. N. & Rolfes, S.R. (1999): Understanding Nutrition, 8th Edition, West / Wadsworth, An International Thomson Publishing Co.,
4. Ira Wolinsky (Ed.)(1998): Nutrition in Exercise and Sports, 3rd Edition, CRC Press.

REFERENCE BOOKS:

1. Parikova, J. nutrition, Physical activity and health in early life, Ed. Wolinsky, I., CRC Press.

2. Shils, M.E., olson, J.A., Shike, N. and Rossa, A.C. (Ed.) (1999): Modern Nutrition in Health & Disease, 9th Edition, Williams & Wilkins.

3. McArdle, W. Katche, F. and Katch, V. (1996). Exercise Physiology. Energy, Nutrition and Human performance 4th edition, Williams and Wilkins, Philadelphia.

4. Journals-Medicine and Science in Sports and Exercise and International Journal of Sports Nutrition.

B.Sc.-Human Nutrition-Fourth Semester

SUBJECT CODE – BHN25404

FOOD SCIENCE-II

Min. Hrs. –Practical: 60 hrs.

1. Egg cookery
2. Sugar and Jaggery- Syrup formation, crystallization and caramelization
3. Preparation of different types of beverages.
4. Fruits and Vegetables cookery

B.Sc.-Human Nutrition-Fourth Semester

SUBJECT CODE – BHN25405

COMMUNITY NUTRITION-II

Min. Hrs. –Practical: 60 hrs.

1. Assessment of nutritional status of an individual/community using anthropometry and dietary survey-
   A) Preparation of schedule
   B) Survey work
   C) Analysis of data
   D) Writing of report.
2. Development of audio visual aids- radio script; popular article; chart/posters leaflets etc. Planning, implementation and evaluation of nutrition education for a target group.

B.Sc. Human Nutrition-Fourth Semester

NUTRITION FOR HEALTH FITNESS
COURSE CODE- BHN25406

Min. Hrs. – Practical: 60 Hrs.

1. Calculation of Nutritive Value and Preparation of Diet for Sports Person.
2. Preparation of Pre-Game Meal and Post Game-Meal.

B.Sc.-Human Nutrition-Fourth Semester
SUBJECT CODE – BHN25407
FIELD VISIT
Practical: 120 hrs.

1. Field visit to-
   a- To observe the working of nutrition & health-oriented programs (Survey based results)
   b- Hospitals to observe nutritional deficiencies.
2. The students shall maintain Logbook regarding it.
3. At the end of the semester their Logbooks will be evaluated by the faculty concerned

B.Sc.-Human Nutrition-Fifth Semester
SUBJECT CODE – BHN25501
FOOD INSTITUTIONAL MANAGEMENT
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. Understand the special characteristics of food service.
2. To enable students to understand the management of human in food service establishment.
3. To teach the student the mechanics of accounting in hotel and catering industry.
4. Gain knowledge to develop skills in handling equipment and maintenance.

Course Outcome

1. The student will be able to understand the different areas and segments of the hospitality industry.
2. The student will be able to understand the development of Food Service Institutions.
3. The student will understand the concept of approaches to Management, Principles and Functions of management and tools of Management.

THEORY

1. **Organization and management**: Definition and types of organization.
2. Definition functions and tools of management.
3. **Evolution of the food service industry Broad categories of catering services**: commercial and Institutional- Characteristics of the various types of food service units – Canteens, Hostels, Hospitals and Restaurants.
4. **Food selection**, purchasing, receiving and storeroom management.
5. **Personnel Management:** Recruitment, selection and training, performance appraisal
6. **Equipment selection**: Classification of equipment, Factors to be considered in equipment selection, materials and finishes used in equipment Construction, Types of equipment
7. **Menu Planning**: Definitions considerations, patterns and types, menu cycles, menu planning, menu format, menu design and display.
8. Policy and law related to Institutional management

TEXT BOOKS

1. Agarwal Anju. D: A practical handbook for consumers, Indian Book Houses, Mumbai.2014
2. Boella M.J.: Personnel Management in the hotel and catering industry; Barrie and Jenhins London ,213
3. Bessie B West, le velle Wood: Food Service in Institution. Macmillan Publishing co.2014

REFERENCE BOOKS

1. Gupta B.d. ” Consumption patterns in India, Tata McGraw hill.2014
2. Lillicarp D. R., Food and Beverage service: BLBS Kinton and Casarani, Theory of catering. Butter and Tanner Ltd, 2003
3. Kotschevr and Terrell, Food Service Planning Layout and Equipment,1987
4. Mahmood A Khan, Food Service Operations. Avi Publishing. 1
5. Handbook of Food Preparations – A.M. Home Economics Association1987.
6. Sweetman, M.D., 4, Mackeller. Food Selection and Preparations1978
7. Oliver B. Watson. School Lunch Room ServiceLender H. Ketshevar and Marget Food Service Planning: layout Equipment,1986

B.Sc.-Human Nutrition-Fifth Semester
SUBJECT CODE – BHN25502
ADVANCED DIETETICS-I
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To understand the foundation sciences which underpin therapeutic dietetic practice, the principles of disease prevention and health promotion, the principles of therapeutic intervention practice.
2. To understand the organization, management and provision of healthcare both in the hospital and in primary care.

Course Outcomes

1. The student will be able to study etiology, symptoms and treatment of GIT diseases.
   The student will be able to study etiology, symptoms and treatment of different metabolic disorders**.**

THEORY

1. **Concept of Diet therapy**: Growth and source of dietetics, purpose and principles of therapeutic diets, modification of normal diet, classification of therapeutic diets
2. **Routine hospital diets**: Preoperative and postoperative diets, study and review of hospital diet. Basic concepts and methods of -Oral feeding, Tube feeding, Parental nutrition, Intravenous feeding.
3. **Diet in gastritis, peptic ulcer-** symptoms, clinical findings, dietary modification, adequate nutrition, amount of food and intervals of feeding, chemically and mechanical irrigating foods, four stage diet (Liquid, soft, convalescent, liberalized diet).
4. **Diet in disturbances of small intestine and colon-**
   Diarrhoea- (child and adult)- classification, modification of diet, fibre, residue. Fluids &nutritional adequacy.
   Constipation and flatulence - dietary considerations.
   Ulcerative colitis (adults)- symptoms, dietary treatment.
   Sprue, coeliac disease- symptoms,dietary treatment.
5. **Diet in diseases of the GIT:** Liver, gall bladder- Etiology, symptoms and dietary treatment.
6. **Gout**: Nature and occurrence of uric acid, causes, symptoms and diet.

TEXT BOOKS

1. Antia, F.P. : Clinical Nutrition and Dietetics, Oxford University Press, Delhi,1999
2. Shubhangini A Joshi : Nutrition and Dietetics2nd edition, Tata Mc Graw-Hill Publishing Company Limited, New Delhi.2002
3. Srilakshmi. B: Dietetics, New Age International(P) Limited Publishers, New Delhi,2019

REFERENCE BOOKS

1. Mahan, L.K., Arlin, M.T.: Krause's Food, Nutrition and Diet therapy, W.B.Saunders Company, London.2003
2. Robinson,C.H;Lawler,M.R.Chenoweth,W.L;and Garwick,A.E Normal and Therapeutic Nutritioin, 1986
3. Therapeutic Nutrition, Mac Millan Publishing Co,1978
4. Williams's: Nutrition and diet Therapy. Times Mirror/Mosby College Publishing, St.Louis,1998

B.Sc.-Human Nutrition-Fifth Semester

SUBJECT CODE – BHN25503

DIET THERAPY (ELECTIVE)

Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To understand the use of nutrition care process model to make decisions, able to understand and identify nutrition-related problems and determine and evaluate nutrition interventions.

Course Outcomes

1. The student will be able to compare the hyper-metabolic (burns, surgery, trauma, surgery) conditions that increase resting energy expenditure and hence kilo caloric requirements.
2. The student will be able to understand the types of food allergies, list the foods that people are prone to cause allergies.
3. The student will understand why malnutrition is commonly seen in clients with HIV or AIDS.
4. The student will be able to understand the nutritional therapy in various metabolic disorders.

THEORY

1. **Nutrition in Surgical Conditions**- General Considerations, Pre-Operative and Postoperative Diet.
2. **Burns-** Medical Management, (Fluid & Electrolyte Repletion, Wound healing, Nutritional Therapy.
3. **Infections-**UTI and viral diseases (HIV, COVID19 etc. and its Nutritional Therapy).
4. **Food Allergy and Food Intolerance**-Definitions, Symptoms, Risk Factors, Food Intolerances, Diagnosis, Treatment, Nutritional management.
5. **Anaemias**: General concept, etiology, classification, and dietary management of Nutritional anaemia.
6. **Cancer**-Nutritional care in Cancer- Pathophysiology, Causes, Types, Treatment-Nutrition management, Role of Antioxidants, Nutritional problems in cancer treatment
7. **Drug and Nutrient Interactions** -Drugs Effects on Food Intake

TEXT BOOKS

1. Anderson L, Dibble MV, Turkki PR, Mitchall HS, and Rynbergin HJ: Nutrition in Health and Disease. J. B. Lipincott & Co. Philadelphia.1986
2. Joshi SA: Nutrition and Dietetics, Tata McGraw Hill Publications, New Delhi,1987
3. Anita FP and Abraham P: Clinical Dietetics and Nutrition. Oxford University Press, Delhi.1999

REFERENCE BOOKS

1. Mahan LK and Escott-Stump S: Krause's Food and Nutrition Therapy. WB Saunders Company, London.1956
2. Robinson. CH, Lawler MR, Chenoweth WL and Garwick, AE: Normal and Therapeutic Nutrition, Macmilian Publishing Co.1986
3. Williams SR: Nutrition & Diet Therapy. Times Mirror/Mosby College Publishing, St. Louis.2000
4. Begum RM: A textbook of Food, Nutrition and Dietetics, 3rd Ed. Sterling Publishers, New Delhi.2003
5. Hutchison, R: Food And The Principles Of Dietetics, Kessinger Publishing, LLC,1975

B.Sc.-Human Nutrition-Fifth Semester

SUBJECT CODE – BYOG 101 (ELECTIVE)

FOUNDATIONS OF YOGA

Min. Hrs. – Theory: 60 hrs.

Course Objectives:

The subject entitled 'Foundation of Yoga' has the following objectives:

1. Students of the UG course will have an understanding about origin, history and development of Yoga.
2. They will have an idea about the insights of Indian philosophy and Astika & Nastika darshanas.
3. Introduction about Yoga according to various yogic texts.

Course Outcome:

1. Students gain newer insight regarding the introduction & importance of Yoga for day today life.
2. This forms the basis of the development of concept of Indian Philosophy.
3. Also, the content dealing with the ancient Indian literature in yogic perspective

Unit-1: General introduction to yoga

Brief about origin of Yoga: Psychological aspects and Mythological concepts; History and Development of Yoga: prior to the Vedic period, Vedic period, Medival period, modern era; Etymology and Definitions of Yoga, Aim and Objectives of Yoga, Misconceptions of Yoga; Brief about Streams of Yoga; Principles of Yoga, Importance of Yoga

Unit - 2: General introduction to Indian philosophy

Philosophy: meaning, definitions and scope; Indian Philosophy: Salient features, Branches (Astika and Nastika Darshanas), Distinction from Religion and Science, Brief introduction to Prasthanatrayee and Purushartha Chatushtaya; Relationship between Yoga and Indian Philosophy

Unit - 3: Brief about Yoga in texts –I

Brief to Upanishads and Yoga in Principal Upanishads, Yoga in Yogopanishad; Yogic perspective of Epics: Ramayana, Adhyatma Ramayana and Mahabharata; Yogic perspective: Bhagavad Gita, Yoga Vasishtha, Narada Bhakti Sutras

Unit-4: Brief about Yoga in texts – II

Yogic perspective: Smritis, Puranas with emphasis to Bhagavat Purana; Yogic perspective to Shad-darshanas; Emphasis to Vedantic approach of Shankara, Ramanuja, Madhva and Vallabha; Brief: Agamas, Tantras, Shaiva Siddhanta.

Text Books

1. Lal Basant Kumar: Contemporary Indian Philosophy, Motilal Banarsidas Publishers Pvt. Ltd, Delhi, 2013.
2. Dasgupta S. N: History of Indian Philosophy, Motilal Banarsidas, Delhi, 2012.
3. Singh S. P: History of Yoga, PHISPC, Centre for Studies in Civilization Ist, 2010.
4. Singh S. P & Yogi Mukesh: Foundation of Yoga, Standard Publication, New Delhi, 2010

Books for Reference

1. Agarwal M M: Six systems of Indian Philosophy, Chowkhambha Vidya Bhawan, varanai, 2010
2. Swami Bhuteshananda: Nararad Bhakti Sutra, Advaita Ashrama Publication-Dept., II Edition,2009.
3. Hiriyanna M: Outlines of Indian Philosophy, Motilal Banarsidas, Delhi, 2009.
4. Hiriyanna M: Essentials of Indian Philosophy, Motilal Banarsidas, Delhi, 2008.
5. Radhakrishnan S: Indian Philosophy, Oxford University, UK (Vol. I & II) II Edition, 2008.
6. Max Muller K.M: The six system of Indian Philosophy, Chukhambha, Sanskrit series, Varanasi, 6th Edition, 2000.

B.Sc.-Human Nutrition-Fifth Semester
SUBJECT CODE – BHN25504
FOOD INSTITUTIONAL MANAGEMENT
Min. Hrs. –Practical: 60 hrs.

1. Comparing the Layout, Equipment, Service and Accounting followed in 3 Commercial and 3 NonCommercial Institutions (Visit).
2. Developing a performance appraisal for an employee in any Food Service Institution.
3. Special cooking for canteens, birthdays, weddings corporate seminars and practical training in buffet service.

B.Sc.-Human Nutrition-Fifth Semester
SUBJECT CODE – BHN25505
ADVANCE DIETETICS – I
Min. Hrs. –Practical: 60 hrs.

1. Planning and preparing diets for GIT diseases.
2. Planning and preparing diets for Liver and gall bladder diseases
3. Planning and preparing diets for gout patients.
4. Planning and preparing diets for gastritis, peptic ulcer etc.

B.Sc.-Human Nutrition-Fifth Semester
SUBJECT CODE – BHN25506
CLINICAL TRAINING
Min. Hrs. – Practical: 120 hrs.

Clinical Training (in a medical college/hospital /nursing home with well-equipped for at least one month on rotatory basis

1. Assessing the nutritional status and diet history of patients.
2. Planning diet sheets, preparing and providing guidance in the production of therapeutic diet.
3. Supervising the preparation of diets.
4. Supervising the delivery of trays to the patient.
5. Getting feedback from patients regarding diets.
6. Understanding the layout of hospital dietary unit.
7. Acquiring practical knowledge in diet counseling.

B.Sc. Human Nutrition - Sixth Semester
SUBJECT CODE-BHN25601
FOOD QUALITY ANALYSIS
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To understand the importance of food standard and quality control.
2. To understand the need for new food product development.

Course Outcomes

1. The student will be able to understand the importance of food standards and food laws.
2. The student will learn how to develop new food product.

THEORY

1. Importance of Food Standards: Quality control and assurance. Food standard, laws and regulations to ensure safety of food.
2. Product Evaluation: Sampling for product evaluation, sample preparation. Tests for raw food ingredients: Proximate principles, nutrient analysis.
3. Hazards to food products: Microbiological, environmental, natural, toxicants, pesticide residues and food additives.
4. Product development and Evaluation: Need for product development, how to develop a new Product, new products and ingredients, functional foods, shelf life of Product.
5. Principles of Proximate Analysis: Moisture, Ash, Crude Fat, Crude Fibre, Crude Protein and Carbohydrates by difference.
6. Principles and methods of Food Analysis

TEXT BOOKS

1. Amerine M.A., Pengtorn, R.M. Reoceasier E.B. Principles of sensory evaluation and academic Press, New York. 1986
2. Bamji, M.S., Rai, P.N. and Reddy V. (eds) Food chemistry (2nd ed.) springer, New York.1998

REFERENCE BOOKS

1. Bealon, G.H.and Begos J.M. (eds.) Nutrition in Preventative Medicine. WHO.1976
2. Belity. H.D. an Grosch W. Food chemistry springer Verleg Berlin, Heidelberg.1986
3. Damodaran, S., Parkin, K.L. and Fennema, O. R. Fennema's Food Chemistry, published by CRC Press.1987
4. Meyer L.H. Food Chemistry, Reinhold Pub. Corp. 1986
5. Nielsen, S.S. Food Analysis;Kluwer Academic/Plenum Publishers, New York.

B.Sc. Human Nutrition - Sixth Semester
SUBJECT CODE-BHN25602
ADVANCED DIETETICS-II
Min. Hrs. – Theory: 60 hrs.

Course Objectives

1. To understand the foundation sciences which underpin therapeutic dietetic practice, the principles of disease prevention and health promotion, the principles of therapeutic intervention practice.
2. To understand the organization, management and provision of healthcare both in the hospital and in primary care.

Course Outcomes

1. The student should be able to define and classify different metabolic disorders and describe the treatment for each type of the disorder.
2. The student will understand the goals of nutritional care for persons with various disorders and list nutritional guidelines.
3. The student should be able to identify the major modification in the diet for the treatment of chronic kidney disease (CKD) and CVD.

THEORY

1. Hypertension: classification, etiology, symptoms and dietary management
2. Diseases of the cardiovascular system: Definition of infarct, ischemia, angina pectoris, myocardial infarction, heart attack and stroke, Atherosclerosis and hyperlipidemias –classification, symptoms, dietary and lifestyle management. Prevention of cardiovascular diseases.
3. Renal Diseases: Etiology, symptoms and dietary management of acute and chronic
   Glomerulonephritis. Nephrotic syndrome - dietary management. Uraemia – dietary Nephrolithiasis - dietary management. Use of sodium and potassium exchange list.
4. Diet in allergy and skin disturbances: Definition, classification, manifestations, common food allergies and tests and their dietary management.
5. Diet in Diabetes Mellitus: Incidence and predisposing factors, symptoms, types. Metabolism in Diabetes, Dietary treatment & meal management, Hypoglycaemic agent, Insulin and its types, Complication of Diabetes.

TEXT BOOKS

1. Srilakshmi,B:Dietetics, New Age International(P) Limited Publishers, New Delhi,2019
2. Shubhangini A Joshi: Nutrition and Dietetics2nd edition, Tata Mc Graw-Hill Publishing Company Limited, New Delhi.2000
3. Antia, F.P: Clinical Nutrition and Dietetics, Oxford University Press, Delhi, 1999

REFERENCE BOOKS

1. Mahan, L.K., Arlin, M.T: Krause's Food, Nutrition and Diet therapy, 11th edition, W.B.Saunders Company, London.1986
2. Robinson,C.H;Lawler, M.R.Chenoweth, W.L;and Garwick, A.E:Normal and Therapeutic Nutrition,17th Ed., Mac Millan Publishing Co,1986
3. Williams's: Nutrition and diet Therapy.6th edition. Times Mirror/Mosby College Publishing, St.Louis.2000

B.Sc. Human Nutrition - Sixth Semester
SUBJECT CODE-BHN25603
FOOD QUALITY ANALYSIS
Min. Hrs. – Practical: 60 hrs.

1. Development of a new product and evaluation
2. Determination of proximate analysis of given samples: Moisture, ash, crude fat, crude fibre, crude protein and carbohydrate by difference.
3. Estimation of total sugar content, reducing and non-reducing sugars in given food samples.
4. Estimation of starch content of cereals.
5. Determination of iodine value and saponification number of fats.

B.Sc. Human Nutrition - Sixth Semester
SUBJECT CODE-BHN25604
ADVANCED DIETETICS-II
Min. Hrs. – Practical: 60 hrs.

1. Planning and preparing diet for Hypertension
2. Planning and preparing diet for Atherosclerosis
3. Planning and preparing diet for Glomerulonephritis and Nephritic Syndrome
4. Planning and preparing diet for Renal Failure Patients.
5. Planning and preparing diets for Diabetes mellitus.

B.Sc. Human Nutrition - Sixth Semester
SUBJECT CODE-BHN25605
PROJECT WORK
Practical: 10 hrs.

1. Basic concepts of project planning
   i. Defining objectives- Need problem, project, feasibility, planning, and formulation.
   ii. Identifying resources
   iii. Methods/approaches, Project Appraisal- Project Format

2. Guideline for project writing
   - Title of the project
   - Name of the person
   - Duration of the project, type of project.
   - Aims and objectives - summary of the proposed project
   - Project information, location, people and personnel involved.
   - Working/methodology
   - Evaluation
   - Writing and Reporting