

**IRAQI BOARD FOR MEDICAL SPECIALIZATIONS
FAMILY AND COMMUNITY MEDICINE
SCIENTIFIC COUNCIL**



**MEDICAL
NUTRITIONAL
THERAPY
SUBSPECIALTY
CURRICULUM**



**The Academic Curriculum
for the Subspecialty Study
(Subspecialist-Degree) in
Medical Nutrition Therapy
“FIBMC/MNTS”**



2026-2030

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**Three Year Subspecialty
Training Programme**



ACADEMIC CURRICULUM FOR MEDICAL NUTRITIONAL THERAPY SUBSPECIALTY 2025-2026



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TABLE OF CONTENTS

Title	Page
Introduction, Vision, Goal.	1
Eligibility, Learning Objectives.	2
Study Period, Curriculum highlights and Map.	3-6
Details of Topics of the First Year (Building the Foundation):	7-17
Details of Topics of the Second Year (Deepening Expertise in Clinical Nutrition):	18-31
Details of Topics of the Third Year (Mastering Specialization):	32-36
Study Instructions & Assessment of Students	37
Blueprint for part I Exam (Year I): Basic nutrition and MNT	38
Blueprint for Part II Exam (Final)	39
Recommended Books & Websites	40

Curriculum for Medical Nutritional Therapy Subspecialty

- **Introduction:**

Although many people think that food and nutrition mean the same thing, they don't.

Nutrition, as a scientific discipline exploring the relationship between food and its effects on the body, is essential for promoting overall health and well-being, encompassing physical growth, development, mental health, and longevity. A balanced diet rich in diverse nutrients is crucial for supporting optimal health throughout life.

Given the increasing prevalence of chronic diseases and the growing awareness of nutrition's profound impact on health, there is a rising demand for skilled professionals who can navigate the complexities of nutrition science. These professionals translate research findings into practical applications, empowering individuals and communities to make informed dietary choices.

The Medical Nutrition Therapy (MNT) program is designed to elevate the expertise and impact of clinical nutritionists in the dynamic field of healthcare. This program integrates scientific inquiry with compassionate care, innovation with advocacy, and evidence-based practice with continuous learning, reflecting a commitment to advancing health and well-being through food and nutrition.

- **Vision:**

To cultivate leaders who advance evidence-based practice, promote health equity, and drive innovation in clinical nutrition and dietetics (Clinical Dietetics).

- **Goal:**

To equip students with advanced knowledge and skills in nutrition science, promote critical thinking and evidence-based practice, prepare leaders in clinical nutrition, and enhance nutritional health in diverse health settings and populations.

The student will be equipped with up-to-date understanding of the science of nutrition, encompassing areas such as Nutritional Biochemistry and Physiology, Genetic Nutrition, Public Health Nutrition, Nutrition and Obesity, Sports Nutrition, Nutrition in Chronic Diseases, Nutrition in Clinical settings, Nutrition in Vulnerable Groups (including Maternal and Child Nutrition, Geriatric Nutrition, and Food Allergy), and Nutrition Education and Counseling.

Graduates will earn the title of “Clinical Dietitian”, indicating their expertise as healthcare professionals in the specialized field of nutrition and dietetics.

- **Eligibility:**

Students with the following postgraduate degrees are eligible: Iraqi or Arab Board Certificates (or any equivalent degree; PhD) in Community Medicine, Family Medicine, Pediatrics, or Internal Medicine.

- **Learning objectives**

Upon completion of the of the Subspecialty program in Nutritional Therapy, students will:

- 1) Demonstrate comprehensive knowledge of nutritional biochemistry, physiology, and metabolism.
- 2) Apply evidence-based practice principles to assess, diagnose, and treat nutrition-related conditions across diverse patients and populations.
- 3) Develop comprehensive treatment plans customized to individual patient needs, integrating dietary interventions, supplementation, and lifestyle modifications to optimize health outcomes.
- 4) Apply advanced interventions in nutritional management and provide expert clinical care to patients with complex medical conditions, such as diabetes, cardiovascular disease, and other disorders.
- 5) Design and implement personalized nutritional interventions tailored to individual needs, considering associated comorbidities and genetic profiles.
- 6) Provide specialized care in areas such as sports nutrition or public health nutrition.
- 7) Engage in ethical research practices, considering societal, cultural, and ethical implications of nutritional therapy.
- 8) Apply advanced research methods and statistical techniques to investigate complex nutritional problems and address national priorities in the field.
- 9) Communicate scientific findings effectively through scholarly publications, presentations, and interdisciplinary collaborations.
- 10) Utilize expertise in nutrition counseling and behavior change techniques to educate patients about healthy eating habits.
- 11) Collaborate effectively with healthcare providers, including physicians, nurses, and allied health professionals, to coordinate patient care and ensure a multidisciplinary approach to treatment.
- 12) Assume leadership roles within healthcare organizations, academic institutions, or professional associations, guiding strategic initiatives and influencing best practices in nutrition and dietetics.

- **Study Period:**

The curriculum spans three years, with each year consisting of three courses, each lasting four months. This structured program is specifically designed to equip registered dietitian nutritionists with advanced expertise and proficiency across various domains of nutrition science, clinical practice, research, and public health.

- **Student Title:**

The student is entitled to the title 'Fellow Trainer' during the three years of study.

- **Curriculum Highlights:**

I- Year One (Building the Foundation):

This introductory year, consisting of three courses, serves as the foundation for candidates aspiring to become skilled and knowledgeable Clinical Nutritionists (CN). Throughout these courses, students will develop essential knowledge and skills that form the cornerstone of professional practice in the field of nutrition and dietetics.

By gaining a multidimensional understanding of nutrition, biochemistry, physiology, and assessment techniques, candidates will be prepared for activities aimed at promoting health, preventing disease, and providing effective nutrition interventions in clinical, community, or research settings. Additionally, these courses lay a strong groundwork in dietetics, public health nutrition, sports nutrition, and nutritional research methods. The combination of theoretical knowledge and practical skills obtained from courses on nutritional therapy, nutritional diagnosis, intervention, and nutritional preventive care enhances students' competitiveness and prepares them for careers in nutrition and healthcare.

☞ Time & Site: Each course 4 months and requires full-time participation, five days per week, during official working hours in the Nutrition Research Institute.

☞ The course structure includes:

- ✓ Two days per week dedicated to theoretical lectures, seminars, and case-based studies and practical applications, facilitating trainee discussions and interactive learning based on the attached schedule.
- ✓ Three additional days are allocated for trainees to engage in various research practices and programs available at the Nutrition Research Institute, with a specific focus on Public Health Nutrition.

☞ Course Content:

- ✓ Course 1: - ☞ Introduction to Basic Nutrition.
 - ☞ Clinical & Nutritional Biochemistry.
 - ☞ Human Physiology.
 - ☞ Nutritional Assessment.
- ✓ Course 2: ☞ Nutrition in the Life Cycle.
 - ☞ Nutrition for Weight Management.
 - ☞ Public Nutrition
 - ☞ Advanced Methods of Research in Clinical Nutrition
- ✓ Course 3: ☞ Nutrition Diagnosis
 - ☞ Medical Nutrition Therapy
 - ☞ Invasive Nutrition Intervention
 - ☞ Preventive Nutritional Care

2 - Year II (Deepening Expertise in Clinical Nutrition):

This year of the program offers a comprehensive experience in managing various medical conditions that can be altered through dietary interventions. Participants will gain practical knowledge in handling common conditions like cardiovascular diseases, renal diseases, respiratory diseases, and endocrine disorders, focusing on evidence-based nutrition therapy for disease prevention and management. Additionally, the program emphasizes recognizing pediatric health issues influenced by nutrition, such as childhood obesity, food allergies, and growth disorders, and teaches specialized nutritional approaches to support growth, development, and disease prevention in pediatric patients. Furthermore, participants will develop skills in advanced nutritional support techniques including enteral and parenteral nutrition for patients who cannot orally consume adequate nutrients, and they will explore nutritional considerations in surgical patients, covering pre-operative assessment, optimization of nutritional status, and post-operative management, with a focus on surgical interventions for specific nutritional disorders or conditions.

- ☞ Time & Site: Each course 4 months and requires full-time participation, five days per week, during official working hours in the outpatient clinic.
- ☞ The course structure includes:
 - ✓ Four days are allocated for trainees to engage in various clinical practices and activities available at the outpatient clinics. Trainees are encouraged

to follow up on each case and visit the inpatient wards for further attachment.

- ✓ One day per week dedicated to continuous professional development (CPD) and case-based seminars and discussions, facilitating trainee discussions and interactive learning based on the attached schedule.

☞ Course Content:

- ✓ Course 1: ☞ Gastrointestinal Consultation Clinic (2 months)
☞ Kidney Disease Consultation Clinic (2 months)
- ✓ Course 2: ☞ Internal Medicine Consultation Clinic: Cardiovascular, Respiratory, Neurology. (2 months)
☞ ICU (2 weeks)
☞ Infertility Consultation Clinic (2 weeks)
☞ Maxillofacial Surgery Consultation Clinic (2 weeks)
☞ Psychiatry Clinic (2 weeks)
- ✓ Course 3: ☞ Pediatric Consultation Clinic (6 weeks)
☞ Endocrinology Consultation Clinic (1 months)
☞ Oncology Consultation Clinic (1months)
☞ Burns Management Hospital (2 weeks)

2 - Year III (Mastering Specialization):

In this final year, and under the guidance of a dedicated subspecialty mentor, students develop skills in practicing clinical nutritional specialization within nutritional clinics. This training is complemented by clinical practicums that align with an interdisciplinary, comprehensive patient approach.

Students develop expertise in managing a diverse range of nutritional health-related conditions, including obesity, diabetes, cardiovascular diseases, gastrointestinal disorders, and metabolic syndromes. They implement advanced dietary interventions tailored to individual patient needs, taking into account medical history, genetic factors, and lifestyle preferences. The training covers the following aspects:

- 1) Management of Nutritional Health-Related Conditions
- 2) Investigation of Nutrition-Related Diseases
- 3) Conduct in-depth investigations into nutrition-related diseases, exploring the underlying interactions between diet, genetics, & environmental factors.
- 4) Counseling of Individuals and Patients About Nutrition
- 5) Prescribing Dietary Plans
- 6) Utilize nutritional guidelines, therapeutic diets, and meal planning strategies to optimize patient outcomes and improve overall health.

7) Cooperate as part of a team with other medical subspecialties to provide comprehensive healthcare.

☞ Time & Site: Each course 4 months and requires full-time participation, five days per week, during official working hours in the Therapeutic nutritional consultation clinic.

☞ The course structure includes:

✓ Four days are allocated for trainees to engage in various clinical practices and activities available at the outpatient clinics. Trainees are encouraged to follow up on each case and visit the inpatient wards for further attachment.

✓ One day per week dedicated to continuous professional development (CPD) and case-based seminars and discussions, facilitating trainee discussions and interactive learning based on the attached schedule.

☞ Course Content:

✓ Course 1: ☞ Obesity Surgery Consultation Clinic for (2 months)

☞ Therapeutic Nutritional Consultation Clinic for (2 months)

✓ Course 2 } ☞ Job Shadowing; Therapeutic Nutritional Consultation

✓ Course 3 } Clinic (8 months).

Three - Year Medical Nutritional Therapy subspecialty Study Curriculum Map

Year	Course 1				Course 2				Course 3			
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
I Basic Nutrition	✓ Introduction to Basic Nutrition ✓ Clinical & Nutritional Biochemistry ✓ Human Physiology. ✓ Nutritional Assessment				✓ Nutrition in the life cycle ✓ Nutrition for Weight Management ✓ Public Nutrition ✓ Advanced Methods of Research in Clinical Nutrition				✓ Nutrition Diagnosis ✓ Clinical Nutritional Therapy ✓ Advanced Nutrition Intervention ✓ Preventive Nutritional Care			
II Clinical Practice	✓ Gastrointestinal consultation clinic ✓ Kidney Disease Consultation Clinic				✓ Medicine Consultation Clinic (Cardiovascular, Respiratory, & Neurology) ✓ ICU ✓ Infertility Consultation Clinic ✓ Maxillofacial Surgery Consultation Clinic ✓ Psychiatric Consultation Clinic				✓ Endocrinology Consultation Clinic ✓ Pediatric Consultation Clinic ✓ Oncology Consultation Clinic ✓ Burns Management Hospital			
III Clinical Nutritional Practice	✓ Obesity Surgery Consultation Clinic ✓ Therapeutic Nutritional Consultation Clinic				✓ Job shadowing in Therapeutic Nutrition Consultation Clinic				✓ Job shadowing in Therapeutic Nutrition Consultation Clinic			

• **Details of Topics of the First Year (Building the Foundation):**

Course I	Introduction to Basic Nutrition
Course topics	1) Introduction to Basic Nutrition 2) Clinical & Nutritional Biochemistry 3) Human Physiology. 4) Nutritional Assessment
Learning outcomes	✓ Recognize fundamental concepts in nutrition. ✓ Explain the significance of nutrients in supporting human growth and health maintenance. ✓ Explain how nutrients contribute to human health and the development of certain health conditions. ✓ Identify various types of nutrients, discuss their sources, and understand the body's nutritional needs. ✓ Identify energy requirements and calculate daily calorie intake. ✓ Measure various anthropometric indicators. ✓ Review biochemical tests, acid-base balance issues, and medication impacts for optimal care provision. ✓ Identify the behavioral aspects of food choices. ✓ Illustrate common medical conditions related to or aggravated by diet. ✓ Document the Nutritional records Care Record in HealthCare.
1) Introduction to Basic Nutrition	✓ Introduction to Nutrition: Definition & History, Basic concepts , Interrelationship between nutrition & health ✓ Food as a Source of Nutrients, Functions of Food ✓ Micro & Macronutrients, Food Pyramid, Balanced Diet, Nitrogen Balance. ✓ Specific Dynamic Action (SDA), Basal Metabolic Rate (BMR), Thermogenic Effect of Foods, Energy Requirement, Methods of Measuring Energy Expenditure ✓ Optimum & Good Nutrition, Malnutrition ✓ Visible Symptoms and Signs of Good Health ✓ Food Guide for Basic Five Food Groups. ✓ Nutrition in Health & Diseases ✓ Food sanitation in hygiene ✓ Food preparation: Effect of cooking & heat processing on the nutritive value of foods.

2) Clinical & Nutritional Biochemistry	✓ Carbohydrates (CHO) • Types, Functions, Classification, Food Sources, and Storage in the Body • Brief Outline of Metabolism: Glycogenesis & Glycogenolysis, Glycolysis, Citric Acid Cycle & Its Significance, & Gluconeogenesis, Regulation of Blood Glucose Level • Glycemic Index and Glycemic Load ✓ Proteins • Amino Acids: Nutritional Importance, Essential and Non-Essential Amino Acids, Therapeutic Applications of Specific Amino Acids • Biomedical Importance of Metabolism: Transformation, Decarboxylation, Ammonia Formation & Transport, Urea Cycle ✓ Lipids • Fats & Oils: Composition, Saturated and Unsaturated Fatty Acids, Classification, Food Sources, and Functions • Cholesterol & triglyceride: Their clinical significance, Lipoproteins in the blood composition & their functions • Nutritional Significance of Fatty Acids – Saturated Fatty Acids (SFA), Monounsaturated Fatty Acids (MUFA), Polyunsaturated Fatty Acids (PUFA): Functions and Deficiency • Nutritional Requirements and Dietary Guidelines (International and National) for Visible and Invisible Fats in Diets ✓ Vitamins: • Structure, Chemistry, Food sources, Requirement and Deficiency manifestations • Water soluble Vitamins (B Complex and Vitamin C), Fat soluble Vitamins (Vitamin A,D,E,K) ✓ Minerals • Macro Minerals: Calcium, Phosphorus, Magnesium, Sodium, Potassium, Chloride Introduction, Body role, Bioavailability and requirements, food sources, deficiency and toxicity. Interaction with other nutrients Minerals • Micro Minerals: Iron, Zinc, Copper, Selenium, Chromium, manganese, iodine and fluorine Introduction, Body role,
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	Bioavailability and requirements, food sources, deficiency and toxicity, Interaction with other nutrients Minerals - macro & micronutrients. ✓ Water Metabolism: Distribution of Fluids in the Body, Extracellular Fluid (ECF), Intracellular Fluid (ICF), Water Metabolism, Dehydration
3) Human Physiology	✓ Acid-Base Balance and Its Regulation ✓ Basics of Energy Metabolism, Nutrition & Dietetics ✓ Energy Requirements and Energy Expenditure ✓ Circulatory System: Basic Structure and Function, Cardiac Impulse and Cardiac Cycle, Concept of Blood Pressure, Normal Values, Regulation, Normal Electrocardiogram (ECG) ✓ Respiratory System: Basic Structure and Function, Mechanism of Breathing, Transport of Oxygen and Carbon Dioxide, Regulation of Respiration ✓ Digestive System: Basic Structure and Function of Gastrointestinal Tract (GIT), Digestion & Absorption of Different Types of Food in Various Parts of GIT, Transport & Utilization of Food in the Body (Brief Overview), Liver Functions and Their Assessment, Lipoprotein Metabolism (VLDL and LDL for 'Forward' Cholesterol Transport, VLDL and LDL for Endogenous TAG Transport, HDL for 'Reverse' Cholesterol Transport) ✓ Renal System: Basic Structure and Function, Mechanism of Urine Formation, Glomerular Filtration Rate (GFR) & Tubular Functions, Maintenance of Osmolarity & Volume of Extracellular Fluid (ECF), Micturition & Renal Function Tests (RFT) ✓ Endocrine System: Introduction, Function, Regulation & Disorders of • Pituitary gland, • Thyroid gland, Parathyroid gland • Adrenal gland • Endocrine Pancreas gland • Reproductive Glands Hormone ✓ Hematology • Composition and Functions of Blood • Normal Hemogram

	• Formation of Blood Cells: Red Blood Cells (RBCs), White Blood Cells (WBCs), Platelets • Anemia • Blood Coagulation ✓ General Concepts and Functions of Immunoglobulins ✓ Tumor Markers and Their Clinical Applications, Including Oncofetal Antigens (e.g., CEA, AFP, etc.) ✓ Musculoskeletal system: Basic structure and function of skeletal muscle, Neuromuscular Transmission and muscle contraction, Energetics of muscle contraction ✓ CNS: Neurophysiology of appetite and eating, Autonomic Nervous System and Nutrition, Neurotransmitters and Hormones: (e.g., serotonin, dopamine) and hormones (e.g., leptin, ghrelin) in appetite control.
4) Nutritional Assessment	✓ Overview of nutritional assessment concepts in healthcare ✓ Dietary Assessment: Methods for assessing dietary intake, including food records, 24-hour recalls, food frequency questionnaires, and dietary recalls. ✓ Anthropometric Assessment: Techniques for assessing nutritional status using tools such as height, weight, body mass index (BMI), waist circumference, and skinfold thickness, along with interpretation of anthropometric data in nutritional assessment. ✓ Biochemical Assessment: Laboratory tests used to assess nutritional biomarkers, e.g: serum levels of vitamins, minerals, proteins, and lipid profiles. ✓ Clinical Assessment including clinical signs of nutritional deficiencies and imbalances, and incorporation of medical history and symptoms into nutritional assessment. ✓ Nutritional Assessment in Special Populations (e.g., children, elderly) and specific populations (e.g., pregnant women, athletes, individuals with chronic diseases). ✓ Documentation & reporting of nutritional assessment findings. ✓ Ethical considerations in conducting nutritional assessments. ✓ Application of nutritional assessment methods to real-life scenarios and case studies Practice in conducting comprehensive nutritional assessments and formulating recommendations based on assessment results.

Course II	Individual and Public Nutrition
Course topics	1) Nutrition Across the Human Life Cycle 2) Nutrition for Weight Management 3) Public Nutrition 4) Advanced Methods of Research in Clinical Nutrition.
Learning outcomes	✓ Identify key nutritional requirements during pregnancy and infancy, and explain the importance of maternal nutrition for fetal growth and development. ✓ Describe optimal feeding practices for infants and young children, including the benefits of breastfeeding and appropriate introduction of solid foods. ✓ Analyze the changing nutrient needs and dietary considerations during childhood, adolescence, and adulthood, with a focus on supporting growth, development, and overall health. ✓ Evaluate nutritional concerns and strategies for promoting healthy aging, including the management of chronic diseases through diet and lifestyle modifications. ✓ Apply evidence-based nutritional principles to address specific age-related nutritional challenges and promote optimal health outcomes throughout the human life span. ✓ Explain the concept of energy balance and its role in weight gain, loss, and maintenance. ✓ Analyze different dietary patterns (e.g., Mediterranean diet, low-carbohydrate diet) and their effectiveness for weight management. ✓ Recognize prevalent nutrition-related issues affecting populations, such as malnutrition, obesity, micro-nutrient deficiencies and food safety and security. ✓ Interpret Research Findings and Explain the role of nutritional research in identifying nutritional trends, risk factors, and health outcomes within populations. ✓ Evaluate public policies and programs aimed at improving nutrition, such as food assistance programs, school meal initiatives, and nutrition labeling regulations. ✓ Critically analyze community-based nutrition interventions, including their design, implementation, and effectiveness in promoting healthy dietary behaviors.

	✓ Explore Socioeconomic Determinants and Investigate socioeconomic factors (e.g., income, education, food access) influencing nutritional disparities and public health outcomes. ✓ Advocate for Nutrition Education: Develop strategies for advocating and implementing nutrition education programs to enhance community awareness and behavior change. ✓ Engage in Interdisciplinary Collaboration: Collaborate with stakeholders from diverse fields (e.g., public health, policy makers, educators) to address complex nutrition challenges at the population level.
1) Nutrition Across the Human Life Cycle	✓ Nutrition in Preconception and Fertility Period, Pregnancy, and Lactation, Nutrition in the Postpartum Period ✓ Nutrition in Infancy and Childhood: Growth and Development, Physiological Development, Nutrient Requirements ✓ Nutrition in Adolescence: Growth and Development, Nutrient Requirements, Food Habits, and Eating Behaviors ✓ Nutrition in the Adult Years: Lifestyle and Health Risk Factors, Nutritional Factors Affecting Adult Women and Men, Food Trends and Patterns ✓ Nutrition in Aging: Gerontology, Geriatrics, and the Spectrum of Aging, Nutritional Supplementation, Functional Foods ✓ Nutrition in Health Promotion and Disease Prevention: Theories on Aging, Physiological Changes, Quality of Life ✓ Documentation in the Nutrition Care Record
2- Nutrition for Weight Management	✓ Body Weight Components, Regulation of Body Weight, Overweight, and Obesity ✓ Nutrition in Weight Management and Obesity ✓ Elements of Energy Balance Dysregulation ✓ Dietary Patterns and Strategies for Weight Loss ✓ Management of Obesity in Adults ✓ Weight Management in Children and Adolescents ✓ Excessive Leanness or Unintentional Weight Loss ✓ Nutrition in Eating Disorders ✓ Nutrition in Exercise and Sports Performance

3- Public Nutrition	✓ Nutrition Policy and Programs ✓ Food Security and Access ✓ Nutrition Education and Promotion ✓ Nutrition Screening and Assessment: Nutrition Needs, Medicare Benefits, Nutrition Support Services, ✓ Community and Residential Facilities for Older Adults ✓ Nutrition Surveillance and Monitoring ✓ Nutrition in Emergency and Disaster Response ✓ Health Disparities and Global Health ✓ Global Nutrition Challenges and Initiatives
4- Nutritional Research Methods	✓ Research Design and Methodology ✓ Sampling Techniques in Nutritional Research ✓ Data Collection Methods for Nutrition Assessment ✓ Statistical Analysis of Nutritional Data ✓ Writing and Publishing Research Papers ✓ Ethical Considerations in Nutritional Research

Course III	Medical Nutritional Therapy
Course topics	1) Nutrition Diagnosis 2) Clinical Nutrition Therapy 3) Advanced Nutrition Intervention 4) Preventive Nutritional Care
Learning outcomes	✓ Demonstrate knowledge of the pathophysiology of common medical conditions affecting nutritional status, such as diabetes, cardiovascular diseases, gastrointestinal disorders, renal diseases and endocrinal diseases. ✓ Utilize appropriate methods to conduct comprehensive nutrition assessments, including anthropometric measurements, dietary analysis, biochemical tests, and clinical evaluations. ✓ Interpret Medical Data and Lab Results: ✓ Formulate nutrition diagnoses based on assessment findings and established criteria (e.g., Academy of Nutrition and Dietetics' Nutrition Care Process). ✓ Using standardized terminology to describe and label the identified nutrition problems. ✓ Establish realistic and measurable nutrition goals tailored to individual patient needs and medical conditions.

	✓ Reflects evidence-based knowledge and current trends in nutrition therapies including integrative approaches, MNT for common medical conditions and rheumatologic, neurologic, and psychiatric disorders. ✓ Deliver essential nutrients directly into the body using invasive methods when oral intake is inadequate or not feasible (enteral and parenteral nutrition). ✓ Use dietary interventions and lifestyle changes to maintain health, prevent disease, and reduce the risk of developing chronic conditions. ✓ Apply Nutritional Guidelines and Recommendations
1) Nutrition Diagnosis	✓ Overview of Nutrition Diagnosis in healthcare practice ✓ Nutritional Problem Identification: Assessing the individual's nutritional status, dietary habits, and medical history to identify specific nutrition-related problems. ✓ Problem Labeling: Using standardized terminology and diagnostic labels to describe identified nutrition problems. ✓ Applying critical thinking and evidence-based practice to formulate accurate and relevant nutrition diagnoses, while considering individual characteristics, medical history, and other factors to ensure that the diagnosis reflects specific nutritional needs and challenges.
2) Clinical Nutrition Therapy	✓ Nutrition Therapy for Gastrointestinal Tract Disorders: Common Intestinal Problems, Intestinal Brush-Border Enzyme Deficiencies, Inflammatory Bowel Disease, nutritional Consequences of Intestinal Surgery. ✓ Nutrition Therapy for Hepatobiliary and Pancreatic Disorders: End-Stage Liver Disease , Cirrhosis, Herbal and Dietary Supplements and Liver Disease, Liver Resection and Transplantation, ✓ Nutrition Therapy for Diabetes Mellitus and Hypoglycemia of Non-diabetic Origin, Management of Pre- diabetes, diabetic Complications. ✓ Nutrition Therapy for Thyroid disorders, Adrenal, and Other Endocrine Disorders e.g: Polycystic Ovary Syndrome, Managing Imbalances of the Hypothalamus-Pituitary-Thyroid Axis, Adrenal Disorders.

	✓ Nutrition Therapy for Anemia, Iron-Related Blood Disorders, Iron Overload, Megaloblastic Anemias, Other Nutritional Anemias, and nonnutritional Anemias. ✓ Nutrition Therapy for Cardiovascular Disease, Atherosclerosis and Coronary Heart Disease, Genetic Hyperlipidemias, Hypertension, Heart Failure, Cardiac Transplantation. ✓ Nutrition therapy for chronic pulmonary diseases, asthma, chronic obstructive pulmonary disease, pulmonary hypertension, diffuse parenchymal lung disease, tuberculosis, lung cancer, obesity hypoventilation syndrome, pleural effusion, pneumonia, lung transplantation. ✓ Nutritional therapy for renal disorders: acute kidney injury (acute renal failure), chronic kidney disease, end-stage renal disease, renal transplant. ✓ Nutrition therapy for chronic autoimmune disease: Rheumatic fever, Osteoarthritis, Rheumatoid Arthritis, Sjögren's Syndrome, Temporomandibular Disorders, Gout, Scleroderma, Systemic Lupus Erythematosus and other inflammatory diseases. ✓ Nutrition Therapy for Neurologic Disorders, Dysphagia, Neurologic Disorders From Trauma, Head Trauma or Neurotrauma, Spine Trauma and Spinal Cord Injury, Neurologic Diseases. ✓ Nutrition Therapy in Psychiatric and Cognitive Disorders, Anxiety, Bipolar Disorder, Dementia and Alzheimer's Disease, Depression, Fatigue, Schizophrenia . ✓ Nutrition Therapy for Low-Birth Weight Infants. ✓ Geriatric Nutrition Support ✓ Nutrition Therapy for Cancer patient. ✓ Nutrition Therapy in Critical Care, Metabolic Response to Stress, Hormonal and Cell-Mediated Response, Starvation Versus Stress, Sepsis, and Organ Dysfunction or Failure, Trauma and the Open Abdomen Surgery. ✓ Nutrition Therapy in Major Burns. ✓ Nutrition for the Terminally Ill or Hospice Client: ✓ Medical Nutrition Therapy for Intellectual and Developmental Disabilities
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3) Advanced Nutrition Intervention	✓ Types: Include the placement of feeding tubes (e.g., nasogastric, gastrostomy, jejunostomy) for Enteral Nutrition delivery and the insertion of central venous catheters for total Parenteral nutrition (TPN) administration. ✓ Indications: dysphagia, severe malnutrition, gastrointestinal disorders, terminally ill patient, or neurological impairments that compromise their ability to consume adequate nutrition orally. ✓ Complications: Tube dislodgment, infection at insertion sites, aspiration, electrolyte imbalances, and metabolic disturbances, and Refeeding Syndrome.
4) Preventive Nutritional Care	✓ Nutrition Education and Counseling: ✓ Providing knowledge and skills to individuals regarding balanced nutrition, portion sizes, food groups, and making informed dietary choices. This includes teaching individuals how to read food labels effectively to understand nutritional content and make healthier selections when grocery shopping or dining out. ✓ Promoting Healthy Eating Patterns: ✓ Encouraging the consumption of a variety of nutrient-dense foods such as fruits, vegetables, whole grains, lean proteins, and healthy fats. Emphasizing moderation and portion control to maintain a healthy weight and prevent overconsumption of unhealthy foods. Advocating for reduced intake of processed foods, sugar-sweetened beverages, and foods high in saturated fats and added sugars. ✓ Lifestyle Modification: ✓ Integrating nutrition counseling with other lifestyle changes, including physical activity, stress management, adequate sleep, and smoking cessation. Addressing individual behaviors and habits that may contribute to poor dietary choices or sedentary lifestyles. ✓ Assessment and Risk Stratification: ✓ Conducting nutritional assessments to identify risk factors for chronic diseases such as obesity, diabetes, cardiovascular disease, and certain cancers. Stratifying individuals based on their risk profiles and tailoring preventive nutritional interventions accordingly.

	✓ Prevention of Non-communicable Diseases: ✓ Targeting specific populations or individuals with higher risk factors (e.g., family history, obesity, metabolic syndrome) for early intervention. Implementing personalized nutrition plans to address individual needs and mitigate potential health issues before they become more severe. ✓ Community and Public Health Initiatives: ✓ Supporting community-based programs and public health campaigns that promote healthy eating and physical activity. Collaborating with schools, workplaces, and local organizations to implement nutritional education and wellness programs. ✓ Regular Monitoring and Follow-Up: ✓ Encouraging regular check-ups and follow-up appointments to monitor progress, reinforce behavioral changes, and make adjustments to nutrition plans as needed. ✓ Use of Complementary and Integrative Therapies: ✓ Incorporating complementary and integrative health approaches, such as anti-inflammatory diets, antioxidant supplementation, and strategies to support gut microbiota health, particularly in conditions like arthritis.
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☞ **Skills the CN gain at the end of the first year :**

- 1) **Nutrition Assessment:** Assess individuals' nutritional needs, including conducting dietary assessments, analyzing food intake, and evaluating nutritional status through anthropometric measurements and biochemical tests.
- 2) **Nutrition Counseling and Education:** Developing effective communication skills to educate and counsel individuals and groups on nutrition-related topics, including healthy eating habits, disease prevention, and management of medical conditions through diet.
- 3) **Medical Nutrition Therapy:** Acquiring knowledge and skills to provide evidence-based medical nutrition therapy (MNT) for various health conditions, such as diabetes, cardiovascular disease, gastrointestinal disorders, and renal disease.
- 4) **Food Science and Culinary Skills:** Understanding food composition, food preparation techniques, and culinary principles to promote healthy eating and enhance the palatability and nutritional quality of meals.

- 5) **Evidence-Based Practice:** Learning how to critically appraise research literature, apply scientific evidence to clinical decision-making, and stay updated on the latest nutrition research and guidelines.
- 6) **Cultural Competency:** Developing cultural awareness and sensitivity to address diverse cultural beliefs, practices, and dietary preferences when delivering nutrition services to individuals from different cultural backgrounds.
- 7) **Professionalism and Ethics:** Understanding professional ethics, standards of practice, and legal regulations governing the practice of dietetics and nutrition, and adhering to professional codes of conduct and confidentiality guidelines.
- 8) **Problem-Solving and Decision-Making:** Developing analytical and critical thinking skills to identify nutrition-related problems, evaluate alternative solutions, and make informed decisions to optimize patient outcomes.

• **Details of Topics of the Second Year (Deepening Expertise in Clinical Nutrition):**

Course I	Common Clinical Conditions in Gastrointestinal Consultation Clinic and Kidney Disease Consultation Clinic
Course topics	1) Common conditions in GIT Consultation Clinic 2) Common conditions in KD Consultation Clinic
Learning outcomes	✓ Gain hands-on experience in conducting detailed patient histories and physical examinations focused on GIT and renal diseases. ✓ Learn to recognize common signs and symptoms of GIT disorders (e.g., abdominal pain, diarrhea, constipation) and renal diseases (e.g., edema, changes in urine output, electrolyte imbalances). ✓ Develop skills in interpreting diagnostic tests such as laboratory investigations (e.g., blood tests, urine analysis) and imaging studies (e.g., ultrasound, CT scan) relevant to GIT and renal diseases. ✓ Gain practical experience in nutritional assessment and managing common GIT and renal diseases, that are associated with or treated through dietary interventions.

	✓ Understand the role of medical nutrition therapy (MNT) in preventing and managing GIT and renal diseases, including appropriate dietary modifications (e.g., low-protein diets, sodium restriction) and fluid/electrolyte management, focusing on evidence-based dietary strategies. ✓ Communicate with the medical team from other specialties to achieve comprehensive care.
1) Common conditions in GIT Consultation Clinic	✓ Treating common gastrointestinal (GIT) diseases and disorders such as gastroesophageal reflux disease (GERD), gastritis, peptic ulcer disease, inflammatory bowel disease (IBD), irritable bowel syndrome (IBS), celiac disease, gastrointestinal cancers, dyspepsia, functional dyspepsia, postoperative medical nutrition therapy, dumping syndrome, tropical sprue, lactose intolerance, and fructose malabsorption. ✓ Nutrition assessment techniques specific to GI disorders, including evaluating symptoms such as diarrhea, constipation, abdominal pain, and malabsorption, and medical nutrition therapy for hepatobiliary and pancreatic disorders. ✓ Providing medical nutrition therapy (MNT) for various GI conditions, utilizing dietary modifications, nutrient supplementation, and elimination diets. ✓ Enteral and parenteral nutrition support options for patients with GI disorders who cannot meet their nutritional needs orally, including indications, administration, monitoring, and complications. ✓ Gastrointestinal surgeries such as gastric bypass, colectomy, and ostomy procedures, and provide appropriate nutrition support before and after surgery. ✓ Diagnosis and management of food allergies, intolerances, and sensitivities that may contribute to GI symptoms. ✓ Medications commonly used to treat GI disorders may affect nutritional status and nutrient absorption, and manage medication-nutrient interactions. ✓ Interdisciplinary Team work & ethical issue: with gastroenterologists, GIT surgeons, nurses, and others.

2) Common Conditions in Kidney disease Consultation Clinic	✓ Diagnosing and managing common renal diseases and disorders such as chronic kidney disease (CKD), acute kidney injury (AKI), nephrotic syndrome, glomerulonephritis, urinary tract infections (UTIs), renal calculi (kidney stones), and electrolyte imbalances. ✓ Assessment techniques specific to renal disorders, including evaluating symptoms such as fluid retention, edema, changes in urine output, and electrolyte abnormalities. ✓ Medical nutrition therapy (MNT) for renal diseases, including dietary modifications for fluid and electrolyte balance, protein intake management, and phosphate and potassium restrictions. ✓ Providing MNT for various stages of CKD, AKI, and other renal conditions, focusing on individualized dietary plans and monitoring nutritional status. ✓ Renal replacement therapies including hemodialysis, peritoneal dialysis, and kidney transplantation, understanding indications, complications, and nutritional considerations for patients undergoing these treatments. ✓ Impact of renal diseases on nutritional status, including protein-energy wasting, mineral and bone disorders, and acid-base imbalances, and provide appropriate nutritional support. ✓ Renal diets, including low-protein diets and sodium restriction, in managing complications associated with renal diseases such as hypertension, cardiovascular disease, and fluid overload. ✓ Medications commonly used to treat renal diseases (e.g., diuretics, phosphate binders) may affect nutritional status and nutrient absorption, and manage medication-nutrient interactions. ✓ Interdisciplinary Team work & Ethical issue: With nephrologists, urologists, dialysis nurses, and other healthcare professionals as part of an interdisciplinary team to deliver comprehensive care for patients with renal diseases.
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Course II	Common Clinical Conditions in Internal Medicine Consultation Clinic, and Other Minor Clinics
Course topics	1) Common conditions in Internal Medicine Consultation Clinic (Respiratory, cardiovascular & Neurology) 2) Critical care in intensive care Unit (ICU) 3) Infertility Consultation Clinic 4) Maxillofacial Surgery Consultation Clinic 5) Psychiatric Consultation Clinic
Learning outcomes	✓ <u>Internal Medicine Consultation Clinic + ICU</u> ☞ Gain comprehensive exposure to a wide range of common medical conditions encountered in both outpatient and critical care settings. ☞ Develop proficiency in conducting detailed patient histories, performing physical examinations, and interpreting diagnostic tests (e.g., laboratory investigations, imaging studies). ☞ Understand the role of nutrition in managing common internal medicine conditions like diabetes, hypertension, heart failure, and respiratory diseases. ☞ Collaborate with healthcare teams to develop and implement specialized nutrition plans tailored to patients' medical conditions and critical care needs. ✓ <u>Infertility Consultation Clinic</u> ☞ Develop skills in evaluating the nutritional status and dietary habits of individuals seeking infertility treatment. ☞ Learn about the impact of nutrition on reproductive health and provide dietary guidance to support fertility treatment outcomes. ☞ Address weight management issue, and other lifestyle factors, impacting the patient with infertility ✓ <u>Maxillofacial Surgery Consultation Clinic</u> ☞ Understand the nutritional needs of patients undergoing maxillofacial surgeries and provide tailored nutrition support. ☞ Educate patients on postoperative nutrition and oral health maintenance.

	☞ Collaborate with healthcare teams to develop and implement specialized nutrition plans tailored for patients attending the Maxillofacial Surgery clinic. ✓ <u>Psychiatric Consultation Clinic</u> ☞ Gain skills in assessing nutritional status and dietary patterns in patients with psychiatric disorders. ☞ Learn about the role of diet and nutrients in supporting mental health and wellness. ☞ Collaborate with healthcare teams to develop and implement specialized nutrition plans tailored for patients attending the Psychiatric Clinic.
1) Common Conditions in Internal Medicine Consultation Clinic +ICU	✓ Common Medical Conditions (Respiratory, Cardiovascular, Neurology): Overview of respiratory disorders such as asthma, chronic obstructive pulmonary disease (COPD), and pneumonia along with cardiovascular diseases including coronary artery disease, heart failure, and hypertension as well as neurological conditions including stroke, epilepsy, Parkinson's disease, Multiple Sclerosis (MS), Alzheimer's Disease, Dementia, Migraine and Headache Disorders . ✓ Common ICU Cases: Cardiovascular Emergencies (Acute myocardial infarction, unstable angina, cardiogenic shock, arrhythmias (e.g., ventricular tachycardia, atrial fibrillation), and heart failure exacerbation), Neurological Emergencies (Stroke, ischemic or hemorrhagic, intracranial hemorrhage, seizures, and altered mental status due to various causes), Acute Respiratory Failure (pneumonia, acute respiratory distress syndrome (ARDS), chronic obstructive pulmonary disease (COPD) exacerbation, pulmonary embolism, and respiratory muscle weakness can lead to severe respiratory failure requiring mechanical ventilation, Sepsis and Septic Shock, multiorgan failure, Postoperative Complications, and trauma. ✓ Nutrition Support: Learning about enteral and parenteral nutrition support, including indications, administration, monitoring, and complications.

	✓ Geriatric Nutrition: Understanding the unique nutritional needs and challenges faced by older adults, including sarcopenia, malnutrition, and swallowing difficulties. ✓ Medical Nutrition Therapy Guidelines: Learning evidence-based nutrition therapy guidelines for managing common medical diseases. ✓ Dietary Modifications: Developing dietary plans and lifestyle interventions to optimize patient health, including recommendations for sodium, fluid, and cholesterol intake. ✓ Nutrition Counseling: Developing effective communication skills to counsel patients on nutrition-related issues, behavior change strategies, and adherence to dietary recommendations. ✓ Specialized Diets: Understanding and implementing specialized diets such as low-sodium diets, low-carbohydrate diets, or other diets based on individual patient needs. ✓ Nutritional Pharmacology: Understanding how medications affect nutritional status and vice versa, and how to manage medication-nutrient interactions.
2) Infertility Consultation Clinic	✓ The impact of nutrition on reproductive health, including ovulation, sperm quality, and hormonal balance. ✓ Assessment of Nutritional Status: Mastering techniques for evaluating dietary intake, anthropometric measurements, and biochemical markers relevant to fertility. ✓ Medical Nutrition Therapy (MNT): Applying MNT principles to optimize fertility outcomes through dietary modifications, nutrient supplementation, and lifestyle interventions. ✓ Weight Management: Understanding the effects of weight on fertility and developing strategies for weight management through nutrition counseling and behavior change. ✓ Nutrition and Reproductive Disorders: Exploring the relationship between nutrition and conditions such as polycystic ovary syndrome (PCOS) and endometriosis, and developing nutrition interventions to manage these disorders. ✓ Nutrition during Assisted Reproductive Technologies (ART): Providing guidance on nutrition before and during procedures

	such as in vitro fertilization (IVF) to support optimal outcomes. ✓ Nutritional Supplementation: Understanding the role of specific nutrients and supplements in fertility and advising on appropriate supplementation when necessary. ✓ Lifestyle Factors: Addressing the impact of lifestyle factors such as diet, physical activity, stress, and substance use on fertility, and providing guidance on adopting healthier habits.
3)Maxillofacial Surgery Consultation Clinic	✓ Maxillofacial Anatomy and Surgery: Understanding the anatomy of the face, jaws, and oral cavity, as well as common maxillofacial surgical procedures and treatment modalities. ✓ Nutritional Assessment in Maxillofacial Patients: Learning specialized techniques for assessing the nutritional status of patients undergoing maxillofacial surgery, considering factors like preoperative nutritional status, swallowing function, and oral intake ability. ✓ Preoperative Nutrition Optimization: Strategies to optimize patients' nutritional status before surgery, including nutrition support interventions to improve wound healing, immune function, and overall surgical outcomes. ✓ Postoperative Nutrition Support: Understanding the nutritional needs of patients during the postoperative period, including managing pain, inflammation, and healing, and providing appropriate nutrition support through oral intake, enteral nutrition, or parenteral nutrition as needed. ✓ Dietary Modifications for Oral Health: Providing dietary recommendations to support oral health and facilitate recovery after maxillofacial surgery, including soft or liquid diet recommendations, modified texture diets, and strategies to maintain hydration and oral hygiene. ✓ Management of Nutritional Complications: Identifying and managing nutritional complications commonly associated with maxillofacial surgery, such as malnutrition, dysphagia, oral mucositis, and weight loss. ✓ Nutrition Counseling and Education: Developing counseling skills to educate patients and caregivers on nutrition-related aspects of maxillofacial surgery, including dietary

	modifications, wound healing nutrition, and strategies to maintain adequate oral intake. ✓ Interdisciplinary Collaboration: Collaborating with maxillofacial surgeons, oral and maxillofacial surgeons, dentists, speech therapists, and other healthcare professionals to provide comprehensive care and support for patients undergoing maxillofacial surgery.
4) Psychiatric Consultation clinic	✓ Overview of Psychiatric Disorders: Understanding various psychiatric conditions commonly encountered in clinical practice. ✓ Psychotropic Medications: Effects on appetite, metabolism, and nutritional status. ✓ Psychiatric Nutrition Assessment: Techniques and tools for assessing nutritional status, dietary habits, and eating behaviors in patients with psychiatric disorders. ✓ Nutritional Considerations in Psychiatric Disorders: Specific dietary needs, nutrient deficiencies, and metabolic implications associated with different psychiatric conditions. ✓ Eating Disorders: Recognition, assessment, and management of eating disorders such as anorexia nervosa, bulimia nervosa, food aversions, and binge-eating disorder. ✓ Substance Use Disorders: Nutritional implications and interventions for individuals with substance abuse or addiction issues. ✓ Nutritional Interventions: Developing individualized nutrition care plans tailored to the needs of patients with psychiatric disorders. ✓ Counseling and Behavior Change Techniques: Strategies for promoting healthy eating habits, improving food choices, and addressing food-related issues in psychiatric patients. ✓ Interdisciplinary Collaboration: Working effectively as part of a multidisciplinary team to optimize patient care and outcomes in a psychiatric consultation clinic setting.

Course III	Common Clinical Conditions in Pediatric, Endocrine, and patient managemt in Oncology Center and Burn Hospital
Course topics	1) Common conditions Pediatric Consultation Clinic 2) Common Conditions Endocrinology Consultation Clinic 3) Management strategy in Oncology Consultation Clinic 4) Management strategy in Burns Hospital
Learning outcomes	✓ <u>Pediatric Consultation Clinic</u> ☞ Learn how to obtain a comprehensive and age-appropriate medical history from pediatric patients ☞ Gain proficiency in pediatric physical examination techniques, including assessment of growth and development milestones, and selecting appropriate diagnostic tests ☞ Practice the managemt for the common pediatric diseases and conditions encountered in a clinic setting including dietary intervention. ☞ Understand principles of pediatric pharmacotherapy, including dosing potential side effects and their relation with diet. ☞ Develop effective communication skills tailored to pediatric patients and their families. ☞ Gain knowledge of pediatric preventive care, including immunizations, growth monitoring, and screening tests. Practice counseling families on topics such as nutrition, safety, and child development. ☞ Collaborate effectively with nurses, allied health professionals, and other members of the healthcare team in pediatric care. ✓ <u>Endocrine Consultation Clinic</u> ☞ Gain knowledge of common endocrine disorders such as diabetes mellitus, thyroid disorders, adrenal disorders, and metabolic syndrome. ☞ Understand the pathophysiology, hormonal imbalances, and nutritional implications of these conditions. ☞ Develop skills in conducting comprehensive medical and nutrition assessments for patients with endocrine disorders.

	☞ Learn to interpret endocrine laboratory tests, including hormone levels and dynamic function tests. ☞ Understand evidence-based approaches to managing different endocrine disorders, including pharmacological and non-pharmacological interventions. ☞ Gain experience in formulating treatment plans, including nutritional intervention, tailored to individual patients, considering factors such as age, comorbidities, and patient preferences. ☞ Develop effective communication skills for providing nutrition education and counseling to patients with endocrine disorders. ☞ Collaborate with endocrinologists, pharmacists, nurses, and other healthcare providers to deliver comprehensive care to patients with complex endocrine disorders. ✓ <u>Oncology Consultation Clinic</u> ☞ Gain knowledge of the impact of cancer on metabolism, nutritional status, and nutrient requirements. ☞ Understand how cancer and its treatments (chemotherapy, radiation therapy, and surgery) can affect appetite, digestion, and nutrient absorption. ☞ Develop skills in conducting comprehensive nutrition assessments for cancer patients, including dietary intake analysis, anthropometric measurements, and biochemical markers. ☞ Identify malnutrition, weight changes, and nutritional deficiencies in cancer patients. ☞ Learn about different nutrition support modalities, including oral nutrition supplementation, enteral feeding, and parenteral nutrition. ☞ Understand indications, contraindications, and management of nutrition support in cancer patients. ☞ Implement dietary strategies to alleviate symptoms and improve quality of life. ☞ Develop strategies to prevent and manage malnutrition in cancer patients through individualized nutrition interventions.
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	☞ Collaborate with oncologists, pharmacists, nurses, and other healthcare professionals to optimize patient care and outcomes. ✓ <u>Burns Management Hospital</u> ☞ Develop expertise in assessing nutritional needs and providing specialized nutrition support for burn patients. ☞ Collaborate with burn care teams to optimize nutritional care during burn rehabilitation.
1) Common Conditions in Pediatrics Consultation Clinic	✓ Pediatric Growth and Development: Understanding the nutritional needs of infants, children, and adolescents during different stages of growth and development. ✓ Nutritional Assessment in Pediatrics: Demonstrate competence in assessing the nutritional status of pediatric patients, including growth monitoring, dietary intake analysis, and assessment of feeding behaviors. ✓ Infant and Child Nutrition: Learning about breastfeeding, formula feeding, introduction of solid foods, and dietary requirements for optimal growth, development, and overall health. ✓ Management of Common Pediatric Medical Conditions: Understanding nutrition interventions for common pediatric medical conditions such as food allergies, gastrointestinal disorders, failure to thrive, obesity, and metabolic disorders. ✓ Pediatric Feeding Disorders: Identifying and managing feeding disorders such as pediatric feeding aversion, selective eating, and food refusal, as well as strategies for promoting positive feeding behaviors. ✓ Specialized Pediatric Diets: Familiarization with specialized diets for pediatric patients with specific medical conditions, such as ketogenic diet for epilepsy, gluten-free diet for celiac disease, and low-phenylalanine diet for phenylketonuria (PKU). ✓ Pediatric Sports Nutrition: Providing guidance on nutrition for young athletes, including pre- and post-exercise nutrition, hydration strategies, and optimizing performance while ensuring proper growth and development. ✓ Parent and Caregiver Education: Developing effective communication skills to educate parents and caregivers on

	pediatric nutrition, feeding practices, meal planning, and strategies for promoting healthy eating habits in children. ✓ Developmental Disabilities and Nutritional Needs: Understanding the nutritional needs of pediatric patients with developmental disabilities such as cerebral palsy, autism spectrum disorder, and Down syndrome, and providing tailored nutrition support.
2)Endocrine Consultation Clinic	✓ Endocrine System Overview: Understanding the anatomy and physiology of the endocrine system, including hormone regulation and feedback mechanisms. ✓ Diabetes Mellitus Management: Learning about the pathophysiology of diabetes mellitus, glycemic control principles, insulin therapy, carbohydrate counting, and diabetes self-management education and support (DSMES). ✓ Thyroid Disorders: Understanding the role of nutrition in managing thyroid disorders such as hypothyroidism, hyperthyroidism, and thyroid cancer, including iodine intake, goitrogenic foods, and dietary considerations. ✓ Adrenal Disorders: Exploring nutritional implications of adrenal disorders such as Addison's disease and Cushing's syndrome, including sodium and potassium balance, cortisol replacement therapy, and dietary modifications. ✓ Metabolic Syndrome and Obesity: Understanding the relationship between nutrition, metabolism, and conditions like metabolic syndrome and obesity, and developing dietary interventions for weight management and metabolic health. ✓ Bone Health and Osteoporosis: Understanding the role of nutrition in bone health, calcium and vitamin D intake, and dietary strategies for preventing and managing osteoporosis. ✓ Nutritional Assessment in Endocrine Disorders: Mastering techniques for assessing the nutritional status of patients with endocrine disorders, including dietary intake analysis, anthropometric measurements, and biochemical markers. ✓ Medical Nutrition Therapy (MNT): Applying evidence-based MNT principles to manage endocrine disorders, including dietary modifications, meal planning, and lifestyle interventions tailored to individual patient needs.

3)Oncology Consultation Clinic	✓ Nutritional Assessment in Oncology: Techniques for assessing nutritional status, dietary intake, and nutritional needs of cancer patients. ✓ Cancer Treatment Modalities: Overview of surgery, chemotherapy, radiation therapy, immunotherapy, and targeted therapy, and their impact on nutritional status. ✓ Nutritional Management of Treatment Side Effects: Strategies for addressing common side effects of cancer treatment such as nausea, vomiting, taste changes, and mucositis. ✓ Oncology Nutrition Guidelines: Familiarity with evidence-based nutrition guidelines for cancer prevention, treatment, and survivorship. ✓ Malnutrition and Cachexia: Understanding the prevalence, mechanisms, and management of malnutrition and cachexia in cancer patients. ✓ Dietary Counseling and Behavior Change: Effective communication strategies for counseling cancer patients and caregivers on nutrition-related topics. ✓ Survivorship Nutrition: Addressing long-term nutritional needs and survivorship issues in cancer survivors.
4)Burn Management Hospital	✓ Burn Pathophysiology and the physiological response to burn injuries, including metabolic changes, fluid shifts, and hypermetabolism. ✓ Comprehensive nutrition assessments for burn patients, considering factors such as burn size, depth, and associated injuries. ✓ Nutritional Support Strategies and caloric requirements based on burn size, patient's age, weight, and metabolic status. ✓ Fluid and Electrolyte Management. ✓ Implement nutrition interventions to promote wound healing and tissue regeneration in burn patients. ✓ Pharmacotherapy and Nutrition Interactions: ✓ Interdisciplinary Collaboration with healthcare teams to adjust nutrition interventions based on medication effects and patient response. ✓ Nutrition Education and Counseling.

Clinical Skills Mastery of the second year:

1. Comprehensive Patient Assessment:
 - Proficiently conduct detailed patient histories and physical examinations.
 - Utilize diagnostic tests to inform nutritional assessments and management plans.
2. Nutritional Management:
 - Develop personalized nutrition plans for various clinical conditions.
 - Implement evidence-based medical nutrition therapy (MNT) protocols.
3. Interdisciplinary Collaboration:
 - Communicate and collaborate effectively with healthcare teams from different specialties.
 - Participate in multidisciplinary rounds and patient care meetings.
4. Patient Counseling and Education:
 - Educate patients and families on nutrition-related topics and dietary interventions.
 - Address cultural, psychosocial, and behavioral factors influencing patient care.
5. Pharmacotherapy Knowledge:
 - Understand medication effects on nutritional status and manage medication-nutrient interactions.
6. Specialized Clinical Skills:
 - Tailor nutrition support plans for pediatric, elderly, chronic disease, endocrine, oncology, and burn patients.
 - Provide symptom management and supportive care through nutrition interventions.
 - Plan of dietary interventions for disease prevention and management.
7. Ethical and Professional Practices:
 - Adhere to ethical guidelines and professional standards in clinical nutrition practice.
 - Demonstrate cultural competence and sensitivity in patient care.

• **Details of Topics of the Third Year (Mastering Specialization):**

Course I, II, and III	Clinical Nutritional Practice (Medical and Surgical Approaches to dietary intervention)
Course topics	1) Obesity Surgery Practices (Obesity Surgery consultation Clinic) 2) Medical Nutritional Therapy (Job Shadow in Therapeutic Nutrition Consultation Clinic)
Learning outcomes	✓ Conduct thorough nutritional assessments to identify deficiencies and dietary problems. ✓ Calculate and monitor nutrient intake to ensure patients meet their specific requirements. ✓ Design and implement individualized therapeutic diets for various medical conditions (e.g., diabetes, heart disease, kidney disease, fatty liver disease, pre and post-operative). ✓ Understand the different types of bariatric surgeries, their indication, and their impact on nutrient absorption and digestion. ✓ Develop individualized pre-operative meal plans focusing on nutrient optimization and healthy eating habits. ✓ Counsel patients on managing expectations and potential dietary changes post-surgery. ✓ Implement specific dietary protocols tailored to the type of surgery performed (e.g., liquid diet, soft diet). ✓ Address potential nutritional deficiencies and complications that may arise after surgery. ✓ Educate patients on long-term dietary strategies for weight management and overall health. ✓ Work effectively with physicians, pharmacists, nurses, and other healthcare professionals to create a comprehensive treatment plan.
1) Obesity Surgery Practices	✓ Bariatric Surgery Procedures: Understanding different types of bariatric surgeries, their mechanisms, indications, and potential complications. ✓ Preoperative Nutrition Assessment: Mastering techniques for assessing the nutritional status of patients before bariatric surgery, including identifying nutrient deficiencies and evaluating dietary habits.

	✓ Preoperative Dietary Counseling: Providing tailored nutrition counseling to prepare patients for bariatric surgery, including preoperative weight loss requirements, dietary modifications, and lifestyle changes. ✓ Postoperative Nutrition Guidelines: Understanding postoperative dietary modifications, progression of diet stages, and recommended nutrient supplementation to support healing and weight loss. ✓ Managing Nutrient Deficiencies: Learning to identify and manage common nutrient deficiencies post-bariatric surgery, such as vitamin and mineral deficiencies, protein malnutrition, and dehydration. ✓ Behavioral and Lifestyle Counseling: Providing guidance on behavior modification, healthy eating habits, portion control, meal planning, and physical activity to support long-term weight management success. ✓ Meal Planning and Food Choices: Teaching patients how to plan balanced meals, make healthy food choices, read food labels, and incorporate nutrient-rich foods into their diet after surgery. ✓ Psychological and Emotional Support: Understanding the psychological and emotional aspects of obesity and bariatric surgery, and providing support and resources for addressing mental health concerns. ✓ Nutrition Education for Complications: Educating patients about potential complications of bariatric surgery, such as dumping syndrome, gastrointestinal symptoms, and eating disorders, and providing strategies to prevent and manage these complications through nutrition. ✓ Long-Term Follow-Up Care: Developing strategies for long-term follow-up care, including monitoring nutritional status, assessing dietary adherence, and providing ongoing support and education. ✓ Interdisciplinary Collaboration: Collaborating with surgeons, nurses, psychologists, and other healthcare professionals as part of an interdisciplinary team to provide comprehensive care and support for bariatric surgery patients.
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2) Medical Nutritional Therapy (Job Shadow in Therapeutic Nutrition Consultation Clinic)	✓ Medical Conditions and Nutrition: Understanding the relationship between various medical conditions (e.g., diabetes, heart disease, gastrointestinal disorders) and nutrition, including their impact on dietary requirements and management strategies. ✓ Nutrition Assessment Techniques: Mastering methods for conducting comprehensive nutrition assessments, including dietary analysis, anthropometric measurements, biochemical assessments, and clinical evaluations. ✓ Medical Nutrition Therapy (MNT): Learning principles and practices of MNT for different medical conditions, including developing individualized dietary plans, setting nutrition goals, and monitoring progress. ✓ Dietary Interventions: Exploring specific dietary interventions and meal planning strategies tailored to address the nutritional needs and health goals of patients with various medical conditions. ✓ Nutritional Support Modalities: Understanding enteral and parenteral nutrition support options, including indications, contraindications, administration methods, and monitoring requirements. ✓ Counseling and Communication Skills: Developing effective communication skills to educate and counsel patients on nutrition-related topics, facilitate behavior change, and promote adherence to dietary recommendations. ✓ Evidence-Based Practice: Applying current research evidence and best practice guidelines to inform decision-making and optimize patient care outcomes. ✓ Cultural Competence: Recognizing cultural factors that influence dietary habits and health behaviors, and adapting nutrition counseling approaches to meet the diverse needs of patients from different cultural backgrounds. ✓ Documentation and Record-Keeping: Understanding the importance of accurate documentation of nutrition assessments, interventions, and patient progress in medical records or electronic health records.
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☞ **Clinical Skills Mastery of the second year:**

1. Management of Nutritional Health-Related Conditions

- ✓ Nutrition Assessment Tools: Proficiency in using tools such as food frequency questionnaires, 24-hour dietary recalls, and food diaries to gather information about clients' dietary intake and habits.
- ✓ Nutrient Analysis Software: Skills in using nutrient analysis software programs like Food Processor, My Fitness Pal, or Nutrition Data System for Research (NDSR) to analyze dietary intake data, calculate nutrient content, and assess clients' nutritional status.
- ✓ Develop expertise in managing and menu planning for a wide range of nutritional health-related conditions, including:
 - ☞ Nutrition Education and dietetic counseling
 - ☞ MNT in of cardiovascular diseases.
 - ☞ MNT of Pulmonary diseases.
 - ☞ MNT for gastrointestinal diseases and disorders.
 - ☞ MNT for diseases of hepato biliary tract
 - ☞ MNT for diabetes
 - ☞ MNT for renal diseases
 - ☞ MNT for Thyroid and other endocrinal Disorders.
 - ☞ MNT for Neurological disease i.e. epilepsy (ketogenic diets)
 - ☞ Nutritional management of eating disorders.
 - ☞ MNT for under nutrition, and failure to thrive
 - ☞ MNT for obesity, and metabolic syndromes.
 - ☞ MNT for Cancer
 - ☞ MNT for gout, osteoporosis and other musculoskeletal disorders
 - ☞ Nutritional management of food allergies and food intolerance:
 - ☞ Nutrition during stress : Burns, Trauma, Sepsis, Critical Illness
 - ☞ Nutrient and drug interaction:
 - ☞ Nutrition in special population: Geriatric, Pregnancy and lactation, Infants and preschool children: Sports Nutrition, immunocompromised patient
 - ☞ Nutritional genomics and personalized nutrition approaches.
 - ☞ Interdisciplinary collaboration: Team-based approach to patient-centered care.

- ✓ Implement advanced dietary interventions tailored to individual patient needs, considering medical history, genetic factors, and lifestyle preferences.
- ✓ Gain competence in prescribing customized dietary plans based on clinical assessments, nutritional assessments, and dietary preferences, while considering evidence-based guidelines and recommendations to optimize patient outcomes and improve overall health.

2. Investigation of Nutrition-Related Diseases

- ✓ Conduct in-depth investigations into nutrition-related diseases, exploring the underlying mechanisms and interactions between diet, genetics, and environmental factors.
- ✓ Apply advanced research methods and analytical techniques to study nutritional epidemiology, metabolic pathways, and disease prevention strategies.

3. Counseling of Individuals and Patients About Nutrition

- ✓ Acquire proficiency in providing personalized nutrition counseling to individuals and patients, integrating evidence-based dietary recommendations with behavioral and lifestyle modifications.
- ✓ Develop skills in assessing nutritional needs, addressing dietary challenges, and supporting patients in achieving sustainable lifestyle changes.
- ✓ Kitchen Tools: Proficiency in using kitchen tools and equipment such as measuring cups and spoons, food scales, blenders, food processors, and cooking utensils to prepare and portion foods accurately.
- ✓ Food Labeling and Packaging: Understanding how to read and interpret food labels and packaging information to identify key nutrients, serving sizes, ingredients, and allergen warnings, and assess the nutritional quality of packaged foods.

4. Follow-Up with Individuals and Patients Regarding Nutritional Health

- ✓ Regular check-ins, assessments, and guidance to ensure that individuals are meeting their nutritional needs and making necessary adjustments to support their overall health and wellness.
- ✓ Effective follow-up provide ongoing education, and promote sustainable dietary habits for better long-term health outcomes.

- **Study Instructions**

- ☞ Each academic week is assessed as one accredited instructional unit. (16 credits for each course).
- ☞ Students attend within the official working hours throughout the week, with two days allocated in the first year and one day in the second and third years for academic and scientific activities (such as case studies, seminars, discussions, and research presentations).
- ☞ In the second year, students are assigned to professors or consultants to conduct scientific research on a topic related to therapeutic nutrition.

- **Assessment of Trainee:**

The Trainee assessment is done through the following:

1- Continues Assessment (Mandatory to the entrance of part I and part II written exam):

- a- Log book: The student are required to keep logbook where he/or she will record all procedures and activities. The activities must date and categorized to rotation of training and whether it was performed or observed by resident participation and attendance in seminars and CME activities are also included. Each activity registered in the logbook must countersigned by the Trainer.
- b- Active participation in group discussion and seminar presentation
- c- Assignment
- d- Quizzes
- e- Each week, Thursdays are reserved exclusively for formative assessment, supervisor communication and participating in Journal Club
- f- Attendance should registered and copy of attendance record from each training site will be kept for report and documentation.

2- Part I (primary) exam (summative assessment): 100 – 120 MCQs

- Exam at the end of the first year.
- Attendance of more than 85% of educational activates, in the first academic year, Continues assessment and supervisor approval are mandatory for participation of student in the exam.
- The pass mark is 70 %
- The student has maximum of four attempts to pass; exceeding this limit will lead to their dismissing from the academic program
- The exam conducts in April and October.

3-Mid study exam (Year III, mandatory to enter part II Exam):

- 50 MCQs exam in introduction to nutrition science
- Passing score is 60%

4- Discussion of dissertation (Year III, mandatory to enter part II Exam)

5- Part II Exam: at the end of third year consists of the following:

a- Theory Exam (50%) :

- Paper 1: Written 100 MCQs exam
- Paper 2: written short essay exam (20 clinical cases)
- Passing exam 70% is mandatory to participate in clinical exam

b- Clinical Exam (50%)

- Objective Structured Clinical Examination (OSCE)
- 10 clinical based slides (OSBE)
- Viva Exam

Blueprint for part I Exam (Year I): Basic nutrition and MNT

Topics of First Year	Credit %	No. of Exam MCQs
1- Introduction to Basic Nutrition	7	9
2- Clinical & Nutritional Biochemistry	10	12
3- Human Physiology.	10	12
4- Nutritional Assessment	8	10
5- Nutrition in the life cycle	12	14
6- Nutrition for Weight Management	8	10
7- Public Nutrition	10	11
8- Nutritional Research Methods	8	10
9- Nutrition Diagnosis	6	7
10- Clinical Nutritional Therapy	6	7
11- Advanced Nutrition Intervention	5	6
12- Preventive Nutritional Care	10	12
Total	100	120

Blueprint for part II Exam (Final):

Topics: Common Nutritional Conditions		Credits%
1	Basic Nutrition (1 st year topics)	5
2	Common Gastrointestinal diseases and their relation to nutrition	7
3	Common Kidney Diseases and their relation to nutrition	7
4	Common Respiratory Diseases and their relation to nutrition	5
5	Common CVS Diseases and their relation to nutrition	6
6	Common Neurology Diseases and their relation to nutrition	4
7	ICU conditions management	3
8	Infertility Consultation Clinic	3
9	Maxillofacial Surgery Consultation Clinic	2
10	Psychiatric Consultation Clinic	3
11	Endocrinology Consultation Clinic	5
12	Pediatric Consultation Clinic	4
13	Oncology Consultation Clinic	4
14	Burns Management Hospital	4
15	Obesity Surgery Consultation Clinic	3
16-	Clinical Nutritional Therapy	35
Total		100

Final OSCE & OSBE of Medical Nutritional Therapy Blueprint (15 Stations)					
Topics Domains		Prevention	Skills & management	Interpretation	Total
1	Nutrition education, counseling	2			2
2	Common nutrition-focused History taking & physical exam	1	2	1	4
3	Laboratory results			1	1
4	Interpret body composition measurements using bioelectrical impedance analysis (BIA).			1	1
5	Nutritional Therapy for Medical Conditions	1	1		2
6	Dietary habit & physical activity level	1		1	2
7	Food Science and Culinary Nutrition		1		1
8	Enteral nutrition		1		1
9	Disordered eating behaviors			1	1
Total Questions		5	5	5	15

Notes

- ☞ Each student is given four attempts to pass either the Part I or Part II exam. Failure to do so will result in their dismissal from the study.

• Recommended Textbooks in the study (last versions):

- 1- Krause's Food & the Nutrition Care Process" by L. Kathleen Mahan MS RD CDE, Janice L. Raymond MS RD CD, and Sylvia Escott-Stump MA RD LDN.
- 2- Williams' Basic Nutrition & Diet Therapy" by Staci Nix McIntosh and Sara Long Roth
- 3- Advanced Nutrition and Human Metabolism" by Sareen S. Gropper, Jack L. Smith, and James L. Groff.
- 4- Nutrition Therapy and Pathophysiology" by Marcia Nelms, Kathryn P. Sucher, and Sara Long Roth.
- 5- Clinical Nutrition: A Functional Approach" by Geoffrey P. Webb and Kevin T. Patton.
- 6- Nutrition Counseling and Education Skill Development" by Kathleen D. Bauer, Doreen Liou, and Carol A. Sokolik:

• Recommended websites in the study:

- 1- Academy of Nutrition and Dietetics (AND): eatright.org PubMed: <https://www.pubmed.ncbi.nlm.nih.gov>
- 2- Nutrition Evidence Library: <https://www.nutritionevidencelibrary.com>
- 3- EatRightPro: <https://www.eatrightpro.org/>
- 4- Nutrition.gov: <https://www.nutrition.gov>
- 5- National Institutes of Health (NIH): <https://www.nih.gov>
- 6- The Nutrition Society: <https://www.nutrition society.org>
- 7- Dietary Guidelines for Americans: <https://www.dietaryguidelines.gov/>
- 8- MedlinePlus: <https://www.medlineplus.gov>
- 9- My fitnesspal: <https://www.myfitnesspal.com/>
- 10- American Society for Parenteral and Enteral Nutrition: <https://www.nutritioncare.org/>
- 11- Food Prodigy. National Academy Press: <https://nap.nationalacademies.org/topic/287/food-and-nutrition>