

Vidyasagar University

Curriculum for B.Sc (Honours) in Nutrition [Choice Based Credit System]

Semester-III

Course	Course Code	Name of the Subjects	Course Type/ Nature	Teaching Scheme in hour per week			Credit	Marks
				L	T	P		
CC-5		C5T: Family meal management and meal planning	Core Course - 5	4	0	0	6	75
		C5P: Practical		0	0	4		
CC-6		C6T: Community Nutrition and Nutritional Epidemiology	Core Course - 6	4	0	0	6	75
		C6P: Practical		0	0	4		
CC-7		C7T: Basic Dietetics	Core Course - 7	4	0	0	6	75
		C7P: Practical		0	0	4		
GE-3	TBD		Generic Elective -3				4/5	75
							2/1	
SEC-1		SEC1T: Immunology, Toxicology and Public Health Or SEC1T: Biostatistics and Bioinformatics	Skill Enhancement Course-1	1	1	0	2	50
Semester Total							26	350

L=Lecture, **T**= Tutorial, **P**=Practical, **CC** = Core Course, **GE**= Generic Elective, **SEC** = Skill Enhancement Course, **TBD** = to be decided

Generic Elective (GE) (Interdisciplinary) from other Department [Four papers are to be taken and each paper will be of 6 credits]:

Papers are to be taken from any of the following discipline:

Chemistry/Physiology/Botany /Zoology/Computer Sc/Microbiology/Bio-Technology/ Mathematics/Statistics

Modalities of selection of Generic Electives (GE): A student shall have to choose **04** Generic Elective (GE1 to GE4) strictly from **02** subjects / disciplines of choice taking exactly **02** courses from each subjects of disciplines. Such a student shall have to study the curriculum of Generic Elective (GE) of a subject or discipline specified for the relevant semester.

Semester-III
Core Course (CC)

CC-5: Family meal management and meal planning **Credits 06**

CC5T: Family meal management and meal planning **Credits 04**

Course Contents:

1. Nutrition during Pregnancy: Physiology of pregnancy, factors (nonnutritional) affecting pregnancy outcome, importance of adequate weight gain during pregnancy, antenatal care and its schedule, Nutritional requirements during pregnancy and modification of existing diet and supplementation, nutritional factors affecting breast feeding. Deficiency of nutrients and impact- energy, iron, folic acid, protein, calcium, iodine. Common problems of pregnancy and their managements- nausea, vomiting, pica, food aversions, pregnancy induced hypertension, obesity, diabetes and Adolescent Pregnancy.
2. Nutrition during Lactation: Physiology of Lactation: Nutritional requirements during lactation, dietary management, food supplements, galactogogues, preparation for lactation. Care and preparation of nipples during breast feeding.
3. Nutrition during infancy: Infant physiology relevant to feeding and care. Breast feeding - colostrums, its composition and importance in feeding. Initiation of breast-feeding and duration of breast-feeding, Advantages of exclusive breast-feeding, Nutritional and other advantages of breast-feeding. Introduction of complementary foods, initiation of management of weaning, breast feeding etc. Bottlefeeding circumstances under which bottle-feeding is to be given. Care and sterilization of bottles. Preparation of formula. Mixed feeding, breast feeding and artificial feeding. Teething and management of problems.
4. Nutrition to toddlers / preschool/school going children or adolescent.
5. Management of preterm and low birth weight children – their special needs.
6. Growth and development from infancy to adulthood: Importance of nutrition for ensuring adequate development, Preventions of growth faltering. Growth assessment by Height, Weight, BMI, Skin fold thickness, Waist Hip Ratio.
7. Geriatric nutrition – Dietary requirement, Geriatric health problems, Nutritional care.
8. Sports Nutrition- nutritional demand on different sports and dietary recommendations.
9. Space Nutrition- Body composition changes in space, special diet in space persons.
10. Meal planning for the family
11. Indian meal pattern- vegetarian and non- vegetarian
12. Food faddism and the faulty food habits
13. Nutritive value of common Indian recepies.

C5P: Family meal management and meal planning (practical) **Credits 02**

1. Planning and preparation of balanced diet for a pregnant women
2. Diet during complication of pregnancy
3. Planning and preparation of balanced diet for a lactating women
4. Preparation of weaning food
5. Planning and preparation of balanced diet for a pre-school children
6. Planning and preparation of balanced diet for school going child. Preparation of packed lunch
7. Planning and preparation of balanced diet for adolescents

8. Planning and preparation of balanced diet for adult men and women of different Physical activity and economic status.
9. Planning and preparation of balanced diet for senior citizen.

CC-6: COMMUNITY NUTRITION AND NUTRITIONAL EPIDEMIOLOGY

Credit 06

C6T: Community Nutrition and Nutritional Epidemiology

Credit 04

Course Contents:

1. Concept of community, types of community, factors affecting health of Community.
2. Nutritional Anthropometry, Biochemical tests and Biophysical methodology - Merits, Limitations
3. Diet Survey: Need and importance, methods of dietary survey- Merits and Limitations. Family food security.
4. Clinical Signs: Merits, Limitations, Need and importance, identifying signs of PEM, vitamin A deficiency, Vit.-D deficiency and iodine deficiency, Classify clinical sign according to WHO.
5. Nutritional problem in the community
6. National Nutritional Intervention Programme to combat malnutrition
7. Food availability, factors affecting food availability and its consumption.
8. Infection and Immunization: Importance and Schedule of Vaccination of Children, Adult and foreign travelers. Full and partial immunization. Role of community for universal vaccination implementation
9. Principles of Epidemiology: Concept of disease, rate of a disease in a population (attack rate, morbidity rate, mortality rate, incidence and prevalence rate).
10. Dietary Exposure-National, Household, Institution and Individual level (NHFS and NNMB)
11. Biomarkers and nutrient intakes.
12. Epidemiological methods: descriptive studies, analytical studies and experimental studies.
13. Study of the epidemiologic approach – time, place, person distribution. Determinants of disease. Vital statistics and their significance.
14. Demography- Demography cycle and its applications. Socio-demographic and psychosocial variables.
15. Public health hazards from contaminated foods
16. Comparison with norms, standards, Z-scores.
17. Interpretation of the nutritional assessment data and its significance
18. Determining Validity and Reliability
19. Sources of errors for different methods of measurement relating to nutritional exposures.
20. Malnutrition and Infection vicious cycle-UNICEF conceptual model of Malnutrition.

C6P: Community Nutrition and Nutritional Epidemiology (Practical)

Credit 02

1. Diet and nutrition surveys
 - a. Identification of vulnerable and risk groups
 - b. Diet survey for breast feeding and weaning practices of specific groups

- c. Use of anthropometric measurement of children and adolescent girls and boys
2. Preparation of visual aids to highlight community nutrition, nutritional awareness, nutritional surveillance.
3. Field visit to-
 - a. Observe the working of nutrition and health oriented programmes (survey based result).
 - b. Hospitals to observe nutritional deficiencies.

CC-7: Basic Dietetics

Credits 06

C7T: Basic Dietetics

Credits 04

1. Role of dietician: The hospital and community
2. Basic Concepts of diet therapy
3. Principle of diet therapy and therapeutic nutrition for changing needs
4. Routine Hospital Diets: Regular, light, soft, fluid, parenteral and enteral feeding
5. Diets for febrile conditions, infections and surgical conditions.
6. Diet for gastro-intestinal disorders- Constipation, diarrhoea, peptic ulcer
7. Diet for Renal Diseases- Nephritis, Nephrotic syndrome, Renal failure.
8. Diet for obesity and different cardiovascular disorders
9. Diet for diabetes mellitus
10. Nutrition in cancer
11. Nutrition in Immune system dysfunction (AIDS & Allergy)
12. Nutrition support in metabolic disorder
13. Nutrition in burn and surgery
14. Nutrition- Addictive behaviour in anorexia nervosa, bulimia and alcoholism
15. Nutrient Drug interaction
16. Feeding infants and children's- problems in feeding children in hospital
17. Nutrition and diet clinics- Nutrition education in general, Patients check-up and dietary counselling, educating the patient and follow up.

C7P: Basic Dietetics (Practical)

Credits 02

1. Planning and preparation of normal diets.
2. Planning and preparation of fluid diets.
3. Planning and preparation of soft/semi solid diets.
4. Planning and preparation of high and low calorie diets.
5. Planning and preparation of diets for diabetes mellitus
6. Planning and preparation of diet for hypertension and atherosclerosis
7. Planning the preparation of diets for nephritis and nephrotic syndrome
8. Planning and preparation of diets for Peptic Ulcers.
9. Low and medium cost diets for PEM, anaemia and vitamin A deficiency

Skill Enhancement Course (SEC)

SEC-1: IMMUNOLOGY, TOXICOLOGY AND PUBLIC HEALTH

Credits 02

SEC1T: Immunology, Toxicology and Public Health

Theory:

1. Immunology:

- Basic concept of immunity, Types of immunity-innate, acquired, active and passive immunity.

2. Humoral immune system:

- Mechanisms of humoral immunity, Immunoglobulin isotypes- IgG, IgM, IgA, IgD, and IgE.

3. Cell mediated immune system:

- Types of effector T cells, mechanisms of cell mediated immunity.

4. Toxic agents:

- Human exposure, mechanism of action and resultant toxicities of the following xenobiotics: Metals: lead, arsenic Pesticides: organophosphates, carbamates, organochlorine.

5. Eco-toxicology:

- Brief introduction to avian and aquatic toxicology, movement and effect of toxic compounds in food chain (DDT, mercury), bioaccumulation, biomagnifications, concept of BOD and COD.

Suggested Reading:

1. Immunology, 8th edition, (2012), Male, D., Brostoff, J., Roth, D.B. and Roitt, I., Elsevier-Sanders.
2. An Introduction to Immunology, Immunochemistry and Immunobiology, 5th edition, (1988), Barrett, James T., Mosby Company, St. Louis.
3. Immunology: An Introduction, 4th edition, (1994), Tizard, I.R., Saunders College Publishing, Philadelphia.
4. Cassarett and Doull's "Essentials of Toxicology" 2nd edition (2010), Klaassen and Whatkins, McGraw Hill Publisher.
5. Introduction to Toxicology, 3rd edition (2001), John Timbrell, Taylor and Francis Publishers..
6. Principles of Toxicology, 2nd edition (2006), Stine Karen and Thomas M Brown, CRC press.
7. Lu's basic toxicology: Fundamentals target organ and risk assessment, 5th edition (2009), Frank C Lu and Sam Kacow, Informa Health care.

OR

SEC 1: BIOSTATISTICS AND BIOINFORMATICS

Credits 02

SEC1T: Biostatistics and Bioinformatics

Theory:

1. Data and Data Types: Primary data and Secondary Data.
2. Measures of Central Tendency: Mean, Median, Mode.
3. Dispersion: Range, Standard Deviation.
4. Hypothesis Testing: Chi-square Test, Student 't' test, Analysis of Variance (ANOVA).
5. Bioinformatics and Health Informatics: Concept and applications.
6. Nucleic acid and Protein Data Bases, Nutrient data bases.
7. Sequence similarity searching by BLAST, Principle, features and types of BLAST, Significance of Multiple Sequence Alignments, Phylogenetic Tree.

Suggested Readings :

1. Saxena Sanjay (2003) A First Course in Computers, Vikas Publishing House.
2. Pradeep and Sinha Preeti (2007) Foundations of Computing, 4th ed., BPB Publications.
3. Lesk M.A. (2008) Introduction to Bioinformatics. Oxford Publication, 3rd International Student Edition.
4. Rastogi S.C., Mendiratta N. and Rastogi P. (2007) Bioinformatics: methods and applications, genomics, proteomics and drug discovery, 2nd ed. Prentice Hall India Publication.
5. Primrose and Twyman (2003) Principles of Genome Analysis & Genomics. Blackwell.
6. Debjyoti Das (2012). Biostatistics. Academic Publishers
7. E. Batschelet : Introduction to Mathematics for Life Scientists, Springer Verlag, International Student Edition, Narosa Publishing House, New Delhi (1971, 1975).
8. A. Edmondson and D. Druce : Advanced Biology Statistics, Oxford University Press; 1996.
9. W. Danial : Biostatistics : A foundation for Analysis in Health Sciences, John Wiley and Sons Inc; 2004.

Generic Elective Syllabus
GE-3 [Interdisciplinary for other department]

GE-3: Community Nutrition and Nutritional Programme

Credits 06

GE3T: Community Nutrition and Nutritional Programme

Community Nutrition and Nutritional Programme:

1. Concept of community, types of community, factors affecting health of Community.
2. Basic concept of Nutritional Programme Formulation.
3. ICDS Programme – Aims, Objectives, Target group, Services provided, Advantages, Limitation, Suggestion for improvement.
4. MDMP – Aims, Objectives, Target group, Service provided, Advantages, Limitation, Suggestion for improvement.
5. ANP, SNP, CNP, BFP – Aims and Objectives, Target group, Service provided, Advantages, Limitation.
6. PHC and Public distribution system to combat malnutrition
7. Identifying signs and symptoms of vitamin A deficiency, Vit.-D deficiency, iodine and iron deficiency, and role of prophylaxis programme to overcome such deficiencies.
8. Nutritional Anthropometry, Biochemical tests and Biophysical methodology - Merits, Limitations
9. Diet Survey: Need and importance, methods of dietary survey- Merits and Limitations. Family food security.
10. Concept of Surveillance Systems: Role of international, national, regional agencies and organizations.
11. Nutritional problem in the community : Epidemiology, etiology and prevention of Marasmus, Kwashiorkor, Scurvy, Ricket, Osteomalacia, Obesity.
12. Importance of dietitian in community

Nutrition in specific pathophysiological conditions:

1. Hospital diets- liquid, clear fluid, soft & normal diets.
2. Diet therapy in diabetes mellitus and obesity.
3. Dietary management and nutritional factors involved in cardiovascular disease like atherosclerosis, hyperlipidemia, hypertension.
4. Diet therapy in peptic ulcer, gastritis, diarrhea, colitis, constipation, flatulence and jaundice.
5. Diet during febrile condition, infection, surgical condition, nephritis, and nutritional anemia.
6. Therapeutic uses of dietary fibers with special reference to chronic constipation, diverticular disease, irritable bowel syndrome, obesity and diabetes, possible adverse effects of dietary fibers.
7. Rehydration therapy- Elementary idea about rehydration, Conditions for rehydration. Different types of rehydration therapy with special emphasis on ORS -its types and importance, Age dependent ORS quantity for rehydration therapy.
8. Nutrition and Infection: Infection, a cause of malnutrition and vice-versa. Nutrition and immunity during childhood and in adult.