VIDYASAGAR UNIVERSITY

Midnapore, West Bengal



PROPOSED CURRICULUM&SYLLABUS (DRAFT) OF

BACHELOR OF SCIENCE (HONOURS) MAJOR IN NUTRITION

4-YEAR UNDERGRADUATE PROGRAMME

(w.e.f. Academic Year 2023-2024)

Based on

Curriculum & Credit Framework for Undergraduate Programmes (CCFUP), 2023& NEP, 2020

VIDYASAGAR UNIVERSITY BACHELOR OF SCIENCE (HONOURS) MAJOR IN NUTRITION (under CCFUP, 2023)

Level	YR.	SEM	Course	Course Code	Course Title	Credit	L-T-P	Marks		
			Type					CA	ESE	TOTAL
B.Sc. (Hons.)	3rd	V	SEMESTER-V							
			Major-8	NUTHMJ08	T: Fundamentals of Diet Therapy; P: Practical	4	3-0-1	15	60	75
			Major-9	NUTHMJ09	T: Clinical Diet therapy-1; P: Practical	4	3-0-1	15	60	75
			Major-10	NUTHMJ10	T: Food Microbiology; P: Practical	4	3-0-1	15	60	75
			Major	NUTHDSE1	T: Nutrition and Immunity; P: Practical	4	3-1-0	15	60	75
			Elective-01							
			Minor-5	NUTMIN05	T: Nutrition in Special Physiological Phases	4	3-0-1	15	60	75
			(DiscI)		(To be taken by the other Discipline)					
					Semester-V Total	20				375

MJ = Major, MI = Minor Course, DSE = Discipline Specific Elective Course, CA= Continuous Assessment, ESE= End Semester Examination, T = Theory, P= Practical, L-T-P = Lecture-Tutorial-Practical

SEMESTER-V

MAJOR (MJ)

Major 08: Fundamentals of Diet Therapy Credit: 4 Full Marks: 75

Learning outcomes:

At the end of the course the student will be able to:

- 1. Understand the various therapeutic diets and role in prevention of diseases.
- 2. Know about dietary management for texture & consistency Based Diets
- 3. Learn about Core Components of the Therapeutic Food Plan
- 4. Knowledge regarding Personalised Nutrition.

MJ-8T: Fundamentals of Diet Therapy (Theory)

Credits 03

Course Content:

1. Basic concepts of Diet Therapy

- Historical outline of Diet Therapy-Monastic & The Medieval Diet.
- Definition and objectives of therapeutic nutrition.
- Principles of therapeutic diet.
- Principles of modifying diets based on energy, macronutrients, texture, flavour, genetic predispositions, metabolic profile, gut microbiota, medical history & comorbidities, lifestyle factors (activity level, stress, sleep, etc.).

2. Texture & Consistency Based Diets

- Clear liquid diet for digestive rest—broths, gelatin, clear juice.
- Full liquid diet- smooth purees, milk, yogurt.
- Soft/blenderized diet: for chewing/swallowing challenges—foods pureed, cooked soft with mild seasoning.
- Bland diet: avoids spicy, caffeine, alcohol; mild, soothing for the GI tract.

3. Feeding Methods & Care Planning

- Enteral nutrition: tube feeding types, indications, complications.
- Parenteral nutrition: PPN vs. TPN, monitoring.
- Pre and post-operative diets.
- Diet for specific situation- acid ash diet, alkaline ash diet, ornish diet, DASH diet.

4.Core Components of the Therapeutic Food Plan

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- Macronutrients balanced carbohydrates, healthy fats, lean proteins quinoa, olive oil, lentils, fatty fish.
- Micronutrients address deficiencies based on individual needs Spinach (folate), dairy (calcium), seeds (magnesium).
- Anti-inflammatory foods reduce oxidative stress & chronic inflammation turmeric, ginger, berries.
- Gut-health support restore microbiome balance yogurt, kefir, fermented foods, prebiotic fibers.
- Hydration support detox and cellular function herbal teas, infused water, coconut water

MJ-8P: Fundamentals of Diet Therapy (Practical)

- 1. Planning and preparation of clear fluid diets.
- 2. Planning and preparation of full fluid diets.
- 3. Planning and preparation of soft diets.
- 4. Planning and preparation of therapeutic diets specially emphasis on gut health support with intervention of anti-inflammatory nutrition.

Major 09: Clinical Diet therapy-1 Credit: 4

Full Marks: 75

Learning outcomes:

At the end of the course the student will be able to:

- 1. 1.To know regarding dietary management of diabetic patient.
- 2. To learn regarding dietary management of heart disease patient.
- 3. To educate regarding dietary management of kidney disease patient.

MJ-9T: Clinical Diet therapy-1 (Theory) Credits 03

Course Content:

1. Diabetes Mellitus:

- Types with specific causes, symptoms, diagnosis, Management of diabetes by insulin therapy, oral hypoglycemic agents (OHA).
- Glucose monitoring at home.
- Dietary care and nutritional therapy, meal plan for a diabetic patient.
- Alternatives therapeutic management to combat hyperglycemia.

2. Cardiovascular diseases:

- Etiology and risk factors of various types of heart diseases.
- Hypertension-dietary management.
- Dietary management against progression of atherosclerosis.

3. Hyerlipidemias:

- Primary and secondary hyperlipidemia-causes, risk factors and linked with heart diseases and dietary management.
- National Cholesterol Education Programme (NCEP) guidelines.

4. Renal Diseases:

- Causes and dietary management of acute renal disease.
- Causes and dietary management of chronic renal disease.
- Uremia-cause, risk factors and dietary management.
- Causes and dietary management of nephrolithiasis.

MJ9P: Clinical Diet therapy-1 (Practical)

- 1. Planning and preparation of diets for diabetes mellitus.
- 2. Planning and preparation of diet for atherosclerosis.
- 3. Planning and preparation of diets for hypertension.
- 4. Planning and preparation of diets for nephritis and nephrotic syndrome.
- 5. Planning and preparation of diets for Chronic Kidney disease.

Major 10: Food Microbiology

Credit: 4

Full Marks: 75

Learning outcomes:

At the end of the course the student will be able to:

- 1. 1.To know regarding bacteria, virus, protozoa, fungi etc.
- 2. To learn regarding bacterial growth and nutritional requirement.
- 3. To educate regarding fermented products and probiotics.

MJ-10T: Food Microbiology Credits 03

Course contents:

1.Basics of Microbiology:

- General characteristics of bacteria, fungi, virus, protozoa and algae.
- Bacterial structure- Cell walls of Gram positive and Gram negative, Bacteria capsule, Bacterial spore.
- Basic concept of viroids and prions.

2. Nutrition and culture of Bacteria:

- Bacterial growth-Extrinsic and intrinsic factors affecting growth.
- Bacterial growth curve.
- Types of starters culture.

3. Fermented Foods:

- Bacterial cultures.
- Yeast cultures.
- Mold cultures.
- Beneficial effect of microorganisms-concept of probiotics and related factors.
- Dietary different fermented products, importance of fermented foods.
- Alcoholic beverages and traditional foods.

4. Food borne diseases

- Bacterial agents (e.g., Salmonella enterica, Clostridium perfringens, Escherichia coli O157, Listeria monocytogenes).
- Viral agents (e.g., Norovirus, Hepatitis A virus).
- Parasites (e.g., Giardia lamblia, Taenia solium)
- Toxin-mediated illnesses: food intoxication (e.g., Clostridium botulinum toxin, mycotoxins)

MJ10P: Food Microbiology (Practical)

- 1. Study of equipments in a food microbiology lab.
- 2. General procedures for aseptic work.
- 3. Staining of bacteria (gram staining).
- 4. Preparation of nutrient broth and media with agar.
- 5. Bacteriological examination of water, milk, dried fish and fish meal and canned foods.
- 6. Common preparation of starter culture for fermented food preparation.

MAJOR ELECTIVE (DSE)

Major Elective – 01: Nutrition and Immunity Credit: 4

Full Marks: 75

Learning Outcome:

At the end of the course the student will be able to:

- 1. 1.To know the basics of immune system.
- 2. To learn how amino acid, fatty acid and carbohydrates control immune function.
- 3. To educate regarding probiotics and immune health.

Major (Elect.) MJE -1T: Nutrition and Immunity Credits 03

Course contents:

- 1. Overview of Immune System:
 - Types of immunity-innate immunity, acquired immunity, active and passive immunity.
 - Basic outline of antigen-antibody interaction.
 - Basic idea about immuno-competent cells- Neutrophil, B-lymphocytes, T-lymphocytes (helper, cytotoxic and suppressor), monocytes and macrophages.
 - Types and functions of immunoglobulins.
 - Properties of immunogen, antigens and haptens. Human leukocyte antigens.
- 2. Macronutrients and immune functions:
 - Role of various amino acids (glutamine, arginine etc) on immune functions.
 - Role of glutathione on immune function.
 - Polyunsaturated fatty acids anti and pro inflammatory effects.
 - Dietary fibres modulate the immune system.
- 3. Vitamins and minerals and immune functions:
 - Effect of vitamin D, A and C on immune cell activation.
 - Role of vitamin B1, B2, B3 and B12 on anti and pro inflammatory responses.
- 4. Immunomodulator properties of functional foods:
 - Probiotics and Gut–Immune Axis Modulation.

- Role of Polyphenols and Flavonoids on immune health.
- Food-Derived Bioactive Peptides and Immunity.

Major (Elect.) MJE -1P: Nutrition and Immunity (Practical)

- 1. Test for agglutination reaction.
- 2. Single Radial Immunodiffusion (SRID) test
- 3. Poster presentation on immunonutrition.
- 4. Preparation of immuno-nutrient rich functional foods.

MINOR (MI)

Minor-5: Nutrition in Special Physiological Phases Credit: 4

Full Marks: 75

Learning outcomes-

After completion of the course the students will be able to:

- 1. To know regarding nutritional requirements and dietary management during pregnancy.
- 2. To know about the physiology of lactation, nutritional requirements and dietary management during lactation.
- 3. To learn about nutritional requirement of toddlers / preschool / school going children / adolescent / adults.

MI – 5T: Nutrition in Special Physiological Phases

Credits 04

Course Contents-

1. Nutrition during Pregnancy:

- Importance of adequate weight gain during pregnancy, antenatal care and its schedule.
- Dietary management for a pregnant mother.
- Importance of iron, folic acid and calcium during pregnancy.
- Common problems of pregnancy and their managements- morning sickness, anaemia, constipation, pregnancy induced hypertension, gestational diabetes.

2. Nutrition during Lactation:

- Nutritional requirements during lactation.
- Dietary management, food supplements during lactation.
- Increase the production of breast milk-various factors.
- Care and preparation of nipples during breast feeding.

3. Nutrition during infancy to adult:

- 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.
- Nutrition requirement of toddlers / preschool / school going children / adolescent / adults.

MI-5P: Nutrition in different phases of Human life Cycle (Practical)

- 1. Planning and preparation of balanced diet for a pregnant woman
- 2. Planning and preparation of balanced diet for a lactating women
- 3. Planning and preparation of balanced diet for a pre-school child
- 4. Planning and preparation of balanced diet for school going child.
- 5. Planning and preparation of balanced diet for adolescents