

In the Name of God
Islamic Republic of Iran
Ministry of Health and Medical Education
Deputy for Education

Program: Doctorate in Clinical Nutrition (DCN)

Total Credits:

Course Type	Credits
Pre-Requisite Courses	29 (for the students from medical fields other than Nutritional Sciences)
General Courses	-
Non-Core Courses	7 (for the students admitted from master's degree in nutritional sciences) 3 (for the students admitted from master's degree in clinical nutrition)
Core Courses	31
Internship	9
Field Internship	30
Thesis	6 (for the students from medical fields other than Nutritional Sciences) 4 (for the students admitted from master's degree in nutritional sciences and clinical nutrition)
Total	76 (for students from medical fields other than Nutritional Sciences) 71 (for students admitted from master's degree in nutritional sciences) 47 (for students admitted from master's degree in clinical nutrition)

1. Definition of the course:

The importance of proper nutrition and prevention of malnutrition and nutrient deficiencies in inpatients and outpatients has always been raised as a fundamental issue that intervenes in the process of treatment and recovery of patients in all countries. The high rate of malnutrition in hospitalized patients and insufficient attention to the nutritional needs of patients and the timely implementation of nutritional interventions are among the common problems in managing the treatment of patients. The increase in malnutrition and the occurrence of micronutrient deficiencies in patients can increase the duration of hospitalization, cause disability and death of patients, and impose adverse social and economic consequences on the society. Therefore, the correct and appropriate implementation of the nutritional care program for patients, in addition to ensuring that nutritional needs are met, causes faster recovery, better response of the patient to treatment methods, reduction of complications caused by the disease, reduction of hospitalization time and reduction of treatment costs. Thus, it is necessary to pay attention to nutritional care in hospitalized patients. The Division of Clinical Nutrition at the Tehran University of Medical Sciences is pleased to offer Doctorate in Clinical Nutrition (DCN) program to provide training experience for the students at a sufficient level to broaden the knowledge base in the field of clinical nutrition including nutritional screening, assessment, management, and ongoing support of patients, ranging from critically ill inpatients to ambulatory outpatients of all ages. This advanced degree will also enhance critical thinking skills to keep pace with the medical complexity of today's clinical nutrition practice.

Duration: 24-60 months

2. Educational Goal:

By the end of the program the student will be able to perform the following as part of an interdisciplinary nutrition support team or group:

a. Nutritional Assessment

- 1) Be aware of evidence-based methods for nutritional screening and assessment of patients hospitalized in the intensive care unit and inpatient wards as well as in outpatient clinics.
- 2) Understand and experience anthropometry and methods for body composition
- 3) Be familiar with the interpretation of laboratory values

b. Nutritional Therapy

- 1) Determine nutritional/metabolic requirements based on findings of subjective and objective nutrition assessment
- 2) Be familiar with disease-specific diets and dietary recommendations, enteral formulations, and parenteral solutions
- 3) Designs/recommends patient-specific feeding formulation/prescription
- 4) Understand the issues with the composition of different formulas and complications of therapy
- 5) Be familiar with the indications and delivery of enteral and parenteral nutrition
- 6) Select the appropriate formula/formulation and route for administration of specialized nutrition support based on patient's disease process and compatibility with route of access.

c. Ongoing support

- 1) Be able to modify diet plan based on disease complications.
- 2) Be able to plan long term home enteral or parenteral nutrition therapy for patients considering long term complications of therapy.
- 3) Teaches/educates patients and caregivers on nutrition care plan

d. Research

- 1) One research project during the program is required. The goal of the research project will be to present findings in a peer reviewed journal.

3. Admission Requirements and Eligibility

A. To be eligible for the DCN program, applicants must have completed one of the following degrees:

- a. Master's degree in Clinical Nutrition
- b. Master's degree in Nutritional Sciences
- c. Bachelor degree in Nutritional Sciences
- d. Any other academic fields in medical sciences confirmed by the Clinical Nutrition Department

B. Evidence of English and Persian proficiency

C. Candidates are selected based on the following:

- e. Up to Date Curriculum vitae (CV)
- f. Overall fit for the program

D. Timeline: Tehran University of Medical Sciences has a rolling application system and reviews student applications all year round. However, the deadline for the September intake is June 31.

4. Prerequisite Degrees:

To be eligible for the DCN program, applicants must have completed one of the following degrees:

- a. Master's degree in Clinical Nutrition
- b. Master's degree in Nutritional Sciences
- c. Bachelor degree in Nutritional Sciences
- d. Any other academic fields in medical sciences confirmed by the Clinical Nutrition Department

7. General Objectives and Roles

The DCN program is designed to provide training experience for the students at a sufficient level to broaden the knowledge base in the field of clinical nutrition including nutritional screening, assessment, management, and ongoing support of patients, ranging from critically ill inpatients to ambulatory outpatients of all ages. This advanced degree will also enhance critical thinking skills to keep pace with the medical complexity of today's clinical nutrition practice.

9. Special Competencies Expected for Graduates

At the end of the program learners will be competent in the following skills:

- 1) Determining body composition using a body composition analyzer
- 2) Determining basal body metabolism using indirect calorimetry
- 3) Assessing nutritional status of patients using appropriate tools
- 4) Using portable ultrasound for body composition measurement, nutritional assessment, and nutritional management
- 5) Using physical examination to assess nutritional status of patients
- 6) Calculating energy, macronutrients, and micronutrients needs in various diseases and conditions
- 7) Prescribing appropriate individualized diet regimens for patients based on the disease-specific complications
- 8) Designing nutrient composition of blenderized tube feeding formulas for patients on enteral nutrition
- 9) Identifying appropriate commercial feeding formula considering the feeding route for patients on enteral nutrition
- 10) Calculating intravenous (IV) nutritional fluids amounts based on the IV line for patients on parenteral nutrition.

Table: Expected Procedural Skills

Skill / Task	Observation	Assisted Performance	Independent Performance	Total Frequency (Minimum)
Professional communication with the patients, their families, and colleagues	10	10	5	25
Assessing nutritional status of patients using appropriate tools	1	4	20	25
Determining body composition using a body composition analyzer	1	4	20	25
Determining basal body metabolism using indirect calorimetry	1	4	20	25
Evaluation of muscle strength with a dynamometer	1	4	20	25
Using portable ultrasound for body composition measurement, nutritional assessment, and nutritional management	1	4	10	15
Measuring and evaluating blood pressure, breathing, pulse, temperature, blood glucose and level of consciousness based on the Glasgow Coma Scale (GCS)	5	10	20	35
Assessment and monitoring of fluid intake and output	1	4	20	25
Evaluation of gastric residual volume using ultrasound	1	4	5	10
Feeding by mouth	1	1	1	3
Placing a naso-gastric tube	1	4	5	10
Perform gavage	1	4	10	15
Using an enteral feeding pump and setting the infusion rate	1	4	10	15
Caring for all types of ostomy	1	4	10	15
Injections (intravenous, subcutaneous, intradermal and intramuscular)	5	5	5	15
Use and launch of enteral bags and parenteral feeding solutions	1	4	10	15
Use and setup of ventilators	4	10	1	15
hemodialysis	1	2	-	3
Pericardiocentesis	1	1	-	2
Pleural tap	1	1	-	2
Ascites tap	1	1	-	2
Using physical examination to assess nutritional status of patients	1	4	20	25
Prescribing appropriate individualized diet regimens for patients based on the disease-specific complications	5	10	35	50
Designing nutrient composition of blenderized tube feeding formulas for patients on enteral nutrition	1	4	10	15

Identifying appropriate commercial feeding formula considering the feeding route for patients on enteral nutrition	1	4	30	35
Calculating intravenous (IV) nutritional fluids amounts based on the IV line for patients on parenteral nutrition	1	4	30	35

Table 1: Pre-requisite Courses (for students from medical fields other than Nutritional Sciences)

Cod e	Course Title	Credits (Total)	Credits (Theory)	Credits (Practical)	Hours (Theory)	Hours (Practical)	Hours (Total)	Prerequisite
01	Food safety and poisoning	2	2	-	34	-	34	-
02	Principles of food storage	1	1	-	17	-	17	-
03	Food processing and nutritional value	1	1	-	17	-	17	-
04	Specialized English language for nutrition	2	2	-	34	-	34	-
05	Pathophysiology	2	2	-	34	-	34	-
06	Basic Nutrition I	2	2	-	34	-	34	-
07	Basic Nutrition II	3	3	-	51	-	51	-
08	Nutritional Physiology	2	2	-	34	-	34	06, 07
09	Nutrition in life cycle	3	3	-	51	-	51	06, 07, 12
10	Medical information systems	1	0.5	0.5	8.5	17	25.5	-
11	Prescription and interpretation of laboratory tests	1	1	-	17	-	17	-
12	The principles of meal planning	1	1	-	17	-	17	06, 07
13	Nutrition and genetic	1	1	-	17	-	17	06, 07
14	Malnutrition-related diseases	2	2	-	34	-	34	06, 07
15	Food service management	2	1	1	17	34	51	06, 07
16	Principles of nutrition education and counseling	2	2	-	34	-	34	-
17	Food-drug interaction	1	1	-	17	-	17	-

Table 2: Core Courses (for the students from medical fields other than Nutritional Sciences):

Code	Course Title	Credits (Total)	Credits (Theory)	Credits (Prac.)	Credits (Intern.)	Hours (Theory)	Hours (Prac.)	Hours (Total)	Prerequisite
18	Advanced biostatistics	1.5	1.5	-	-	25.5		25.5	-
19	Research method in nutritional science	1.5	1.5	-		25.5		25.5	18
20	Pathophysiology of endocrine diseases	1	1	-		17		17	-
21	Pathophysiology of cardiovascular diseases	1	1	-		17		17	-
22	Pathophysiology of gastrointestinal diseases	1	1	-		17		17	-
23	Pathophysiology of renal diseases	1	1	-		17		17	-
24	Pathophysiology of neurological diseases	1	1	-		17		17	-
25	Pharmacology	2	2	-		34		34	-
26	Dietary supplements and prescription principles	1	1	-		17		17	
27	Clinical nutrition and applied diet therapy 1	3	3	-		51		51	06, 07
28	Clinical nutrition and applied diet therapy 2	3	3	-		51		51	06, 07
29	Clinical nutrition and applied diet therapy 3	3	3	-		51		51	06, 07
30	Advanced enteral and parenteral nutrition	2	1	1		17	34	51	27, 28, 29
31	Nutrition focused physical examination	1	1	-		17			
32	History taking and physical exam	1	0.5	0.5		8.5	17	25.5	
33	Intravenous fluids and electrolytes-	2	2	-		34		34	

	Common types and uses								
34	Nutritional status assessment of patients	2	2	-		34		34	
35	Psychology and counseling	2	2	-		34		34	
36	Clinical nutrition seminar	1	1	-		17		17	
37	Training in clinical nutrition and diet therapy	9			9		459	459	27, 28, 29, 30, 31, 32, 33, 34
38	Internship in clinical nutrition and diet therapy *	30			30		2040	2040	37
39	Thesis	6							

Table 3: Core Courses (for the students admitted from master's degree in nutritional sciences):

Code	Course Title	Credits (Total)	Credits (Theory)	Credits (Prac.)	Credits (Intern.)	Hours (Theory)	Hours (Prac.)	Hours (Total)	Prerequisite
20	Pathophysiology of endocrine diseases	1	1	-		17		17	
21	Pathophysiology of cardiovascular diseases	1	1	-		17		17	
22	Pathophysiology of gastrointestinal diseases	1	1	-		17		17	
23	Pathophysiology of renal diseases	1	1	-		17		17	
24	Pathophysiology of neurological diseases	1	1	-		17		17	
25	Pharmacology	2	2	-		34		34	
26	Dietary supplements and prescription principles	1	1	-		17		17	
27	Clinical nutrition and applied diet therapy 1	3	3	-		51		51	06, 07
28	Clinical nutrition and applied diet therapy 2	3	3	-		51		51	06, 07

29	Clinical nutrition and applied diet therapy 3	3	3	-		51		51	06, 07
30	Advanced enteral and parenteral nutrition	2	1	1		17	34	51	27, 28, 29
31	Nutrition focused physical examination	1	1	-		17			
32	History taking and physical exam	1	0.5	0.5		8.5	17	25.5	
33	Intravenous fluids and electrolytes- Common types and uses	2	2	-		34		34	
34	Nutritional status assessment of patients	2	2	-		34		34	
35	Psychology and counseling	2	2	-		34		34	16
36	Clinical nutrition seminar	1	1	-		17		17	
37	Training in clinical nutrition and diet therapy	9			9		459	459	27, 28, 29, 30, 31, 32, 33, 34
38	Internship in clinical nutrition and diet therapy*	30			30		2040	2040	37
39	Thesis	4							

Table 4: Core Courses (for the students admitted from master's degree in clinical nutrition):

Code	Course Title	Credits (Total)	Credits (Theory)	Credits (Prac.)	Credits (Intern.)	Hours (Theory)	Hours (Prac.)	Hours (Total)	Prerequisite
24	Pathophysiology of neurological diseases	1	1	-		17		17	
26	Dietary supplements and prescription principles	1	1	-		17		17	
30	Advanced enteral and parenteral nutrition	2	1	1		17	34	51	
31	Nutrition focused physical examination	1	1	-		17			

32	History taking and physical exam	1	0.5	0.5		8.5	17	25.5	
33	Intravenous fluids and electrolytes- Common types and uses	2	2	-		34		34	
34	Nutritional status assessment of patients	2	2	-		34		34	
35	Psychology and counseling	2	2	-		34		34	
36	Clinical nutrition seminar	1	1	-		17		17	
38	Internship in clinical nutrition and diet therapy*	30			30		2040	2040	
39	Thesis	4							

* In medical services including:

- 1) Internal service (2 credits: 136 hrs)
- 2) Endocrine service (3 credits: 204 hrs)
- 3) Cardiology service (2 credits: 136 hrs)
- 4) Renal care and Dialysis service (2 credits: 136 hrs)
- 5) Gastroenterology service (3 credits: 204 hrs)
- 6) Neurology service (2 credits: 136 hrs)
- 7) Gynecology service (2 credits: 136 hrs)
- 8) Intensive Care Unit (4 credits: 272 hrs)
- 9) Oncology service (3 credits: 204 hrs)
- 10) Surgery service (3 credits: 204 hrs)
- 11) Pediatric care service (3 credits: 204 hrs)
- 12) Food service (1 credits: 68 hrs)

Table 5: Non-Core Courses (for the students admitted from master's degree in nutritional sciences):

Code	Course Title	Credits (Total)	Credits (Theory)	Credits (Prac.)	Credits (Intern.)	Hours (Theory)	Hours (Prac.)	Hours (Total)	Prerequisite
11	Prescription and interpretation of laboratory tests	1	1			17		17	
12	The principles of meal planning	1	1			17		17	
15	Food service management	2	1	1		17	34	51	
16	Principles of nutrition education and counseling	2	2			34		34	
17	Food-drug interaction	1	1			17		17	25

Table 6: Non-Core Courses (for the students admitted from master's degree in clinical nutrition):

Code	Course Title	Credits (Total)	Credits (Theory)	Credits (Prac.)	Credits (Intern.)	Hours (Theory)	Hours (Prac.)	Hours (Total)	Prerequisite
11	Prescription and interpretation of laboratory tests	1	1			17		17	
12	The principles of meal planning	1	1			17		17	
17	Food-drug interaction	1	1			17		17	