

ಡಾ. ಮನಮೋಹನ ಸಿಂಗ್
ಬೆಂಗಳೂರು ನಗರ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ



Dr. MANMOHAN SINGH
BENGALURU CITY UNIVERSITY

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No.MSBCU/BoS/Home Sci.-[UG & PG]/194 /2026-27

Date:05.09.2026

NOTIFICATION

Sub: M.Sc. III & IV Semesters Syllabus of Dr. Manmohan Singh
Bengaluru City University-reg.

Ref: 1. Recommendations of Board of Studies in the Home
Science [UG & PG]
2. Approval of the Vice-Chancellor dated.02.09.2026

In pursuance of the recommendation in the BoS in Home Science [UG & PG] and with the approval of the Vice-Chancellor, the Syllabus of following Courses are hereby notified for information of the concerned. This Syllabus will be effective from the academic year 2026-27.

Sl. No.	Programmes
1.	M.Sc. [Nutrition & Dietetics] – III & IV Semester
2.	M.Sc. [Food & Nutrition] – I to II Semester

The copy of the Syllabus is notified in the University Website: www.bcu.ac.in for information of the concerned.

REGISTRAR

To:

The Registrar [Evaluation], Dr. Manmohan Singh Bengaluru City University, Bengaluru.

Copy to;

1. The Dean, Faculty of Science, MSBCU.
2. The Chairman & Members of BoS in Home Science [UG & PG], MSBCU.
3. The P.S. to Vice-Chancellor/Registrar/Registrar [Evaluation], MSBCU.
4. Office copy / Guard file / University Website: www.bcu.ac.in



M.Sc. NUTRITION AND DIETETICS

SYLLABUS

DR. MANMOHAN SINGH

BENGALURU CITY UNIVERSITY

CURRICULAM FRAME WORK

FOR TWO YEAR

POST GRADUATE PROGRAMME

(THIRD AND FOURTH SEMESTER)

IN

NUTRITION AND DIETETICS

2026-2027

**TWO YEAR POST GRADUATE PROGRAMME
IN
NUTRITIONAND DIETETICS**

A] I SEMESTER OF THE POST GRADUATE PROGRAMME IN NUTRITION AND DIETETICS

SUBJECTS		Paper	Instruction Hrs/Week	Duration of Exam	MARKS			Credits	Total Credits
					IA	Exam	Total		
CORE SUBJECTS	Nutrition and Dietetics	4T	4x4	4x3	4x30	4x70	4x100	4x4	168
		4P	4x4	4x4	4x15	4x35	4x50	4x2	
SOFT CORE		1T	1x3	1x3	1x30	1x70	1x100	1x2	2
TOTAL CREDITS PER SEMESTER									26

BJ II SEMESTER OF THE POST GRADUATE PROGRAMME IN NUTRITION AND DIETETICS

Subjects		Paper	Instruction hrs/week	Duration of Exam	MARKS				Total Credits
					IA	Exam	Totals	Credit	
CO RE SUBJE CTS	Nutrition and Dietetics	4T	4x4	4x3	4x30	4x70	4x100	4x4	16
		4P	4x4	4x4	4x15	4x35	4x50	4x2	8
SO FT CO RE		1T	1x3	1x3	1x30	1x70	1x100	1x2	2
TOTAL CREDITS PER SEMESTER									26

C] III SEMESTER OF THE POST GRADUATE PROGRAMME IN NUTRITION AND DIETETICS

Subjects		Paper	Instruction hrs/week	Duration of Exam	MARKS			Credits	Total Credits
					IA	Exam	Total		
CORE SUBJECTS	Nutrition and Dietetics	3T	3x4	3x3	3x30	3x70	3x100	3x4	12
		3P	3x4	3x4	3x15	3x35	3x50	3x2	06
Open Elective		1T	1x4	1x3	1x30	1x70	1x100	1x4	04
Hospital Internship		Report					1x50	1x2	02
TOTAL CREDITS PER SEMESTER									24

D] IV SEMESTER OF THE POST GRADUATE PROGRAMME IN NUTRITIONAND DIETETICS

Subjects		Paper	Instruction hrs/week	Duration of Exam	MARKS			Credits	Total Credits
					IA	Exam	Total		
CORE SUBJECTS	Nutrition and Dietetics	4T	4x4	4x3	4x30	4x70	4x100	4x4	16
		2P	2x4	2x4	2x15	2x35	2x50	2x2	4
		Dissertation	4	Report Evaluation			1x100	1x6	6
TOTAL CREDITS PER SEMESTER									26

BISHOP COTTON WOMEN'S CHRISTIACOLLEGE

Mission Road, Bengaluru-27

TWO YEAR POST GRADUATE PROGRAMME IN NUTRITION AND DIETETICS

A] I SEMESTER OF THE POST GRADUATE PROGRAMME IN NUTRITION AND DIETETICS

Subjects		Paper	Instruction hrs/week Total	Duration of Exam	MARKS			Credits	Total Credits
					IA	EXAM	TOTAL		
Core Subject s	MSND 101								
	Advanced Human Nutrition	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 102								
	Human Physiology	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 103								
	Nutritional Biochemistry	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 104								
	Food Microbiology & Food Preservation	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	SoftCore 105								
	Research Methods And Biostatistics	1T	1x3	1x3	1x30	1x70	1x100	1x2	02
	TOTAL CREDITS PER SEMESTER						700		26

**B) II SEMESTER OF THE POST GRADUATE PROGRAMME IN
NUTRITION AND DIETETICS**

Subjects		Pap er	Instruction hrs/week Total	Duration of Exam	MARKS			Credits	Total Credits
					IA	EXAM	TOTA L		
Core Subjects	MSND 201	IT 1P	1x4	1x3	1x30	1x70	1x100	1x4	04
	Advanced FoodScience		1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 202	1T 1P	1x4	1x3	1x30	1x70	1x100	1x4	04
	Nutrition ThroughLife Cycle		1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 203	1T 1P	1x4	1x3	1x30	1x70	1x100	1x4	04
	PublicHealth Nutrition		1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 204	1T 1P	1x4	1x3	1x30	1x70	1x100	1x4	04
	Food Safety and Quality Control		1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 205	1T	1x3	1x3	1x30	1x70	1x100	1x2	02
	Soft Core Functional Foods and Nutraceuticals								
	TOTAL CREDITS PER SEMESTER						700		26

**C) III SEMESTER OF THE POST GRADUATE PROGRAMME IN
NUTRITION AND DIETETICS**

Subjects		Paper	Instructi on hrs/week Total	Duration of Exam	MARKS			Credits	Total Credits
					IA	EXAM	TOTA L		
Core Subject s	MSND 301								
	Clinical Nutrition and Dietetics	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 302								
	Nutrition in Fitness and Sports	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 303								
	Nutrition and Diet Counseling	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 304 Open Elective Nutrition for Healthy Lifestyle	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
	MSND 305 Hospital Internship	Project Report			-	-	1x50	1x2	02
	TOTAL CREDITS PER SEMESTER						600		24

**D) IV SEMESTER OF THE POST GRADUATE PROGRAMME IN
NUTRITION AND DIETETICS**

Subjects		Paper	Instruction hrs/week Total	Duration of Exam	MARKS			Credits	Total Credits
					IA	EXAM	TOTAL		
Core Subjects	MSND 401 Advanced Clinical Nutrition and Dietetics	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 402 Medical Nutrition In Critical Care	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
		1P	1x4	1x4	1x15	1x35	1x50	1x2	02
	MSND 403 a. Food Service Management b. Nutrition in Emergencies c. Maternal and Child Nutrition	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
	MSND 404 Paediatric & Geriatric Nutrition	1T	1x4	1x3	1x30	1x70	1x100	1x4	04
	MSND 405 Dissertation		1x4	Report Evaluation On			1x100	1x6	6
	TOTAL CREDITS PER SEMESTER						600		26

COURSE ELIGIBILITY

COURSE ELIGIBILITY

Name of the course:	M.Sc. Nutrition and Dietetics
Duration of the course:	Two years (Four semesters,CBCS)
Eligibility:	A candidate must have secured: 50% marks in aggregate and Studied Nutrition as a subject at B.Sc. level with Home Science/ Chemistry/ Nutrition related streams/ Biotech
Intake:	30 seats (15 Management+15 University)
Admission:	As per University Regulations

SEMESTER III
NUTRITION AND DIETETICS
CLINICAL NUTRITION AND DIETETICS

Code: MSND 301

Hours: 52

Instructions/week: 04

Total marks: 100

Theory: 70

IA: 30

OBJECTIVES:

To enable students to:

- Understand the modifications in nutrients and dietary requirements for therapeutic conditions.
- Gain knowledge and provide appropriate nutritional care for treatment of various diseases.

UNIT I

08 hrs

Definition and history of dietetics

Dietetics in modern health care management.

Assessment of patient needs based on interpretation of patient's diagnostic data.

UNIT II

12 hrs

Febrile conditions – Metabolic changes during fever, Pathophysiology and Dietary management

Short duration – Typhoid and Influenza, Intermittent duration – Malaria, Long term – Tuberculosis.

Drug and nutrient interaction –

Types of drugs-antibiotics, analgesics, antihistamines.

Effect of drugs on metabolism, digestion and absorption, Effect on nutritional status, Drug dosage and efficacy.

UNIT III

12 hrs

Disease of Pancreas (acute pancreatitis, chronic Pancreatitis)–etiology, symptoms, diagnosis, and dietary management.

Diabetes Mellitus – Types, pathophysiology, etiology, symptoms of Type 2 Diabetes, diagnosis, complications, Treatment.

Glycemic Index, Glycemic Load. Artificial Sweeteners Types of Insulin, Exchange list, CHO: Insulin Ratio, Role of exercise, Role of fiber in Diabetes Management

UNIT IV**10 hrs**

Energy Imbalance – obesity – Definition, components of body weight, types, etiology, assessment, complications

Regulation of body weight, Role of hormones in obesity

Underweight – Definition, etiology, assessment, health risk, dietary management and complications. Importance of weight management, exercise, behavior modification, functional consequences of energy deficiency.

Food intolerance and allergy – Food allergens, test for allergy – skin test, elimination test, dietary management

UNIT V**12 hrs**

Hepatic disorders (Viral hepatitis – types – A, B, C), Fatty liver – Types, cirrhosis, hepatic coma,

Wilson's disease-Etiology, pathophysiology, symptoms, diagnosis, Complications and dietary management.

Gall bladder- Functions and components of bile, cholecystitis,

Cholelithiasis-Etiology, Pathophysiology, symptoms, diagnosis, Complications and dietary management.

COURSE ARTICULATION MATRIX: MAPPING OF COURSE OUTCOMES (COS) WITH PROGRAM OUTCOMES (POs 1 - 7)

Course outcome (CO's)/Program Outcomes (PO's)	1	2	3	4	5	6	7
To understand the modifications in nutrients and dietary requirements for therapeutic conditions	x	x	x	x	x	x	x
To gain knowledge and provide appropriate nutritional care for treatment of various diseases.	x	x	x	x	x	x	x

CLINICAL NUTRITION AND DIETETICS - PRACTICAL

Code: MSND 301 P
No. of Weeks: 13
Instructions/week: 04

Total marks: 50
Practical: 35
IA: 15

1. Planning and Preparation of high calorie high protein diet for underweight
2. Planning and preparation of low calorie and high fiber diet for Obesity.
3. Planning and preparation of lactose and gluten free recipes
4. Planning and preparation of diet for Diabetes IDDM or NIDDM
5. Planning and preparation of menu for viral hepatitis
6. Case studies and presentation on COPD

REFERENCES:

1. Alfred H.Katz, Prevention and Health, the Haworth, press, New York 1999
2. Achayya,K.T.,(2001) A historical Dictionary of Indian Foods, Oxford Publishing Co
3. Antia, F.P. and Philip A. Clinical Dietetics and Nutrition, 4th Ed, 2002.
4. Bamji, M.S. Rao, P.N. and Reddy (2019,) Text book of Human Nutrition, 4th edition, Oxford and IBH publishing housing.
5. Garrow, J.S. and James WPT. Human Nutrition and Dietetics, 10th Ed.
6. International Life Science Institute Present Knowledge in Nutrition- latest edition 2012
7. Krause Food and Nutrition Care Process,15th edition
8. Modern Nutrition in health and Disease, 10th edition.
9. Sareen S, 2005 Advanced Nutrition and human metabolism, 7th edition, 2016, USAIAPEN,BAPEN webseries
10. Sharon Rady Rolfs and Ellie Whitley,(2018), Understanding Normal and Clinical Nutrition, 11th edition,2018.
11. Williams, S.R., Essentials of Nutrition and Diet Therapy, 12th Ed. Jones Mirror College Publishing, 2018.

SEMESTER III
NUTRITION AND DIETETICS
NUTRITION IN FITNESS AND SPORTS

Code: MSND **302**
Hours: **52**
Instructions/week: **04**

Total marks: 100
Theory: **70**
IA: **30**

OBJECTIVES

To enable students

- To understand special nutritional requirements for physical fitness, exercise adaptations and recovery
- To understand the role of physical activity – management of health.
- To understand diet plans, nutrient timing, supplementation, hydration and body composition

UNIT I

12 hrs

Introduction to Physical Fitness and Sports Nutrition

Physical Fitness and Sports Nutrition – definition, components of physical fitness,

Scope of Sports Nutrition, types of exercises, Classification of Physical Activities by Intensity

Energy transfer and their relevance to exercise, Mobilization of fuel stores during exercise, Body composition in physical fitness- Influence of body weight on performance

Methods of assessment of energy expenditure

UNIT II

10 hrs

Metabolic Fuel Kinetics and Holistic Fitness

Fuel Selection-shifts in Carbohydrate and fat metabolism, Factors affecting physical work capacity and work efficiency. Importance of Carbohydrate loading for sports performance,

Nutrition, exercise, physical fitness and health – their interrelationship, Holistic approach in the management of fitness and health- diet, exercise, yoga and meditation.

UNIT III

10 hrs

Exercise Physiology, Fatigue Mechanisms and Clinical Exercise Guidelines Physiological changes during physical activity– CVS, respiratory system, muscular system.

Effect of training on heart and lung performance. Muscle fatigue during exercise – prevention and recovery

Exercise guidelines in diabetes, osteoporosis and hypertension.

UNIT IV**10 hrs****Micronutrients, Fluid-Electrolyte Dynamics and supplementation in Sports**

Importance of micronutrients and deficiency risks in sports people- Iron, calcium, magnesium, zinc, sodium, and potassium, vitamin D and B vitamins, Exercise induced oxidative stress and role of antioxidants in sports nutrition, Importance of fluid balance and hydration status and rehydration strategies in sports.

Electrolyte imbalances and their impact on athletic performance, Electrolyte replacements, Sports drinks– hypo, iso and hypertonic drinks for hydration/energy, recovery drink, Ergogenic aids-definition and classification, Common supplements used in sports nutrition, Risks of misuse and overuse of supplements. Government policies on sports supplements.

UNIT V**10 hrs****Nutrition Strategies and Competition Regimes**

Nutrition Strategies - Pregame, during and postgame regime, special nutrients for female athletes

Athletic food pyramid - Diet chart for specific sports- Endurance and strength sports Female Athlete Triad and Relative Energy Deficiency in sport, Eating disorders and disordered eating in sports, sports anaemia

Role of nutrition in stress fracture and injury. Nutrition education to athletes and coaches

Sports Nutrigenomics – Definition, Role, Gene-Diet Interactions- significance

**COURSE ARTICULATION MATRIX: MAPPING OF COURSE OUTCOMES (COS) WITH
PROGRAM OUTCOMES (POs 1 - 7)**

Course outcome (CO's)/Program Outcomes (PO's)	1	2	3	4	5	6	7
To understand special nutritional requirements for physical fitness exercise adaptations and recovery		x	x	x	x		x
To understand the role of physical activity - management of health	x	x	x	x			
To understand diet plans nutrient timing, supplementation, hydration and body composition	x	x			x		

NUTRITION IN FITNESS AND SPORTS - PRACTICAL

Code: MSND 302 P

No. of Weeks: 13

Instructions/week: 4

Total marks: 50

Practical: 35

IA: 15

1. Market Survey on sports nutritional supplements for sports personnel
2. Body composition analysis for sports personnel
3. Endurance test for athletes
4. Calculation of BMR, EEE, Total Daily Energy Expenditure (TDEE) for different sports
5. Preparation of sports beverages and snacks
6. Plan a counseling session for sports person and present a case study
7. Plan pre and post-game meal/recipes for different sports

REFERENCES

1. Bamji, S. M., Rao, N. P., & Reddy, V. (2019). *Text book of human nutrition* (4th ed.). Oxford and IBH Publishing
2. Fink, H. H., Mikesky, A. E., & Burgoon, A. L. (2015). *Practical applications in sports nutrition* (4th ed.). Jones & Bartlett Learning
3. Burke, L., & Deakin, V. (Eds.). (2009). *Clinical sports nutrition* (4th ed.). McGraw-Hill Education.
4. Wolinsky, I. (Ed.). (1997). *Nutrition in exercise and sport* (3rd ed.). CRC Press. <https://doi.org/10.1201/9780367813499>
5. Burke, L., & Deakin, V. (Eds.). (2012). *Clinical sports nutrition* (4th ed.). McGraw-Hill.
6. Mahan, L. K., & Escott-Stump, S. (2010). *Krause's food, nutrition and diet therapy*. Saunders Elsevier.
7. Shils, M. E., Olson, J. A., Shike, M., & Ross, A. C. (Eds.). (1999). *Modern nutrition in health and disease* (9th ed.). Lippincott Williams & Wilkins
8. McArdle, W. D., Katch, F. I., & Katch, V. L. (2010). *Exercise physiology: Nutrition, energy, and human performance* (7th ed.). Lippincott Williams & Wilkins.
9. Gibney, M. J., Macdonald, I. A., & Roche, H. M. (Eds.). (2003). *Nutrition and metabolism*. Blackwell Science
10. Williams, M. H. (2012). *Nutrition for health, fitness and sports* (10th ed.). McGraw-Hill Education.
11. Benardot, D. (2011). *Advanced sports nutrition* (2nd ed.). Human Kinetics

SEMESTER III NUTRITION AND DIETETICS
NUTRITION AND DIET COUNSELLING

Code: MSND303
Hours: 52
Instructions/week: 04

Total marks: 100
Theory: 70
IA: 30

OBJECTIVES:

To enable students

- To understand the principles, theories and approaches of nutrition counselling and behaviour change.
- To develop skills in nutrition assessment and counselling and apply effective communication and counselling skills in individual, family, group and community settings.
- To develop the ability to implement and evaluate nutrition counselling and health promotion interventions effectively.

UNIT I

10 hrs

Foundations of Nutrition Counselling

Diet Counseling: Definition and Meaning, Need and significance

Principles of counseling; Common theories and models as a framework for counselling, Diet Counselling based on the Health Belief Model

Types of counseling and related goals: Patient centred counselling, structure and importance of group counselling, benefits and drawbacks of family therapy, Telehealth and online nutrition counselling

UNIT II

10 hrs

Communication and Counselling Skills

Roles and responsibilities of a dietitian, importance of team work Model for nutrition counselling

Stages of an interview and specific tasks of the dietitian

Communication process and counselling skills - Nonverbal and verbal communication; Listening, action, sharing and teaching responses

Common problems in the counseling process and strategies to overcome them

UNIT III

12 hrs

Nutrition Screening, Assessment and Documentation

Nutrition Screening: ESPEN guidelines and overview of common tools (Nutrition Risk Screening, Malnutrition Universal Screening Tool, Mini Nutrition Assessment, Subjective Global Assessment)

Nutritional Assessment: Anthropometric, Biochemical, Clinical and Dietary Assessment, Techniques of obtaining diet information

Introduction to Nutrition-Focused Physical Examination (NFPE) Nutrition Care Process and Model - ADIME format

Documentation Method - SOAP (Subjective, Objective, Assessment, Plan)

UNIT IV**10 hrs****Professional Practice and Ethics**

Planning and designing of client care plan for effective counselor - counsellee relationship, Characteristics of an effective counsellor

Ethical principles of counseling - Code of Ethics

Evaluation component – measuring the success of performance of client and evaluating the counseling process, Goal Attainment Scale, Evaluation of Counseling Effectiveness and Skills

UNIT V**10 hrs****Nutrition Counselling in Clinical and Community Settings**

Role of counselling at hospitals and the 5As framework Goals of nutrition counselling at the community level

Objectives and steps in organising health camps -Patient Feedback - need and importance

Introduction to health psychology, Social Determinants of Health (SDOH), personality factors and the Big Five Model, Interpersonal Communication, Health promotion and health education strategies

**COURSE ARTICULATION MATRIX: MAPPING OF COURSE OUTCOMES (COS)
WITH PROGRAM OUTCOMES (POS 1 - 7)**

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7
To understand the principles, theories and approaches of nutrition counselling and behaviour change.	x	x		x	x		
To develop skills in nutrition assessment and counselling and apply effective communication and counselling skills in individual, family, group and community settings.	x			x	x	x	
To develop the ability to implement and evaluate nutrition counselling and health promotion interventions effectively.		x	x	x	x	x	

NUTRITION AND DIET COUNSELING- PRACTICAL

Code: MSND303 P

No. of weeks: 13

Instructions/week: 04

Total marks: 50

Practicals: 35

IA: 15

1. Planning and compilation of appropriate audiovisual aids on selected health conditions
2. Study of cases with common NCD's and documentation of findings using a simplified ADIME or SOAP note
3. Formulation and Application of an Evaluation Checklist for Nutrition Counselling
4. Planning of counselling session for health promotion
5. Conduct diet and nutrition counselling for a selected age group
6. Visit to a hospital/ canteen/ corporate cafeteria

REFERENCES

1. Bamji, M. S., Rao, N. P., & Reddy, V. (2019). *Textbook of human nutrition*. Oxford & IBH Publishing Co.
2. Bauer, K. (2020). *Nutrition counseling and education skill development* (4th ed.).
3. Beena, & Parweshwaran. (n.d.). *Invitation to psychology*. Neel Kamal Publications.
4. Gelso, C. J., & Fretz, B. R. (2001). *Counseling psychology*. Prism Books Pvt. Ltd.
5. Gibson, R. L., & Mitchell, M. H. (2008). *Introduction to counseling and guidance* (6th ed.).
6. Mahan, L. K., & Escott-Stump, S. (2000). *Krause's food, nutrition, and diet therapy* (10th ed.).
7. Sharma, T. C. (2022). *Modern methods of guidance and counseling*. Sarup & Sons.
8. Shils, M. E., Olson, J. A., Shike, M., & Ross, A. C. (Eds.). (1999). *Modern nutrition in health and disease* (9th ed.). Williams & Wilkins.

SEMESTER III
NUTRITION AND DIETETICS
OPEN ELECTIVE
NUTRITION FOR HEALTHY LIFESTYLE

Code: MSND 304
Hours: 52
Instructions/week: 04

Total marks: 100
Theory: 70
IA: 30

OBJECTIVES

To enable students

- To understand the basic concepts in food, nutrition and health.
- To analyze and choose safe and nutritious foods.
- To understand nutrient labels and identify HFSS packaged foods
- To analyze popular trends in foods and diets and label them as scientific or quackery.

UNIT I

10 hrs

Basics of Nutrition

Definitions: Foods, Diet, Nutrients, Nutrition, Optimum Nutrition, Balanced diet, EAR, RDA, TUL, Malnutrition, Undernutrition, Over nutrition, Food groups

My plate, Nutrient labels, Food portioning and mindful eating

UNIT II

14 hrs

Role of Macronutrients, micronutrients and water in health

Role of Macronutrients (Functions, Sources and Deficiency) - Carbohydrates, Protein and Fat

Role of Micronutrients (Functions, Sources and Deficiency)

Vitamins- (Fat soluble: A, D, E,K), (Water soluble : B1, B2, B3, B5,B6, B7,B9,B12 and C)

Minerals - (Calcium, Phosphorus, Iron, Iodine)

Role of water - Functions, Water Balance, Dehydration and Role of ORS

UNIT III

10 hrs

Functional foods for health

Definition -Nutraceuticals, prebiotics, probiotics and dietary supplements. Role of functional foods in health

Fortification- Definition, commonly fortified foods. Case studies on food choices and health outcomes

UNIT IV

10 hrs

Popular Trends in Foods and Diets

Myths and Facts about recent trends in food and nutrition, Super foods

Nutrition and Immunity

Gluten-free foods, Lactose free foods Pros and Cons of certain diets such as Keto Diet, Mediterranean diet, DASH Diet, Intermittent Fasting Diet, Vegan Foods and Plant derived alternatives.

UNIT V

8 hrs

Market survey on packaged foods

Categorization by food groups, identifying safe food by using food labels, critiquing trends in food and diet

COURSE ARTICULATION MATRIX: MAPPING OF COURSE OUTCOMES (COS) WITH PROGRAM OUTCOMES (POS 1 - 7)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7
To understand the basic concepts in food, nutrition and health.	x	x					
To analyze and choose safe and nutritious foods.	x	x	x		x		
To understand nutrient labels and identify HFSS packaged foods	x	x	x	x	x		
To analyze popular trends in foods and diets and label them as scientific or quackery.		x			x		

REFERENCES

1. Agarwal, A., & Udipi, S. (2021). *Textbook of human nutrition* (2nd ed.). Jaypee Brothers Medical Publishers.
2. Indian Council of Medical Research–National Institute of Nutrition. (2020). *My plate for the day*.
3. Indian Council of Medical Research–National Institute of Nutrition. (2020). *Nutrient requirements for Indians: A report of the expert group*. Ministry of Health and Family Welfare.
4. Indian Council of Medical Research–National Institute of Nutrition. (2024). *Dietary guidelines for Indians: A manual*. National Institute of Nutrition.
5. Joshi, S. A. (2021). *Nutrition and dietetics* (5th ed.). McGraw Hill.
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7. Longvah, T., Ananthan, R., Bhaskarachary, K., & Venkaiah, K. (2017). *Indian food composition tables*. National Institute of Nutrition.
8. Sharma, A. (2017). *Principles of therapeutic nutrition and dietetics*. CBS Publishers & Distributors.
9. Srilakshmi, B. (2023a). *Dietetics* (9th ed.). New Age International Publishers.
10. Srilakshmi, B. (2023b). *Nutrition science* (8th ed.). New Age International Publishers.

SEMESTER III
NUTRITION AND DIETETICS
HOSPITAL INTERNSHIP –PRACTICAL

Code: MSND 305P

Total marks: 50

1. Internship in hospital for four weeks
2. Students to document five case studies during the period of internship
3. Counseling for patients – report
4. A report on the functioning of the dietary department
5. Students may undertake the internship in hospitals or eligible food industry establishments, subject to approval by the department/institution.
6. Report

IV SEMESTER

NUTRITION AND DIETETICS

ADVANCED CLINICAL NUTRITION AND DIETETICS

Code: MSND401

Hours: 52

Instructions/week: 04

Total marks: 100

Theory: 70

IA: 30

OBJECTIVES:

To enable students:

- Impart in depth knowledge regarding diet, life style in acute and chronic diseases.
- Learn the effect of various diseases on nutritional status, and nutrient and dietary requirements.

UNIT I

8 hours

Diseases associated with Gastro Intestinal Tract (GIT)

Pathophysiology, Etiology, symptoms and Dietary Management- Peptic ulcer, Gastritis, Flatulence, diarrhea, constipation, Malabsorption syndrome, Crohn's disease and Ulcerative colitis, Irritable Bowel Syndrome, Steatorrhea, Gluten sensitivity, Lactose intolerance. Celiac disease.

UNIT II

10 hrs

Renal Diseases and Their Nutritional Management

Etiology, pathophysiology, symptoms and Dietary Management in renal disorders- Acute and chronic glomerulonephritis, Nephrosis, Renal calculi

Acute renal failure, Chronic renal failure

Types and principles of dialysis and Kidney transplant

UNIT III**10 hrs****Diseases of cardiovascular system and Lipoproteins**

Etiology, Pathophysiology, Risk factors, Symptoms and Dietary Management - Hypertension, Artherosclerosis, Congestive Heart Disease, Ischemic Heart Disease.

Lipoproteins and their metabolism, blood lipid profile and dietary lipids.

UNIT IV**12 hrs**

Diseases of Nervous system- Etiology, risk factors, symptoms and Nutritional management - dysphagia, epilepsy, Hyperkinetic Behavior Syndrome, Autism Spectrum Disorder (ASD), Alzheimer's disease.

Diseases of Musculoskeletal System-Etiology, risk factors, symptoms and Nutritional management- arthritis and osteoporosis.

Physiological Stress, Wound healing and Sepsis -Etiology, Risk factors, Stages, Nutritional management

UNIT V**10 hrs**

Gout - Etiology, symptoms and dietary management.

Burns- Stages of burns, metabolic changes, Nutritional management

Surgery-Physiological response, metabolic consequences, stages of convalescence, dietary management.

Special Diets: Keto diet, Low CHO diet, Atkin Diet, Paleo diet, Mediterranean Diet

Course Articulation Matrix: Mapping of Course Outcomes (COs) with program Outcomes (POs 1 - 7)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	
To impart in depth knowledge regarding diet, lifestyle in acute and chronic diseases.	x	x		x		x	x
To learn the effect of various diseases on nutritional status and nutrient and dietary requirements	x	x				x	

NUTRITION AND DIETETICS
ADVANCED CLINICAL NUTRITION AND DIETETICS
PRACTICAL

Code: HSND 401 P
No. of Weeks: 13
Instructions /week: 4

Total marks: 50
Practical 35
IA: 15

1. Planning and preparation of diet for hypertension
2. Planning of diet for Ischemic Heart Disease
3. Planning and preparation of diet for acute Renal Failure
4. Planning of diet in Gout
5. Planning of diet for burns
6. Planning of pre and post-operative diets
7. Case studies and presentation on Nephrotic syndrome

REFERENCES:

1. Alfred H.Katz, Prevention and Health, the Haworth, press, New York 1999
2. Achayya,K.T.,(2001) A historical Dictionary of Indian Foods, Oxford Publishing Co
3. Antia, F.P. and Philip A. Clinical Dietetics and Nutrition, 4th Ed, 2002.
4. Bamji, M.S. Rao, P.N. and Reddy (2019,) Text book of Human Nutrition, 4th edition, Oxford and IBH publishing housing.
5. Garrow, J.S. and James WPT. Human Nutrition and Dietetics, 10th Ed.
6. International Life Science Institute Present Knowledge in Nutrition- latest edition 2012
7. Krause Food and Nutrition Care Process, 15th edition
8. Modern Nutrition in health and Disease, 10th edition.
9. Sareen S, 2005 Advanced Nutrition and human metabolism, 7th edition, 2016, USAIAPEN, BAPEN webseries
10. Sharon Rady Rolfs and Ellie Whitley, (2018), Understanding Normal and Clinical Nutrition, 11th edition, 2018.
11. Williams, S.R., Essentials of Nutrition and Diet Therapy, 12th Ed. Jones Mirror College Publishing, 2018.

SEMESTER IV
NUTRITION AND DIETETICS
MEDICAL NUTRITION IN CRITICAL CARE

Code: HSND 402

Hours: 52

Instructions/week: 04

Total marks: 100

Theory: 70

IA: 30

OBJECTIVES:

To enable students to

- Understand the physiology and special nutritional requirements of the critically ill.
- Gain knowledge in special nutritional support techniques and feeding formulation to meet their nutritional needs.

UNIT I

10 hrs

Assessment in Critical Illness

Nutritional Assessment in critical illness- Overview of Nutrition Assessment, Guidelines and Protocols, Nutritional Risk Screening tools, Anthropometric assessment in critical illness

Malnutrition in Critically ill Patients - GLIM criteria for diagnosis of malnutrition, Disease related malnutrition, Impact of malnutrition in critically ill patients

UNIT II

8 hrs

Hospital Diets and Role of micro and macronutrients in Critical Care

Clear liquid diet, full fluid diet, bland and soft diet, Normal diet, special diets

Role of macronutrients and micronutrients in critically ill, oral nutritional supplements, Assessment of Vitamins.

UNIT III

12 hrs

Enteral and Parenteral Nutrition in Critical Care

Overview of Enteral Nutrition for critically ill, indication/complications, routes and administration, Types of enteral formulae

Parenteral nutrition in critically ill patients- routes and administration, parenteral formulae, calculation of the feed, commercial formulae available in the market for adults and children. Significance and advantages and disadvantages of commercial formulas, homemade feeds

Refeeding syndrome, complications of parenteral therapy and enteral therapy, Rehabilitation diets and palliative care.

UNIT IV

12 hrs

Nutritional Support in Specific Conditions

Nutritional assessment and nutritional intervention of HIV patients

Nutritional consideration in critically ill patients, organ transplantation, multiple organ failure. Feeding critically ill obese patients. Nutrition Support in Abdominal Surgery,

Cancer and Brain Trauma

UNIT V**10 hrs****Nutritional Support in Critically Ill Pediatric patients**

Nutritional Assessment of the critically ill child, Energy and macronutrient requirements in a critically ill child, Micronutrient requirements in the critically ill child

REFERENCES

1. Alfred H.Katz, Prevention and Health, the Haworth, press, New York 1999
2. Achayya,K.T.,(2001) A historical Dictionary of Indian Foods, Oxford Publishing Co
3. Antia, F.P. and Philip A. Clinical Dietetics and Nutrition, 4th Ed, 2002.
4. Bamji, M.S. Rao, P.N. and Reddy (2019,) Text book of Human Nutrition, 4th edition, Oxford and IBH publishing housing.
5. Garrow, J.S. and James WPT. Human Nutrition and Dietetics, 10th Ed.
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7. Krause Food and Nutrition Care Process,15th edition
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10. Sharon Rady Rolfs and Ellie Whitley,(2018), Understanding Normal and Clinical Nutrition, 11th edition,2018.
11. Williams, S.R., Essentials of Nutrition and Diet Therapy, 12th Ed. Jones Mirror College Publishing, 2018.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with program**Outcomes (POs 1 - 7)**

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7
Understand the physiology and special nutritional requirements of the critically ill.	x			x	x	x	
Gain knowledge in special nutritional support techniques and feeding formulation to meet their nutritional needs.	x	x	x		x	x	x

SEMESTER IV
NUTRITION AND DIETETICS
a. FOOD SERVICE MANAGEMENT

Code: MSND 403

Hours: 52

Instructions/week: 04

Total marks: 100

Theory : 70

IA : 30

OBJECTIVES

To enable students

- To gain knowledge on requirements and management of various food service establishments.
- To know the types of food cost involved and the methods to control them.
- To know the types and variety of foods available in the market
- To learn to purchase, receive and store different foods.

UNIT I

10 hours

Management in Food Service

Management of Food Service - Theories of Management, Principles of Management, Resource Management, Role of manager, Management by Objectives.

Management Process- Planning, Organizing, staffing, forecasting, directing, coordinating, reporting and budgeting in food service, Personnel Management, Human relations in food industry and labor control.

Tools of Management- Tangible and Intangible tools

UNIT II

8 hours

Food Service and Quality Management in Food Service

Classification of food service institutions: Commercial and Non Commercial food service institutions, Street – mobile food unit, vending machine, food court- Objectives and workflow.

Quality Management - Total Quality Management, SWOT Analysis, Portion control, Food costing and control, sales control, Purchasing and receiving

UNIT III

12 hours

Organisation of Space and Equipment in Food Service Establishment

Functional areas in Food Service Institutions-Front office, Housekeeping, Receiving area, Storage area, Production area, Serving area and Garbage disposal –Layout, role and activities.

Kitchen Space – Size and types, Developing kitchen plan, Work simplification Features to be considered in kitchen designing

Equipment – Classification of equipment, Selection of equipment, designing, installation and operation, purchase, care and maintenance of equipment.

UNIT IV

10 hours

Menu Management

Menu Planning – meaning, Importance of menu planning, types of menus – A la carte, table d'hôte and combination, Steps involved in formulation and standardization of recipes, significance of food standardization.

Style of service- self-service and vending, tray service, waiter-waitress service, portable meal

Food service systems: Conventional, Commissary, ready prepared, assembly service

UNIT V

12 hours

Motivation, Leadership and controlling

Motivation - Definition, importance, types, theories -Traditional and Modern Theories Approaches and techniques to enhance motivation

Leadership – Definition, Characteristics, Theories of Leadership, Types of Leadership styles

Controlling - Definition, characteristics and importance of controlling, techniques of control – Break Even Analysis and Budgetary control

Marketing & Computers in Food Service

Need and scope, e- marketing, pricing policy, promotion techniques, market segmentation, marketing mix, Computer software and artificial intelligence (AI) for food service operation.

REFERENCES

1. Sethi, M., & Malhan, S. (2007). *Catering management: An integrated approach* (Revised 2nd ed.). New Age International.
2. Andrews, S. (2009). *Food and beverage service: Training manual* (2nd ed.). Tata McGraw-Hill.
3. West, B. B., & Wood, L. (1988). *Food service in institutions* (6th ed.). Macmillan Publishing Company
4. Walley, B. H. (1986). *Production management handbook* (2nd ed.). Gower Publishing.
5. Kotas, R. (1981). *Accounting in the hotel and catering industry* (4th ed.). International Textbook Company.
6. Fuller, J. (1983). *Modern restaurant service: A manual for students and practitioners*. Hutchinson.
7. Kotler, P., & Keller, K. L. (2008). *Marketing management* (13th ed.). Prentice Hall.
8. Kotler, P. (2023). *Principles of marketing* (19th ed.). Pearson India Education.
9. Payne-Palacio, J., & Theis, M. (2016). *Foodservice management: Principles and practices* (13th ed.). Pearson.
10. Besterfield, D. H., Besterfield, C., Besterfield, G. H., Besterfield, M., Urdhwareshe, H., & Urdhwareshe, R. (2019). *Total quality management* (5th ed.). Pearson India Education Services
11. Kiran, D. R. (2019). *Production planning and control: A comprehensive approach*. Butterworth-Heinemann. doi.org

**Course Articulation Matrix: Mapping of Course Outcomes (COs) with
program Outcomes (POs 1 - 7)**

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7
To gain knowledge on requirements and management of various food service establishments.			x		x		
To know the types of food cost involved and the methods to control them.			x				x
To know the types and variety of foods available in the market			x		x		x
To learn to purchase, receive and store different foods.			x		x		x

SEMESTER IV
NUTRITION AND DIETETICS
b.NUTRITION IN EMERGENCIES

Code: MSND 402

Hours: 52

Instructions/week: 04

Total marks: 100

Theory: 70

IA: 30

OBJECTIVES

- Familiarize students with various natural emergencies and disasters
- Understand the impact on nutrition and health status and special nutritional arising out of these situations
- Understand strategies for nutritional rehabilitation management of the health of emergency affected populations.

UNIT I

12 hrs

Definition of disaster

Classification of disasters

Natural disasters

Water and climate – cyclone, flood, tornado, Hurricane, flood, drought, tidal wave, Tsunami

Earth related – Earth quake, volcanoes, landslides and Avalanches

Risk and Disaster Management with software applications

Manmade disasters

Nuclear Explosions and War

Accidents, mine flooding and stampede

UNIT II

10 hrs

Disaster Management

Nutrition Management during disaster, Immediate rescue and first aid including physiological aid, Organization and Nutritional surveillance and Individual screening, Supply of food, Assessment of food needs in emergency situations, Food distribution strategy- define and reaching the vulnerable group, Mass and supplementary feeding, Therapeutic feeding.

UNIT III

12 hours

Assessment of food nutritional relief, local foods in rehabilitation, organizations for mass feeding food distribution, transportation and storage, feeding centers, Sanitation and hygiene. Nutritional support system in relief and rehabilitation, surveillance of nutritional status in emergency relief situations such as flood, cyclone, earthquake, drought, war etc.

UNIT IV**8 hrs**

Control of communicable diseases – Surveillance and Treatment

Causes of malnutrition in emergency situation

Major and specific deficiencies in disasters and treatment

UNIT V**10 hrs**

Global warming – Challenges for food security in India

Water – Safe water supply

Sanitation and Hygiene, Role of immunization and Sanitation

Course Articulation Matrix: Mapping of Course Outcomes (COs) with program Outcomes (POs 1 – 7)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7
Familiarize students with various natural emergencies and disasters	x		x	x		x	
Understand the impact on nutrition and health status and special nutritional arising out of these situations	x		x			x	
Understand strategies for nutritional rehabilitation management of the health of emergency affected populations.	x	x	x	x			

REFERENCES

1. Goyet, Fish V, Seaman, J and Geijact (1978).The management of nutritional emergencies in large populations WHO, Geneva
2. Refuge Nutrition Information System (RNIS) Newsletters UNACC/SCN subcommittee on Nutrition
3. Beradley, A Woodruff and Arabella Duffield (July 2000) Assessment of Nutritional status in emergency affected populations. Adolescents special supplement, UNACC.SCN sun committee on nutrition.
4. Young H, Means C (1998) Acceptability and use of cereal – based foods in refugee camps. Oxfain Working paper, Oxfam publishing Oxygen, U.K
5. UNHCR (1999) UNHCR Hand books of emergencies 2nd edition Geneva UNHCR.
6. WHO website for emergencies

SEMESTER IV
NUTRITION AND DIETETICS
C) MATERNAL AND CHILD NUTRITION

Code: MSND 403

Hours: 52

Instructions/week: 04

Total marks: 100

Theory: 70

IA: 30

OBJECTIVES

Enable students:

- To understand the role of nutrition in maternal health, pregnancy outcomes, lactation, infant feeding and child growth and development.
- To identify major nutritional problems among women, infants and children and understand evidence-based strategies for their prevention and management.
- To understand public health approaches, programmes and community-based interventions for improving maternal and child nutrition in India.

UNIT I

10 hrs

Overview of Maternal Nutrition: Preconception and Antenatal Care

Importance of maternal nutrition- Objectives of maternal and child health, Role of Nutrition in Women's Health, Nutrition prior to pregnancy, Nutritional aspects of embryogenesis, Effects of pre conceptional weight status, Gestational weight gain and pregnancy outcomes, Physical Activity during Pregnancy, Common complications associated with pregnancy

UNIT II

10 hrs

Lactation, Infant Feeding and Child Nutrition

Physiology and Endocrinology of lactation, Overview of breastfeeding and formula feeding, Factors affecting breast feeding, Lactation amenorrhoea, Determinants of low breast milk output, Guidelines in infant feeding and complimentary feeding principles, IYCF Guidelines, Advantages and disadvantages of breast feeding and bottle feeding, storage guidelines for expressed breast milk, Breast Milk Bank, Feeding the child with HIV

UNIT III

10 hrs

Nutritional Problems in Women and Management Strategies

Nutritional status of women of reproductive age in India, Adolescent Pregnancy, Common nutritional problems - Anaemia, Underweight and chronic energy deficiency, Overweight and obesity, Vicious/intergenerational cycle of malnutrition, Nutrition-sensitive approaches to improving women's nutrition.

Post Pregnancy - Post Partum Depression, Weight Reduction, Evidence Based Intervention Strategies and Physical Activity

Unit IV**10 hrs****Promoting Nutrition in Children**

Physiological growth reflexes and hunger/satiety cues in infancy, Nutritional requirements of infants, First 1000 days of life, Immunization schedule, Preterm, low birth weight infants, SGA, IUGR-implications for feeding and management, Nutritional Challenges in Feeding Children with special needs, Nutrition education and behaviour change for caregivers

UNIT V**12 hrs****Public Health Strategies for Maternal and Child Nutrition**

Health problems of mother and child in India, Current Scenario of maternal and child nutrition in India, vital statistics related with mother and child, Prenatal supplementation programmes to improve health, Major national programmes and initiatives, Evolution of Mid Day Meal Programme to PM Poshan, Objectives and Components of ICDS - Integrated Child Development Services and role of Anganwadi centres, WASH and its relationship with maternal and child nutrition

REFERENCES

1. Bamji, M. S., Rao, P. N., & Reddy, V. (1996). *Textbook of human nutrition*. Oxford & IBH Publishing Co.
2. Gibson, G. R., & Roberfroid, M. B. (1999). Colonic microbiota, nutrition and health. *Kluwer Academic Publishers*.
3. Mahan, L. K., & Escott-Stump, S. (2000). *Krause's food, nutrition, and diet therapy*. W. B. Saunders.
4. Park, K. (2007). *Park's textbook of preventive and social medicine* (19th ed.). Banarsidas Bhanot.
5. Thompson, L. U. (1993). Potential health benefits and problems associated with antinutrients in foods. *Food Research International*, 26, 131–149.
6. Whitney, E. N., & Rolfes, S. R. (2002). *Understanding nutrition* (9th ed.). Wadsworth/Thomson Learning.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with program Outcomes (POs 1 - 7)

Course Outcomes (COs)/ Program Outcomes (POs)	1	2	3	4	5	6	7
To understand the role of nutrition in maternal health, pregnancy outcomes, lactation, infant feeding and child growth and development.	x		x	x		x	
To identify major nutritional problems among women, infants and children and understand evidence-based strategies for their prevention and management.	x		x			x	
To understand public health approaches, programmes and community-based interventions for improving maternal and child nutrition in India.	x	x	x	x			

IV SEMESTER
NUTRITION AND DIETETICS
PAEDIATRIC AND
GERIATRIC NUTRITION

Code: MSND 404

Hours: 52

Instructions/week: 04

Total marks: 100

Theory: 70

IA: 30

OBJECTIVES:

- To understand the nutritional requirements and factors influencing growth, development and healthy ageing.
- Get an insight and knowledge on inborn errors of metabolism and pediatric care.
- To apply evidence-based nutrition principles in planning appropriate dietary interventions for the prevention and management of health and nutrition-related problems among children and elderly.

UNIT I

8 hrs

Nutrition, Growth and Development in Children

Nutritional requirements of children and dietary guidelines

Factors Affecting Normal growth in Children, Nutritional Factors that Contribute to Growth Promoting healthy eating in children

Assessing growth - Anthropometric Measurements

Growth Monitoring using Growth Charts

Growth Indicators from WHO and Z Scores

UNIT II: Nutritional Management of GI tract, Liver and Renal Diseases in Children 10 hrs

Nutritional support in diarrheal disease: Acute diarrhea –signs of dehydration, WHO treatment plan, Oral Rehydration Therapy (ORT), Persistent diarrhoea – pathogenesis and dietary management.

Constipation - Definition, Types, Etiology and Pathophysiology; diagnostic criteria for functional constipation, dietary management

Pediatric Inflammatory Bowel Disease- Crohn's, Ulcerative colitis, Nutritional Assessment, Nutritional Regimen in IBD

Renal diseases- dietary management in nephrotic syndrome, acute renal failure and chronic renal failure.

Dietary management of Liver diseases— Pediatric liver diseases, Viral Hepatitis, Chronic liver disease- pathogenesis of malnutrition in CLD, Nutritional Status Assessment in CLD

UNIT III

12 hrs

Nutrition Management of Metabolic Disorders and Allergies in Children

Cardiovascular diseases- Congenital heart disease – etiology, factors affecting growth and Nutritional management.

Juvenile diabetes: Classification of diabetes, Nutritional Perspective and requirements, Goals of Medical nutrition therapy, Types of insulin and insulin regime, dawn phenomenon and somogyi effect.

Inborn errors of metabolism - phenylketonuria (PKU), galactosemia, maple syrup urine disease, Wilson's disease

Food intolerance and allergies, common food allergens (milk, egg, soy, fish and peanut)

UNIT IV

10 hrs

Fundamentals of Geriatric Nutrition and Ageing

Definition of ageing, senescence, geriatric nutrition, concept of gerontology

Ageing - Biology of ageing

Dietetics of Geriatric care- Nutritional requirement and dietary modification.

Malnutrition and its impact on the elderly, Cachexia

Age related changes in body composition, Consequences of Obesity

Dysphagia and Feeding Considerations, Senile Diabetes

UNIT V: Major Nutritional and Health Problems in the Elderly

12 hrs

Levels of Prevention; Osteoporosis - Clinical features, Prevention and Management

Infection and Immunity - Age related changes in the immune system, immunosenescence, Dietary management of infections

Anemia - Pathogenesis, Causes of Anemia in the Elderly, Management

Constipation - Type, Consequences, and goals of nutritional treatment

Introduction to Neurological dysfunction, its Feeding and Nutritional Considerations - Dementia, Alzheimer's, Parkinson's

Disorders of Gastrointestinal Tract

Infection of Respiratory system and Dietary Management- Upper Respiratory Tract Infections and Lower Respiratory Tract Infections

Course Articulation Matrix: Mapping of Course Outcomes (COs) with program Outcomes (POs 1 - 7)

Course Outcomes (COs)/ Program Outcomes (POs)		2	3	4	5	6	7
To understand the nutritional requirements and factors influencing growth, development and healthy ageing.	x		x			x	
Get an insight and knowledge on inborn errors of metabolism and pediatric care.			x			x	
To apply evidence-based nutrition principles in planning appropriate dietary interventions for the prevention and management of health and nutrition-related problems across the life cycle.	x	x	x				

NUTRITION AND DIETETICS

PAEDIATRIC AND GERIATRIC NUTRITION PRACTICAL

Code: MSND 404P

Hours: 13

Instructions/week: 04

Total marks: 50

Practical: 35

IA: 15

1. Assessment and interpretation of growth and nutritional status of children using anthropometric measurements and WHO growth charts/Z-scores
2. Preparation of ORS according to WHO guidelines
3. Modification and preparation of nutrient-dense/allergen-free recipes for children
4. Planning of diet for Diarrhoea/ARI for children and elderly
5. Nutritional assessment of an elderly subject using screening and assessment tools.
6. Modification and preparation of appropriate food textures and nutrient-dense meals for elderly
7. Planning and preparation of recipes for constipation/ anaemia in elderly

REFERENCES

1. Bali, P. A. (2001). *Care of the elderly in India: Changing configurations*. Indian Institute of Advanced Study.
2. Gupta, S. (Ed.). (2010). *Recent advances in pediatrics: Nutrition, growth and development* (Special Vol. 20). Jaypee Brothers Medical Publishers.
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4. Indian Dietetic Association. (2011). *Clinical dietetics manual*. [Publisher details not provided].
5. Elizabeth, K. E. (2002). *Fundamentals of pediatrics* (2nd ed.). Paras Publishers.
6. Morley, J. E., & Thomas, D. R. (2007). *Geriatric nutrition*. [Publisher details not provided].
7. Sharma, M. (2013). *Pediatric nutrition in health and disease* (1st ed.). Jaypee Brothers Medical Publishers.
8. HSUJENG. (n.d.). *Handbook of geriatric nutrition*.

**IV SEMESTER
NUTRITION AND DIETETICS
DISSERTATION**

Code: MSND 405

Dissertation & Viva voce: 70 marks

Total Marks: 100

IA: 30 marks

1	Dissertation & Viva voce:	70 marks
2	IA	30 marks
	Total	100 marks