Islamic Republic of Iran

Ministry of Health and Medical Education

High Council for Medical Science Planning

Specialized Training Non-Continuous Master's Program

Clinical Nutrition

(General information, program, course titles, and how to evaluate)

Approved by the 63rd session of the High Council for Medical Science Planning Date 2016/05/29

Vote issued in the 63rd session of the High Council for Medical Sciences Planning dated 2016/05/29 regarding:

Non-Continuous Master's Course in Clinical Nutrition

1- The non-continuous master's course in clinical nutrition was approved by a majority of votes.
2- The non-continuous master's course in clinical nutrition is applicable from the date of notification.

It is approved

Dr. Jamshid Hajati

Secretary of the Council of Basic Medical Sciences, Health and specialized

It is approved

Dr. Mansour Razavi

Secretary of the Supreme Council for Medical Science Planning

It is approved

Dr. Baqer Larijani

Educational Assistant

The decision issued in the 63rd session of the High Council for Planning of Medical Sciences, dated 2016 /05/29, regarding the educational program of the non-continuous master's course in clinical nutrition, is correct and should be implemented.

Dr. Seyed Hassan Hashemi

Minister of Health, Treatment, and Medical Education

and Chairman of the Supreme Council for Medical Science Planning Medical Science Planning

In the Name of God

Non-Continuous Master's Program in Clinical Nutrition

Field: Clinical Nutrition

Course: Non-Continuous Master

Specialized Secretariat: Secretariat of the Council for Education of Basic Medical, Health, and Specialized Sciences

This educational course approves the training program of this course and prescribes in five chapters (general specifications, course titles, standards, and program evaluation) as described in the appendix.

1- The non-continuous master's of clinical nutrition is valid from the date of notification for all universities and higher education institutions of the country that have the following specifications.

A: Universities and institutions of higher education that are managed under the supervision of the Ministry of Health and Medical Education.

B: Institutions that are established with the official permission of the Ministry of Health and Medical Education and in accordance with the laws, and are therefore subject to the approvals of the High Council for Medical Sciences Planning.

C: Other higher education institutions that are established in accordance with special laws and must be subject to the university regulations of the Islamic Republic of Iran.

2- From the date of notification of this program, all training courses and similar programs of institutions in the field of non-continuous masters of clinical nutrition in all universities and institutions of higher education mentioned in Article 1 will be obsolete and universities and institutions of higher education will be abolished. According to the regulations, they can establish this course and implement a new program.

3- General specifications, curriculum, course titles, standards and evaluation of non-continuous masters of clinical nutrition will be announced in five chapters for implementation.

Names of the members of the clinical Nutrition Curriculum Review Committee in Non-Continuous Master Program

- **Dr. Hadi Tabibi:** Shahid Beheshti Medical Sciences and Health Services
- **Dr. Zahra Vahdat Shariatpanahi:** Shahid Beheshti Medical Sciences and Health Services
- **Dr. Azita Hekmatdoost:**Shahid Beheshti Medical Sciences and Health Services
- **Dr. Javad Nasrollahzadeh:** Shahid Beheshti Medical Sciences and Health Services
- **Dr. Majid Hajifaraji:**Shahid Beheshti Medical Sciences and Health Services
- **Dr. Abdolreza Norouzy:** Mashhad Medical Sciences and Health Services
- **Dr. Shahram Ejtemaei Mehr:** Tehran Medical Sciences and Health Services
- **Dr. Saeid Hoseini:** Tehran Medical Sciences and Health Services
- **Dr. Raika Jamali:**Tehran Medical Sciences and Health Services
- **Dr. Javad Hoseinzadeh:** Tehran Medical Sciences and Health Services
- **Dr. Abdolreza Mortazavi Tabatabai:** Ministry of Health, Treatment and Medical Education
- **Dr. Maryam Maraghi:** Ministry of Health, Treatment and Medical Education

Colleagues in the Secretariat of the Supreme Council for Medical Science Planning

- **Dr. Abdolreza Mortazavi Tabatabai:** Deputy Secretary of the High Council for Medical Science Planning
- **Ms. Maryam Maraghi:** Expert Secretariat of the High Council for Medical Science Planning
- **Ms. Raheleh Daneshnia:** Expert in charge of the Secretariat of the High Council for Medical Science Planning

List of members and guests present at the 162nd meeting of the Deputy Council of the Supreme Council for Planning of Medical Sciences, dated 2016/01/31

Attendees:

- Dr. Tahereh Changiz
- Dr. Hasti Sanaei Shaar (Representative of the Deputy Minister of Health)
- Dr. Shahram Ejtemaei Mehr
- Dr. Davoud Omi
- Dr. Mohammad Hossein Pourkazemi
- Dr. Jamshid Kermanchi (Representative of the Deputy Treatment)
- Dr. Mohammad Taghi Joghtaei
- Dr. Jamshid Hajati
- Dr. Seyed Ali Hosseini
- Dr. Ahmad Khaleghnejad-Tabari
- Dr. Javad Rafinajad (Representative of the Deputy Minister of Research and Technology)
- Dr. Abbas Manzavi
- Dr. Mohammad Reza Mansoori
- Dr. Mansour Razavi

Invited:

- Dr. Seyed Ali Keshavarz
- Dr. Hadi Tabibi
- Dr. Saeid Hoseini
- Dr. Abdolreza Norouzy
- Dr. Mohammad Reza Safarian
- Dr. Raika Jamali
- Dr. Abdolreza Mortazavi Tabatabai

List of attendees of the High Council for Medical Sciences Planning at the time of approval of the clinical nutrition curriculum for the non-continuous master

- Dr. Seyed Hassan Hashemi
- Dr. Baqer Larijani
- Dr. Reza Malekzadeh
- Dr. Mohammad Haji Aghajani
- Dr. Rassoul Dinarvand
- Dr. Aliakbar Sayyari
- Dr. Mohammad Mirzabeigi
- Dr. Seyed Hassan Emami Razavi
- Dr. Saeid Asgari
- Dr. Hamid Akbari
- Dr. Mohammd Hosein Pourkazemi
- Dr. Mehdi Tehrani Doost
- Dr. Mohammad Taghi Joghtaei
- Dr. Jamshid Hajati
- Dr. Alireza Zali
- Dr. Ali Akbar Haghdoost
- Dr. Seyed Amir Mohsen Ziaei
- Dr. Hossein Keshavarz
- Dr. Abbas Manzavi
- Dr. Mohammad Reza Sabri
- Dr. Feridoun Noohi
- Dr. Mohammad Abdollahi
- Dr. Masour Razavi
- Dr. Tahereh Changiz
- Dr. Seyed Abdolreza Mortazavi Tabatabai
- Ms. Raheleh Daneshnia

Chapter One

Specialized Training Non-Continuous Master's Program

Clinical Nutrition

Introduction:

Proper nutrition is a fundamental requirement for human beings. Improper nutrition, coupled with insufficient or excessive intake of nutrients, can increase the incidence of non-communicable diseases. Such diseases include obesity, thinness, cardiovascular diseases, osteoporosis, endocrine disorders, various types of malnutrition, immune disorders, digestive problems, and metabolic disorders, which can also lay the groundwork for the occurrence of cancers. The importance of this will double in the field of diseases, and patients need to adjust proper diets according to their conditions, so that in addition to receiving current treatments, they can be cured in this way. The purpose of creating this course was to achieve this specific goal. The drafting committee will welcome the constructive opinions of experts to correct and eliminate the program's shortcomings.

Course Title in Persian and English: Clinical Nutrition

Degree: Non-Continuous Master

Definition of the Field:

Clinical nutrition is a branch of the field of nutrition science, the purpose of which is to adjust proper diets and provide appropriate nutritional counseling to patients in hospitals and hospital clinics.

Conditions and method of student admission:

A: Passing the entrance exam is in accordance with the rules and regulations of the Ministry of Health and Medical Education.

B: Having a bachelor's degree in nutrition science

Test items and their coefficients:

Row	Test Items	coefficients
1	Basic Nutrition	2
2	diet therapy	2
3	biochemistry	2
4	Physiology	2
5	general language	2

*For more information about the latest changes in accepted academic degrees exam materials and entrance exam coefficients for the academic year, refer to the non-continuous master's exam booklet for medical sciences related to that academic year.

History and Evolution of the Course in the World and Iran:

Master's course in clinical nutrition and diet therapy in universities in different countries including America, Canada, England, Australia, etc. has been launched for more than 30 years. The nutrition sciences field was launched in 1961 with a Bachelor's, in 1972 master's, and in 1995 at the doctoral, respectively. Apart from the three levels of education in the field of nutrition science, there are also master's degrees available in health sciences with a focus on nutrition and nutrition science specifically for crises and unforeseen events.

Philosophy (Values and Beliefs) (Values):

In compiling this program, the following values are emphasized:

- Health-oriented and health promotion
- Improving the quality of life
- Giving importance to the nutritional needs of patients and interfering with current treatments
- Considering the practicality of the suggested diets
- Considering the side effects of nutritional supplements in underlying diseases and disorders

Perspective (Vision):

In the next decade, it is expected that a nationwide system of clinical nutrition and diet therapy can be established, with the help of a sufficient number of trained senior clinical nutrition experts. First of all this system will provide appropriate diets and accurate nutrition counseling to patients and also, it will contribute to the advancement of clinical nutrition and diet therapy by conducting original and practical research.

Mission:

The mission of this field is to train knowledgeable and capable graduates who can adjust proper diets for patients, provide appropriate nutrition counseling, and conduct research in the field of clinical nutrition.

Employment Status of Graduates:

Hospitals, clinics, educational centers, and research centers

Roles of Educated People in Society:

Graduates of this field will perform duties in the following roles in the society:

- Evaluation and analysis of the nutritional status of patients
- Determining diets for hospitalized patients
- Providing correct nutritional advice to doctors and patients
- Evaluation of food interactions with prescription drugs by the treating physician of the patients
- Nutrition training for inpatients and outpatients, participation in lower-level trainings, and training for community members
- Participation in academic research of units and research centers and national research
- Technical supervision in the food service department of the hospital

- Nutritional counseling in hospitals as a member of the treatment team

Competencies and Skills Expected:

A: The general expected competencies

- Communication-interaction skills
- Patient Education
- Research and write scientific articles
- Critical thinking and problem-solving skills
- Evidence-based management skills
- Team working

B: The expected special competencies

The expected special competencies of these people are:

- Evaluation of nutritional status of patients
- Setting up suitable diets for patients
- Providing correct nutritional advice to patients
- How to monitor prescribed diets
- Designing a research project in the field of clinical nutrition

The practical expected competencies:

- Practical evaluation of the nutritional status of patients
- Practicing the adjustment of suitable diets for patients
- Practical implementation of providing correct nutritional advice to patients
- Practical monitoring of prescribed diets

Educational strategies:

This program is based on the following strategies:

Student-Centered vs. Teacher-Centered Learning

Training based on the needs of patients in the hospital

Problem-solving based learning

Teaching methods and techniques:

The main following teaching methods and techniques will be used:

All kinds of conferences and seminars

Discussion in small groups of educational workshops - Journal Club - Case presentation

Education in the nutrition clinic

Participate in clinical and bedside rounds

Ethical expectations of learners:

Learners are expected to follow and obey:

- The patients' legal charter (1) closely.
- The regulations related to the protection and safety of patients, employees, and the workplace. (These rules are reviewed by the relevant department).
- The rules related to Dress Code (2).
- Protect the resources and equipment they work with under any circumstances.
- Respect faculty, staff, peers, and other learners, and participate in creating a friendly and respectful atmosphere in the workplace.
- Observe social and professional ethics considerations in critique of programs.
- Observe the ethics of research in evaluating studies as well as conducting research.

* Items 1, 2, and 3 are presented in the appendices section.

Student Assessment

A) Evaluation Method:

The student will be evaluated by the following methods:

- OSCE exam
- Case presentation method
- 360-degree assessment
- Log-book method

B) Frequency of evaluation:

2 times (in the middle of the semester and at the end of the semester)

Chapter Two

Minimum Training Program Requirements

Designing an Executive Overview of a Training Program:

A: The executive training group consists of faculty members with the following composition:

In order to offer a master's course in clinical nutrition, universities must have a nutrition education group that meets the standards outlined in the relevant bylaws. Additionally, the course requires three full-time faculty members who hold doctorate degrees in clinical nutrition or nutrition sciences.

Supporting Departments:

Department of Pharmacology

Internal diseases group (general digestion, cardiovascular glands, etc.)

Childhood diseases group

Special Interest groups

Statistics group

Staff required to implement the program:

Nutritionist

General educational spaces and facilities required:

- Classrooms
- Conference Hall
- Professors' room
- Internet with sufficient speed
- Library
- Education archive
- Dedicated educational website of the educational group
- Computer site
- Preferably having a clean room

Special spaces and areas required:

- Nutrition unit of educational hospitals
- Professors and student's room in a teaching hospital

Required population or samples:

- Inpatients and outpatients

Major specialized equipment (capital) Required:

- Wheelchair scale
- Normal weighing scales
- body composition measuring device
- Indirect calorimetry device
- Enteral feeding pump

Chapter Three

Training program specifications

Non-Continuous Master's Program

Clinical Nutrition

Course Details:

1- **Course Name:** Non-Continuous Master in Clinical Nutrition
2- **Course length and structure:** The length of the course and the structure of the educational system of this field are in accordance with the curriculum of the non-continuous master's degree and approved by the Supreme Council of Medical Sciences Planning.
3- **Total Number of Credits:** The number of credits in this course is 32, which are as follows:

Mandatory specialized credits (core): 28 credits

Thesis: 4 credits

Total: 32 credits

Table A – Deficiency or Compensation Courses of the Non-Continuous Master in Clinical Nutrition Field

Lesson code	Name of Course	Number of credits				Course hours				Prerequisite or Concurrent
		Theoretical	Practical	internship	Total	Theoretical	Practical	internship	Total	
1	Medical Information Systems	0.5	0.5	-	1	9	17	-	26	-
2	Basic Nutrition (1)	3	-	-	3	51	-	-	51	-
3	Basic Nutrition (2)	3	-	-	3	51	-	-	51	-
4	The Principles of Meal Planning	1	-	-	1	17	-	-	17	-
5	Food Service Management	2	-	1	3	34	-	51	85	-
6	Principles of Nutrition Education and Counseling	2	-	-	2	34	-	-	34	-
	Total	13								

Students are required to pass the diagnosis of the department and the approval of the Graduate Council of the University with all a number of deficiency or compensatory courses (Table A).

* Passing this course is mandatory for all students who have not passed it before.

Table B - Compulsory specialized courses of the Ph.D. program in Medical Ethics Field

Lesson code	Name of Course	Number of credits				Course hours				Prerequisite or Concurrent
		Theoretical	Practical	internship	Total	Theoretical	Practical	internship	Total	
7	Advanced Vital Statistics	1.5	-	-	1.5	26	-	-	26	-
8	Research Method in Nutrition Science	1.5	-	-	1.5	26	-	-	26	-
9	Pathophysiology of Endocrine Diseases	1	-	-	1	17	-	-	17	-
10	Pathophysiology of Cardiovascular Diseases	1	-	-	1	17	-	-	17	-
11	Pathophysiology of Digestive Diseases	1	-	-	1	17	-	-	17	-
12	Pathophysiology of Kidney Diseases	1	-	-	1	17	-	-	17	-
13	Pharmacology	2	-	-	2	34	-	-	34	-
14	Clinical Nutrition and Applied Diet Therapy(1)	2	1	-	3	34	51	-	85	-
15	Clinical nutrition and applied diet therapy(2)	2	1	-	3	34	51	-	85	13,14
16	Clinical nutrition and applied diet therapy(3)	2	1	-	3	34	51	-	85	15
17	Clinical Nutrition and Diet Therapy Seminar	1	-	-	1	17	-	-	17	8
18	Internship in clinical nutrition and diet therapy	-	-	9	9	-	-	68	612	14,15,16
19	Thesis	4								
	Total	32								

Title of training workshops required for the course :

- Endnote Workshop

Course Name :Medical Information Systems **Course code: 01**

Prerequisite or Concurrent: None

Number of Credits: 1 (0.5 Theoretical, 0.5 Practical)

Credit Type: Theoretical & Practical

Overall Course Objectives :

This unit aims to familiarize students with the Windows operating system personal computers, important databases, software related to their field of study, and essential search engines on the Internet.

Outlines: (9 theoretical hours)

- Familiarity with various hardware components of a personal computer and its accessories
- The function and importance of each hardware component and its accessories
- Familiarity with the history of advanced operating systems, especially Windows
- Functionality and features of the Windows operating system
- How to install and set up the Windows operating system and how to configure it
- Familiarity with important Windows applications
- Introducing information concepts and terminology
- Familiarity with the software used in the field of study and how to use them
- Familiarity with databases such as Medline, etc, and its features.
- Familiarity with magazines and electronic books and methods of searching in them
- Familiarity with the internet works and its important search engines, especially Persian scientific search engines such as SID and Mediran
- Familiarity with EndNote software

Outlines: (17 practical hours)

Medical information resources on the web

- Introducing the types of information sources and their classification
- Introducing the features of an electronic magazine and how to search and retrieve its articles
- Introducing MeSH medical thesaurus (printed and electronic) to find and select research keywords
- Introducing databases and electronic journals such as (.OVID, Blackwell Synergy ,Web of Knowledge Science Direct, Scopus, SID, Google Scholar, Web of Science (Medline, PubMed, Cochrane
- Setting up case notification (such as alert)
- Some scientific criteria

1- Impact factor and authors 2- H-index

- Familiarity with a reference management software EndNote or Reference Manager

References:

H.U Prokososch T.Dudeck, Design & Development Characteristics. Amsterdam: Esevier. Last Edition

Student's evaluation:

- writing test
- practical test

Course Name: Basic Nutrition (1) **Course code: 02**

Prerequisite or Concurrent: None

Number of Credits: 3

Credit Type: Theoretical

Overall Course Objectives :

Upon completion of this course, students should be able to demonstrate an understanding of the nutritional principles of carbohydrates, fiber, fat, protein, energy, and body composition.

Course Description:

This lesson is the basis of entering the science of nutrition with accurate and practical knowledge of carbohydrates, fiber, fat, protein, energy, and body composition.

Outline: 51 theoretical hours

- Definitions and overviews of nutrition science. Key concepts about macronutrients
- Briefly about the biochemistry of carbohydrates, the types of importance, and the nutritional role of each in the diet of carbohydrate substitute sweeteners. Dietary fibers and their importance in the diet, metabolism of carbohydrates (digestion, absorption, transport, storage)
- Hormonal control of carbohydrate metabolism, food sources, their effects on oral and dental health and cardiovascular diseases, brief information about carbohydrate metabolism disorders
- Briefly about the biochemistry of proteins, their importance and nutritional role, classification of amino acids, protein indices, digestion, absorption, metabolism and factors affecting their consumption, nitrogen balance, the amount of protein required in different age groups and physiological conditions, food sources, how to determine the need for protein, metabolic disorders of amino acids and disorders caused by protein deficiency
- Types of fats (triglycerides, phospholipids, steroids, etc.) and their role in the body, fatty acids and their food sources, fat metabolism (digestion, absorption, transfer, storage, excretion), amounts required for essential fatty acids, complications related to the lack of essential fatty acids and disorders related to the consumption of fats in the body
- The methods used in determining body composition and the effects of nutrition, physical activity, growth, and aging on it
- Components of body energy consumption, factors affecting them, and methods of measuring each of them

- Energy unit and food energy measurement, recommended amounts of energy in different periods of life, energy balance and factors affecting it

References:

1- :Mahan L K and Escott-Stump S. Krause's Food, Nutrition & Diet Therapy, Philadelphia WB Saunders.Last Edition
2- .Shils ME, Olson JA. Shike M, Ross AC. Modern Nutrition in Health & Disease Philadelphia: Lippincott Williams & Wilkins. Last Edition
3- Garrow JS, James WPT, Ralph A, Human Nutrition & Dietetics. Churchill Livingstone. Last Edition

Student's evaluation:

- Midterm and final written exams
- class activity

Course Name: Basic Nutrition (2) **Course code: 03**

Prerequisite or Concurrent: None

Number of Credits: 3

Credit Type: Theoretical

Overall Course Objectives :

Upon completion of this course, the student is expected to be able to explain the nutritional principles of vitamins, minerals, and water.

Course Description:

As a part of the principles of nutrition science, this unit is the basis for students to get acquainted with the nutritional importance of vitamins, minerals and water.

Outline: 51 theoretical hours

- Classification, importance and history of vitamins
- The vital role, digestion and bioavailability of metabolism of effective factors in the deficiency and complications resulting from poisoning
- Daily requirements and dietary sources of water-soluble vitamins
- The vital role of digestion and absorption, bioavailability, metabolism, effective factors in deficiency and its complications, toxicity, daily requirements and dietary sources of fat-soluble vitamins.
- Definition and importance of pseudo-vitamins and anti-vitamins
- The vital role of digestion and absorption, bioavailability, metabolism of effective factors in the deficiency and complications resulting from poisoning
- Daily requirements and food sources of macro minerals

- The vital role of digestion and absorption, bioavailability, metabolism, effective factors in deficiency and its complications, poisoning, daily requirements and food sources of trace minerals.
- The vital role of digestion and absorption, bioavailability, metabolism, effective factors in deficiency and the resulting complications, poisoning, daily required amounts and food sources of very rare elements.
- The vital role of water, the distribution and balance of water in the body, dehydration and water intoxication

References:

1- .Mahan L K and Escott-Stump S. Krause's Food, Nutrition & Diet Therapy Philadelphia: WB. Saunders Company. Last Edition
2- & Shils ME, Olson JA, Shike M. Ross AC. Modern Nutrition in Health Disease.Philadelphia: Lippincott Williams & Wilkins. Last Edition
3- Garrow JS, James WPT, Ralph A, Human Nutrion & Dietetics. Churchill Livingston. Last Edition

Student's evaluation:

- Midterm and final written exams
- class activity

Course Name: The Principles of Meal Planning **Course code: 04**

Prerequisite or Concurrent: None

Number of Credits: 1

Credit Type: Theoretical

Overall Course Objectives :

Upon completion of this course, students will be able to design and adjust meal plans based on the nutritional needs, socio-economic conditions, food habits, and culture of individuals or groups.

Course Description:

This course introduces students to the basics of how to set meal plans to provide nutritional services.

Outline: 17 theoretical hours

- Principles of food planning
- Dietary Guidelines and Food Groups
- Succession list
- Dietary Reference Intakes, its components and how to use them in the diet

- Nutritional needs of each age-sex group according to physiological conditions and physical activity
- Indicators of adequacy and variety of diet
- Tables of food ingredients
- Food Labeling
- How to adjust the diet for a healthy person

References:

1- Mirmiran P, principles of food planning in Tehran, Special Diseases Affairs Foundation, Last edition
2- Mahan. LK, Escott-Stump S. Kraus's Food, Nutrition and Diet Therapy. Philadelphia WB. Sounder. Last Edition

Student's evaluation:

- Midterm and final written exams
- class activity

Course Name: Food Service Management **Course code: 05**

Prerequisite or Concurrent: None

Number of Credits: 3 (2 Theoretical & 1 Internship)

Credit Type: Theoretical- Internship

Overall Course Objectives:

Upon completion of this course, the student will possess the skills necessary to plan and manage food service programs for various organizational groups in different food preparation and distribution centers.

Course Description:

This course is the basis for familiarizing students with the management and planning of food preparation and distribution and ensuring its quality in group food service centers.

Outline: 34 theoretical hours

- Principles and types of food service systems and subsystems, especially group feeding services and its practical training
- How to plan and prepare food menu and its practical training
- Organizing, planning and monitoring the preparation and distribution of food, including purchasing, storage, how to prepare food and its quality, and the methods of food distribution and its practical training.
- National and international principles and standards of health and safety of environmental workers and its equipment and practical training
- Principles of human resource management and its practical training
- Setting the budget and financial reports and its practical training

- Principles of building design and arrangement of internal components of group food service centers and its practical training

Outline: 51 Internship hours

Practical training of the above-mentioned contents during the internship

References:

1- West BB, Wood L. Food Service in Institutions. New York: Macmillan Publishing Company. Last Edition
2- Splaver B. Successful Catering. New York: Reinhold Last Edition.

Student's evaluation:

- written exams
- Internship report done in the hospital

Course Name: Principles of Nutrition Education and Counseling **Course code: 06**

Prerequisite or Concurrent: None

Number of Credits: 2

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student is expected to be familiar with different nutrition education and counseling methods and to design and implement a suitable training program.

Course Description:

This course is the basis of students' familiarity with the design of nutritional education programs and nutritional messages, and to discuss and apply nutritional counseling and education strategies and evaluation methods of educational programs and resources.

Outline: 24 theoretical hours

- Learning theories and models of behavior and behavior change and their application in nutrition education
- Communication skills (verbal, written, and non-verbal communication skills)
- Types of counseling, stages of counseling, nutritional counseling components
- Principles of designing and implementing nutrition education programs and messages
- Methods of preparing and evaluating educational materials
- The use of mass media and how to work with them in promoting nutritional health
- Types of interviews, interview conditions, interview sections
- Developing and implementing an educational program to change the behavior of the target group in relation to a common nutritional problem in that group

References:

1- Bauer K. Sokolik C. Basic Nutrition Counseling: Skill Development. Belmont: Wadsworth،Thomson Learning. Last Edition
2- Curry KR, Jaffe A. Nutrition Counseling & Communication Skills. Philadelphia: W.B. Saunders. Last Edition
3- Gable J. Counselling Skills for Dietitians. Oxford: Blackwell. Last Edition

Student's evaluation:

- written exams
- class activity

Course Name: Advanced Vital Statistics **Course code: 07**

Prerequisite or Concurrent: None

Number of Credits: 1.5

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to use different statistical methods in the statistical analysis of research data using statistical software.

Course Description:

This course is the basis of familiarizing senior experts in clinical nutrition and diet therapy as researchers with various statistical tests for statistical analysis of research data using statistical software.

Outline: 26 theoretical hours

- An overview of central indices (including the mean, median, mode or face) and dispersion indices (including the length of the field of changes, mean deviations, variances and standard deviations, the concepts of probability, binomial distributions and the normal distribution, distance estimation for the population mean and proportion, and the concepts of hypothesis testing and types of errors
- An overview of the mean comparison test in two independent populations, the mean comparison test in paired samples and the ratio comparison test in two independent populations and the use of SPSS software to perform them

- The test of the relationship between qualitative variables (chi-square), the test of correlation coefficient and simple and multivariate linear regression and the use of SPSS software to perform them.
- One-way analysis of variance test, analysis of variance for repeated data, covariance analysis and factor analysis and using SPSS software to perform them.
- Testing the compatibility of distribution of quantitative variables with normal distribution and using SPSS software to do them
- Non-parametric tests include Mann-Whitney, Wilcoxon, McNemar, Friedman, Kruskal, Wallis, and Speer-Mann correlation coefficient and use SPSS software to perform them.

References:

1- Rosner B. Fundamentals of Biostatistics. Belmont: Duxbury Press. Last Edition

2- Norman GR, Streiner DL. Biostatistics: The Bare Essentials. Baltimore: Mosby. Last Edition

3- Munro BH. Statistical Methods for Health Care Research. Philadelphia: Lippincott. Last Edition

4- Dunn OJ, Clark VA. Applied Statistics: Analysis of Variance and Regression. New York: John Wiley & Sons. Last Edition

5- Winer BJ, Brown DR, Michels KM. Statistical Principles in Experimental Design. New York: McGraw-Hill. Last Edition

6- Siegel S. Castellan NJ. Nonparametric Statistics for the Behavioral Sciences:New York: McGraw-Hill. Last Edition

7- Mohammad.K Malek Afzali.H, Nahaptian.V , Statistical methods and health indicators of Tehran, Last edition

Student's evaluation:

- written final exams
- Class activities including interpreting the statistical analysis section of research articles

Course Name: Research Method in Nutrition Science **Course code: 08**

Prerequisite or Concurrent: None

Number of Credits: 1.5

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student is expected to explain various epidemiological studies and be able to prepare a research proposal.

Course Description:

This course is the basis of familiarizing the senior experts of clinical nutrition and diet therapy as a researcher with various epidemiological studies and designing research proposals.

Outline: 26 theoretical hours

- An overview of how to choose a research topic and different components of a research proposal, including the research title, statement of the problem, practical definition of words, overview of previous studies, research questions, research objectives and hypotheses, research variables, study type, sample size, sampling method, data collection methods and study implementation, statistical analysis of data, ethical considerations, scheduling and budgeting, sources and attachments as well as developing a research proposal
- Types of studies include case studies, studies based on existing data, cross-sectional studies, case-control studies, cohort studies, and intervention studies and how to design a research proposal for each of them.
- How to write a final report of a thesis research project and also how to write an essay

References:

1- Hulley SB. Cummings SR. Browner WS, Grady D, Hearst N, Newman TB. Designing Clinical Research: An Epidemiologic approach. Philadelphia: lippincott Williams & wilkins, Last Edition

2- Varkevisser CM. Pathmanathan I. Brownlee A. Designing and Conducting Health Systems Research Projects. Part I: Proposal Development and Fieldwork. Ottawa: International Development Research Centre. Last Edition

3- Varkevisser CM, Pathmanathan 1, Brownlee A. Designing and Conducting Health Systems Research Projects, Part II. Data Analysis and Report Writing. Onawa International Development Research Centre. Last Edition

4- Margetts BM. Nelson M. Design Concepts in Nutritional Epidemiology. Oxford: Oxford University Press Last Edition

5- Willett W. Nutritional Epidemiology. New York: Oxford University Press. Last Edition
6- Authors group of World Health Organization, research in health systems, last edition
7- World Health Organization Western Pacific Regional Office Training Guide on Research Methodology in Health. Last edition

Tehran: Publications of the Ministry of Health and Medical Education Research Deputy. Last edition

Student's evaluation:

- written exams
- Developing a research proposal

Course Name: Pathophysiology of Endocrine Diseases **Course code: 09**

Prerequisite or Concurrent: None

Number of Credits: 1

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to understand the causes of the disease, the mechanism of the disease, semiology, clinical features and complications, laboratory features and their interpretation, the methods of diagnosing awakening and how to treat it in the case of endocrine diseases.

Course Description:

This lesson is the basis of knowing the causes, the disease, the mechanism of the disease, clinical characteristics and complications, laboratory characteristics and getting familiar with their interpretation, the methods of diagnosing the disease, and how to treat it in the case of endocrine diseases, which is necessary to carry out the treatment regimen in the field of endocrine diseases.

Outline: 17 theoretical hours

- Causes, mechanisms, clinical features and complications, laboratory features and familiarity with their interpretation, diagnosis, and treatment methods for type 1 diabetes, type 2 diabetes, diabetic gastroparesis, gestational diabetes, hypoglycemia,

metabolic syndrome and also bone disorders (including rickets, osteomalacia and osteoporosis) in adults and children

- Causes, mechanisms, clinical characteristics, laboratory characteristics and familiarity with their interpretation, methods of diagnosis and treatment of polycystic ovary syndrome, disorders caused by the secretion of hormones of the cortical part of the adrenal glands (Addison's disease, Cushing's syndrome), disorders caused by the secretion of growth hormone, disorders caused by the secretion of thyroid hormones, pheochromocytoma, diabetes insipidus, syndrome of excessive secretion of antidiuretic hormone, disorders caused by the parathyroid glands in adults and children.

References:

1- McPhee SJ, Ganong WF. Pathophysiology of Disease: An Introduction to Clinical Medicine New York: Lange Medical Books/MeGraw-Hill, Last Edition
2- Port CM. Pathophysiology: Concepts of Altered Health. Philadelphia: lippincott Williams & Wilkins. Last Edition
3- Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL. Harrison's Principles of Internal Medicine. New York: McGraw-Hill. Last Edition
4- Kliegman R. Behrman RE. Nelson WE, Jenson HB. Nelson Textbook of Pediatrics Philadelphia: Saunders. Last Edition

Student's evaluation:

- written final exams

Course Name: Pathophysiology of Cardiovascular Diseases **Course code: 10**

Prerequisite or Concurrent: None

Number of Credits: 1

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to explain the causes of the disease, the mechanism of the disease, semiology, clinical features and complications, laboratory features and familiarity with their interpretation, the methods of diagnosing the disease and how to treat it in the case of cardiovascular diseases.

Course Description:

This lesson is the basis of knowing the causes of the disease, the mechanism of the disease, clinical features and complications, laboratory features and familiarity with their

interpretation.the methods of diagnosis and the treatment of cardiovascular diseases, which is necessary to carry out the treatment regimen in the field of cardiovascular diseases.

Outline: 17 theoretical hours

Causes, mechanisms, clinical features, and side effects, laboratory features and familiarity with their interpretation, methods of diagnosis and treatment of lipid abnormalities, high blood pressure, acute coronary syndrome (myocardial infarction, unstable angina pectoris, etc.), heart failure, cardiomyopathy and peripheral vascular diseases in adults and children

References:

1- McPhee SJ, Ganong WF. Pathophysiology of Disease: An Introduction to Clinical Medicine. New York: Lange Medical Books/McGraw-Hill. Last Edition
2- Port CM. Pathophysiology: Concepts of Altered Health. Philadelphia: lippincott Williams & Wilkins. Last Edition
3- Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL. Harrison's Principles of Internal Medicine. New York: McGraw-Hill. Last Edition
4- Kliegman R. Behrman RE, Nelson WE, Jenson HB. Nelson Textbook of Pediatrics. Philadelphia: Saunders. Last Edition

Student's evaluation:

- written final exams

Course Name: Pathophysiology of Digestive Diseases **Course code: 11**

Prerequisite or Concurrent: None

Number of Credits: 1

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student should be able to explain the causes of the disease, the mechanism of the disease, semiology, the clinical features of the complications, the laboratory features and familiarity with their interpretation, the methods of diagnosing the disease and how to treat it in the case of diseases of the digestive tract, liver and pancreas.

Course Description:

This lesson is the basis of knowing the causes of the disease, the mechanism of the disease, clinical features and complications, laboratory features and familiarity with their interpretation, the methods of diagnosing the disease and how to treat it in the case of diseases of the digestive tract, liver and pancreas. In order to carry out a treatment regimen in the field of diseases of the digestive tract, liver and pancreas, it is necessary to have enough information about the above.

Outline: 17 theoretical hours

- Causes, mechanisms, clinical features and complications, laboratory features and familiarity with their interpretation, diagnosis methods and how to treat nausea, vomiting, dry mouth, bad taste in the mouth, inflammation of the esophagus caused by gastric acid reflux (GERD), Dysphagia (achalasia, esophageal stricture, etc.), esophageal cancer, indigestion, pythic ulcers (stomach and duodenal ulcers), stomach cancer, gastrectomy and its complications, constipation, diarrhea (steatorrhoea and malabsorption syndromes, sporo, celiac disease, food allergies and intolerances, especially to lactose), inflammatory bowel diseases, irritable bowel syndrome, Short bowel syndrome, cecum syndrome, diverticula, fistulas and stoma, bacterial overgrowth syndrome and colon cancer in adults and children.
- Causes, mechanisms, clinical features and complications, laboratory features and familiarity with their interpretation, diagnosis and treatment methods of acute and chronic hepatitis, fatty liver, liver cirrhosis, gallstones (cholangitis, cholestasis), acute and chronic cholecystitis, liver and bile duct cancer and cerebrocystectomy in adults and children
- Causes, mechanisms, clinical features and complications, laboratory features and familiarity with their interpretation, methods of diagnosis and treatment of acute and chronic pancreatitis, pancreatic cancer in adults and children.

References:

1- McPhee SJ, Ganong WF. Pathophysiology of Disease: An Introduction to Clinical Medicine. New York: Lange Medical Books/McGraw-Hill. Last Edition
2- Port CM. Pathophysiology: Concepts of Altered Health. Philadelphia: lippincott Williams & Wilkins. Last Edition
3- Kasper DL, Braunwald E, Fauci AS, Hauser SL, Longo DL, Jameson JL. Harrison's Principles of Internal Medicine. New York: McGraw-Hill. Last Edition

4- Kliegman R. Behrman RE, Nelson WE, Jenson HB. Nelson Textbook of Pediatrics. Philadelphia: Saunders. Last Edition

Student's evaluation:

- written final exams

Course Name: Pathophysiology of Kidney Diseases **Course code: 12**

Prerequisite or Concurrent: None

Number of Credits: 1

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to explain the causes of the disease, the mechanism of the disease, semiology, clinical features and complications, laboratory features and familiarity with their interpretation, the methods of diagnosing the disease, and how to treat it in the case of kidney diseases.

Course Description:

This lesson is the basis of knowing the causes of the disease, the mechanism of the disease, clinical features and complications, laboratory features and familiarity with their interpretation, the methods of diagnosing the disease, and how to treat it in the case of kidney diseases, which is necessary to carry out the treatment regimen in the field of kidney diseases.

Outline: 17 theoretical hours

Causes, mechanisms, clinical features and complications, laboratory features and familiarity with their interpretation, diagnosis methods and treatment methods for chronic kidney failure, acute kidney failure, nephrotic syndrome, diabetic nephropathy, kidney stones and urinary infections in adults and children.

References:

1- McPhee SJ. Ganong WF. Pathophysiology of Disease: An Introduction to Clinical Medicine. New York: Lange Medical Books/McGraw-Hill. Last Edition
2- Port CM. Pathophysiology: Concepts of Altered Health. Philadelphia: lippincott Williams & Wilkins. Last Edition
3- Kasper DL, Braunwald E. Fauci AS, Hauser SL. Longo DL, Jameson JL. Harrison's Principles of Internal Medicine. New York: McGraw-Hill. Last Edition

4- Kliegman R, Behrman RE, Nelson WE, Jenson HB. Nelson Textbook of Pediatrics. Philadelphia: Saunders. Last Edition

Student's evaluation:

- written final exams

Course Name: Pharmacology **Course code: 13**

Prerequisite or Concurrent: None

Number of Credits: 2

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, The student should be able to describe the pharmacology of synthetic and natural drugs for diseases of the digestive tract, liver, exocrine part of the pancreas, kidney, neurological diseases, anti-cancer drugs, anti-infectious diseases, drugs used in cardiovascular diseases, endocrine diseases, inflammatory diseases, and gout, as well as obesity and slimming, and explain their mechanism of action.

Course Description:

This course is the basis of familiarization of senior clinical nutrition experts as members of medical personnel with various synthetic drugs and their use in digestive diseases, liver, exocrine part of pancreas, kidney, neurological diseases, anti-cancer drugs, anti-infectious diseases, drugs used in cardiovascular diseases, endocrine diseases, inflammatory diseases and gout, as well as obesity and thinness and understanding their mechanism of action.

Outline: 34 theoretical hours

- Principles of pharmacokinetics and pharmacodynamics of drugs
- Principles of drug metabolism
- Drugs affecting the peripheral and autonomic central nervous system
- Non-steroidal anti-inflammatory drugs and anti-gout
- Medicines that affect the cardiovascular system and reduce blood lipids
- Drugs affecting the endocrine system
- Effective drugs for obesity and slimming
- Medicines against bacterial, viral, parasitic and worm infections
- Anticancer drugs

- Drugs affecting the immune system
- Anticoagulants and effective against anemia
- Drugs affecting the respiratory system
- Vitamin supplements, solute supplements and other food supplements and drug-food interactions

References:

1- Hardman JG, Limbird LE. Goodman & Gilman's the pharmacological Basis of Therapeutics. New York. McGaraw-Hill. Last Edition
2- Katzung BG. Basic & Clinical Pharmacology. London: Prentice-Hall International. Last Edition

Student's evaluation:

- written final exams

Course Name: Clinical Nutrition and Applied Diet Therapy(1) **Course code: 14**

Prerequisite or Concurrent: None

Number of Credits: 3 (2 Theoretical, 1 Internship)

Credit Type: Theoretical- Internship

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to adjust treatment regimens in the field of obesity, weight loss, cardiovascular diseases, endocrine (especially diabetes), rheumatic disorders and food allergies and provide the necessary nutritional recommendations in these cases.

Course Description:

This lesson is the basis of regulating therapeutic regimens in the field of obesity, weight loss, cardiovascular diseases, endocrine glands, rheumatic disorders, and food allergies, which are an important part of the activities of senior experts in clinical nutrition and diet therapy.

Outline: 34 theoretical hours

- Evaluation of the disease status and nutritional status of adults, adolescents and children with obesity, thinness, cardiovascular diseases, endocrinology (especially diabetes) and rheumatic disorders.
- Adjusting diets for adults (including the elderly), teenagers and children with normal weight, obese and thin and providing necessary nutritional recommendations
- Adjusting diets for adults, adolescents and children with risk factors related to cardiovascular diseases (lipid abnormalities, high blood pressure, obesity, etc.), acute coronary syndromes (myocardial infarction, angina pectoris, etc.), heart failure, cardiomyopathy, peripheral vascular diseases, heart transplantation and providing necessary nutritional recommendations in each case
- Regulating diets for adults, adolescents, and children with type 1 diabetes, type 2 diabetes, diabetic gastroparesis, hypoglycemia, and metabolic syndrome and providing the necessary nutritional recommendations in each case
- Adjusting diets for pregnant and lactating mothers without disease, pregnant mothers with pre-eclampsia or eclampsia, diabetic pregnant and lactating mothers, and mothers with gestational diabetes and providing necessary nutritional recommendations in each case
- Regulating diets for adults, teenagers, and children without diseases and diabetic athletes and providing the necessary nutritional recommendations in each case.
- Adjusting diets for adults, adolescents and children with polycystic ovary syndrome, disorders caused by the secretion of hormones in the cortical part of the adrenal glands (Addison's disease, Cushing's syndrome), disorders caused by the secretion of growth hormone, disorders caused by the secretion of thyroid hormones, photochromocytoma, diabetes insipidus, syndrome of high secretion of antidiuretic hormone, disorders caused by the secretion of parathormone and providing the necessary nutritional recommendations in each case
- Adjusting diets for people with rheumatic disorders, including rheumatoid arthritis and gout, and providing the necessary nutritional recommendations in each case.
- Adjusting diets for people with food allergies and providing necessary nutritional advice in each case
- Drug-food interactions related to any of the above-mentioned diseases

Outline: 51 internship hours

Practical training of the above-mentioned content during internship

References:

1- Nonas C, Foster G. Managing Obesity: A Clinical Guide. American Dietetic Assocation. Last Edition
2- Mullen MC. Shield J. ADA Pocket Guide to Pediatric Weight Management American Dietetic Assocation. Last Edition
3- Carson JAS, Burke FM, Hark LA. Cardiovascular Nutrition: Disease Management and Prevention. American Dietetic Assocation. Last Edition
4- Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ. Modern Nutrition in Health and Disease. Philadelphia: Lippincott Williams & Wilkins. Last Edition
5- Education. American Dietetic Assocation. Last Edition
6- Clinical practice recommendations. Diabetes Care. Last Edition
7- Mahan LK. Escott-Stump S. Krause's Food Nutrition and Diet Therapy. Philadelphia: Saunders. Last Edition
8- Escott-Stump S. Nutrition and Diagnosis - Related care. Baltimore: Lippincott Williams & Wilkins. Last Edition
9- Duford M. Sports Nutrition: A Practice Manual for Professionals. American Dietetic Assocation. Last Edition
10- Zeman FJ. Ney DM. Applications in Medical Nutrition Therapy. New Jersey: Prentice Hall. Last Edition
11- Leonberg BL. ADA Pocket Guide to Pediatric Nutrition Assessment. American Dietetic Assocation. Last Edition

Student's evaluation:

- written final exams
- Class activities
- OSCE test
- Case presentation method

Course Name: Clinical Nutrition and Applied Diet Therapy(2) **Course code: 15**

Prerequisite or Concurrent: None

Number of Credits: 3 (2 Theoretical, 1 Internship)

Credit Type: Theoretical- Internship

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to adjust treatment regimens in the field of digestive tract, liver, pancreas and kidney diseases and provide the necessary nutritional recommendations in these cases and also Calculate, adjust and implement the nutritional needs of patients who need parenteral nutrition or tube feeding.

Course Description:

This lesson is the basis of regulating treatment regimens in the field of diseases of the digestive tract, liver, pancreas, kidney, as well as tube feeding and enteral nutrition, which are an important part of the activities of senior experts in clinical nutrition and diet therapy.

Outline: 34 theoretical hours

- Evaluation of the disease status and nutritional status of adults, adolescents and children with diseases of the digestive tract, liver, pancreas and kidney
- Regulating diets for adults, teenagers and children with nausea, vomiting, dry mouth, bad taste, reflux, dysphagia (achalasia, esophageal stricture, etc.), indigestion, pythic ulcers (gastric and duodenal ulcers), gastrectomy and its complications, constipation, diarrhea (steatorrhea, malabsorption of sperm, celiac disease, food allergies and intolerances, especially to lactose), inflammatory bowel diseases, irritable bowel syndrome, short bowel syndrome, blind bowel syndrome, diverticula, fistulas and ostomies and intestinal transplantation and providing the necessary nutritional recommendations in each case.
- Nutrition and diets in oral and dental diseases
- Adjusting diets for adults, adolescents and children with acute and chronic hepatitis, fatty liver, liver cirrhosis, liver transplant, gallstones (cholangitis, cholestasis), acute and chronic cholecystitis, cholecystectomy and providing necessary nutritional recommendations in each case.
- Regulating diets for adults, adolescents and children with acute and chronic pancreatitis and providing necessary nutritional recommendations in each case.
- Adjusting diets for adults, adolescents and children with chronic kidney failure, undergoing hemodialysis or peritoneal dialysis, with acute kidney failure, nephrotic syndrome, diabetic nephropathy, kidney transplant, kidney stones, urinary infections and providing necessary nutritional recommendations in each case.
- Adjusting diets for adults, teenagers and children with metabolic stress (including surgery, infection, burns, trauma, etc.) and providing necessary nutritional recommendations in each case
- Types of nutritional support methods for patients with metabolic stress
- The different types of tube feeding methods, indications and contraindications of tube feeding, types of formulas for tube feeding and their compositions, the amount and method of prescribing the aforementioned formulas, the side effects of tube feeding, how to feed with a tube at home, evaluation of the nutritional status of patients with tube feeding, essential points about drugs used in patients with tube feeding, and legal points in the field of tube feeding.
- Types of different feeding methods for enteral feeding, indications and contraindications for enteral feeding, types of different methods of access to veins in feeding enteral feeding, types of enteral feeding solutions and their compositions, amount and method of administration of said feeding solutions, complications caused by enteral feeding, how to feed enteral patients at home, evaluating the nutritional status of patients with enteral nutrition, essential points about drugs used in patients with enteral nutrition, and legal points in the field of enteral nutrition.
- Drug-food interactions concerning any of the aforementioned diseases

Outline: 51 internship hours

Practical training of the above-mentioned content during internship

References:

1- Delegge MH. Nutrition and Gastrointestinal Disease. New Jersey: Humana Press. Last Editio
2- Buchman AL. Clinical Nutrition in Gastrointestinal Disease. New Jersey: SLACK incorporated. Last Edition
3- Hull MA. Renal Nutrition. Ashland: Nutrition Dimension. Last Edition
4- Kopple JD, Massry SG. Kopple and Massrys Nutritional Management of Renal Disease. Philadelphia: Lippicott Williams & Wilkins. Last Edition
5- Mitch WE, Ikizler TA. Handbook of Nutrition and the kidney. Philadelphia: Lippincott Williams & Wilkins, Last Edition
6- Byham-Gray LD. Burrowes J. Chertow GM. Nutrition in Kidney Disease New Jersey: Humana Press. Last Edition
7- McCann L. Pocket Guide to Nutritional Assessment of the Patient with Chronic Kidney Disease. New York: National Kidney Foundation. Last Edition
8- Charney P, Malone A. ADA Pocket Guide to Enteral Nutrition. American Dietetic Assocation.. Last Edition
9- Charney P, Malone A. ADA Pocket Guide to Parenteral Nutrition. American Dietetic Assocation. Last Edition
10- Cresci G. Nutrition Support for the Critically Ill Patients: A Guide to Practice. Ontario: Talor & Francis. Last Edition
11- Boullata JI, Carney LN, Guenter P. Enteral Nutrition Handbook. Silver Spering: American Nutrition (ASPEN), Last Edition
12- American Society for Parenteral & Enteral Nutrition. Parenteral Nutrition Handbook. Silver Spering: ASPEN, Last Edition
13- Mahan LK, Escott-Stump S. Krause's Food Nutrition and Diet Therapy. Philadelphia: Saunders. Last Edition
14- Escott-Stump S. Nutrition and Diagnosis - Related care, Baltimore: Lippincott Williams & Wilkins. Last Edition.
15- Zeman FJ. Ney DM. Applications in Medical Nutrition Therapy. New Jersey: Prentice Hall. Last Edition
16- Shils ME, Shike M. Ross AC, Caballero B, Cousins RJ. Modern Nutrition in Health and Disease. Philadelphia: Lippincott Williams & Wilkins. Last Edition
17- Leonberg BL. ADA Pocket Guide to Pediatric Nutrition Assessment. American Dietetic Assocation. Last Edition

Student's evaluation:

- written final exams
- Class activities
- OSCE test
- Case presentation method

Course Name: Clinical Nutrition and Applied Diet Therapy(3) **Course code: 16**

Prerequisite or Concurrent: Clinical Nutrition and Applied Diet Therapy(2)

Number of Credits: 3 (2 Theoretical, 1 Internship)

Credit Type: Theoretical- Internship

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to adjust treatment regimens for rare congenital metabolic diseases of children, brain and nerve diseases, cancers and lung diseases and provide the necessary nutritional recommendations in these cases.

Course Description:

This lesson is the basis of regulating therapeutic regimens in the field of rare congenital metabolic diseases of children, brain and nervous diseases, cancers and lung diseases, which form an important part of the activities of senior experts in clinical nutrition and dietary therapy.

Outline: 34 theoretical hours

- Evaluation of disease status and nutritional status of children with rare congenital metabolic syndrome
- Adjusting diets for children with phenylketonuria, tyrosinemia, homocysteineuria, maple syrup disease, urea cycle disorders, other amino acid metabolism disorders, fructosemia, calactosemia, other carbohydrate metabolism disorders and fatty acid metabolism disorders and providing the necessary nutritional recommendations in each case.
- Assessment of disease status and nutritional status of people with brain and nerve diseases
- Adjusting diets for people with Alzheimer's, multiple sclerosis, Parkinson's, strokes, head and spinal cord trauma, types of peripheral and central nerve palsy, coma, seizures and epilepsy, types of headaches and migraines, amyotrophic lateral sclerosis, Guillain Barre, myasthenia gravis, Vreike-Korsakoff syndrome, anxiety, depression, bipolar disorders, hyperactivity with concentration disorders, sleep disorders, autism, anorexia nervosa, bulimia nervosa and providing the necessary nutritional recommendations in each case.
- Evaluation of the disease status and nutritional status of people with cancer
- Changes in the metabolism of carbohydrates, fats and proteins in cancers
- Regulating diets for adults, teenagers and children with cancer undergoing chemotherapy, radiation therapy and tumor surgery and providing the necessary nutritional recommendations in each case.
- Regulating diets for adults, teenagers and children with tumors, head and brain cancers, esophagus, stomach and intestine cancer, breast cancer, prostate cancer and reproductive organs, lung cancer, hematological cancer and bone marrow transplantation, and providing the necessary nutritional recommendations in each case.

- Evaluation of the disease status and nutritional status of people with lung diseases, including asthma, bronchial dysplasia, cystic fibrosis, chronic obstructive pulmonary disease, and respiratory failure.
- Regulating diets for people with lung diseases such as asthma, bronchial dysplasia, cystic fibrosis, chronic obstructive pulmonary disease and respiratory failure and providing necessary nutritional recommendations in each case.
- Drug-food interactions in relation to any of the aforementioned diseases

Outline: 51 internship hours

Practical training of the above-mentioned content during internship

References:

1- Shaw V, Lawson M. Clinical Paediatric Dietetics. lowa: Blackwell Science. Last Edition
2- Nevin-Folino NL. Pediatric Manual of Clinical Dietetics. American Dietetic Assocation. Last Edition
3- The Ross metabolic Formula System: Nutrition Support Protocols. Columbus, Ohio: Ross Laboratories. Last Edition.
4- Leonberg BL. ADA Pocket Guide to Pediatric Nutrition Assessment. American Dietetic Assocation. Last Edition
5- Mahan LK, Escott-Stump S (eds). Krause s Food Nutrition and Diet Therapy. Philadelphia: Saunders. Last Edition
6- Shils ME, Shike M, Ross AC, Caballero B, Cousins RJ, Modern Nutrition in Health and Disease. Philadelphia: Lippincott Williams & Wilkins. Last Edition
7- Escott-Stump S. Nutrition and Diagnosis - Related care. Baltimore: Lippincott Williams & Wilkins. Last Edition
8- Zeman FJ, Ney DM. Applications in Medical Nutrition Therapy. New Jersey: Prentice Hall. Last Edition
9- Marian M. Roberts S. Clinical Nutrition for Oncology Patients. Boston: Jones & Bartlett Publications. Last Edition
10- Elliott L., Molseed LL, McCallum PD. The Clinical Guide to Oncology Nutrition. American Dietetic Assocation. Last Edition

Student's evaluation:

- written final exams
- Class activities
- OSCE test
- Case presentation method

Course Name: Clinical Nutrition and Diet Therapy Seminar **Course code: 17**

Prerequisite or Concurrent: Research Method in Nutrition Science

Number of Credits: 1

Credit Type: Theoretical

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to collect, review and summarize new scientific materials about a clinical nutrition and diet therapy topic and present it in the form of a review article in writing and orally.

Course Description:

This course is the basis for familiarizing senior experts in clinical nutrition and dietary therapy as researchers with how to review and summarize new scientific material and present it in the form of a scientific lecture.

Outline: 17 theoretical hours

- How to practically use the library and databases, including Medline
- How to collect review and summarize new scientific materials about clinical nutrition and diet therapy and compile it as review articles using Endnote software.
- Preparation of necessary slides using Power Point software for oral presentation of an article
- Presentation of scientific speech based on the necessary skills for it

References:

1- - Huth EJ. How to Write and Publish in the Medical Sciences. Baltimore: Williams & Wilkins. Last Edition
2- Articles in reputable scientific journals
3- Reliable internet databases

Student's evaluation:

- Preparation of a review article and its written and oral presentation

Course Name: Internship in clinical nutrition and diet therapy **Course code: 18**

Prerequisite or Concurrent: Internship in clinical nutrition and diet therapy 1,2,3

Number of Credits: 9

Credit Type: Internship

Overall Course Objectives:

Upon completion of this course, the student is expected to be able to practically and independently assess the nutritional status of patients, adjust the required diets, provide appropriate nutritional counseling and manage the food department correctly.

Course Description:

This unit forms the basis for the practical work of senior clinical nutrition experts in the field of nutritional status assessment, diet regulation, nutrition counseling and food department management.

Outline: 621 Internship hours

- Internship in clinical nutrition and diet therapy in the endocrinology department (68 hours)
- Internship in clinical nutrition and diet therapy in the cardiovascular department (34 hours)
- Internship in clinical nutrition and diet therapy in the gastroenterology department (68 hours)
- Internship in clinical nutrition and diet therapy in nephrology departments of kidney transplant dialysis (68 hours)
- Internship in clinical nutrition and diet therapy in the intensive care unit (68 hours)
- Internship in clinical nutrition and diet therapy in surgery and burn departments (34 hours)
- Internship in clinical nutrition and diet therapy in the oncology department (68 hours)
- Internship in clinical nutrition and diet therapy in the department of neurology (34 hours)
- Internship in clinical nutrition and diet therapy in different departments of children (68 hours)
- Internship in clinical nutrition and diet therapy in the diet therapy clinic (24 hours)
- Internship in food department management (68 hours)

References:

1- Ross T. O' Connell B. Boucher J. ADA Guide to Diabetes Medical Nutrition Therapy and Education. American Dietetic Assocation. Last Edition
2- Carson JAS. Burke FM, Hark LA. Cardiovascular Nutrition: Disease Management and Prevention. American Dietetic Assocation, Last Edition
3- Buchman AL. Clinical Nutrition in Gastrointestinal Disease. New Jersey: SLACK incorporated. Last Edition
4- Kopple JD, Massry SG. Kopple and Massry's Nutritional Management of Renal Disease. Philadelphia: Lippincott Williams & Wilkins. Last Edition
5- Charney P. Malone A. ADA Pocket Guide to Enteral Nutrition. American Dietetic Assocation. Last Edition
6- Charney P, Malone A. ADA Pocket Guide to Parenteral Nutrition. American Dietetic Assocation. Last Edition
7- Marian M, Roberts S. Clinical Nutrition for Oncology Patients. Boston: Jones & Bartlett Publications Last Edition.
8- Elliott L. Molseed LL, McCallum PD. The Clinical Guide to Oncology Nutrition. American Dietetic Assocation. Last Edition
9- Mahan LK, Escott-Stump S. Krause's Food Nutrition and Diet Therapy. Philadelphia: Saunders. Last Edition
10- Nevin-Folino NL. Pediatric Manual of Clinical Dietetics. American Dietetic Assocation. Last Edition

11- Leonberg BL. ADA Pocket Guide to Pediatric Nutrition Assessment. American Dietetic Assocation Last Edition
12- Nonas C. Foster G. Managing Obesity: A Clinical Guide. American Dietetic Assocation. Last Edition
13- West BB, Wood L. Food Service in Institutions. New York: Macmillan Publishing Company. Last Edition

Student's evaluation:

- Practical test of how to assess nutritional status, adjust diets and nutritional counseling in hospital and clinic departments
- Providing oral and written reports on the nutritional management of patients in each department
- Practical test of how to manage the food department
- 360 degree assessment
- Log-book method

Chapter Four

Program standards

Standards of educational programs of fields covered by the Supreme Council of Medical Sciences Planning

The following are the minimum issues that should be considered by evaluators in the process of evaluating educational programs:

- It is necessary that the course is equipped with **spaces and general educational facilities** such as: a dedicated classroom, conference hall, specialized bookshelf in the department (group), a public library, a computer center equipped with high-speed Internet and specialized software, a department-specific website and an educational archiving system.
- It is necessary that the educational department provides the required **special spaces**, including: specialized laboratories, hospitals, and social areas based on the provisions of the educational program.
- It is necessary for the educational department to provide the curriculum with the required **welfare and cultural spaces**, including: professors' rooms, students' rooms, self-service, prayer halls, dormitories, and cultural and sports facilities.
- It is necessary that the training areas outside the **rotation courses** of the department be conclusively approved by the assessment team.
- It is necessary that **populations and specific materials required** for education, including: patients, under-hospital active beds, laboratory samples, food samples, medicine, or cosmetics be accessible to the learners based on the needs of the training program in sufficient numbers and acceptable diversity.
- It is necessary that the required **capital and consumption equipment** in the program is provided to the program executors and their quality is approved by the assessment team.
- It is necessary that the **necessary facilities for training exercises and related research**, in accordance with the field being evaluated, are available to the faculty and students, and being approved by the evaluators.
- It is necessary that the evaluated education department has the required **faculty** based on the items in the training program and the approvals of the Development Council and its documents are provided to the evaluation team.
- It is necessary that the training department has the required **trained staff** available in order to train the learners, according to what is stated in the educational program.
- It is necessary that the **educational program**(Curriculum) is available to all audiences.
- It is necessary that the **bylaws, instructions, guidelines, rules and regulations** be available to all audiences. Learners should be informed about them at the beginning of the course and their documentation should be provided to assessors.
- It is necessary that the **course materials** such as books and journals required by learners and faculty members be available on the department bookshelf.
- It is necessary that learners are **actively present** at their workplace during the week, according to the number of days in the current rules, to perform their duties under the supervision of professors or senior learners, and the weekly or monthly schedule of the department should be available.

- It is necessary that the content of the **syllabus in theoretical courses** be compatible with at least 80% of the topics in the curriculum.
- It is necessary that learners be actively involved in all the department **educational and research programs**, such as in-group conferences, seminars, practical work, research work, and lower-level training, according to the department regulatory program, and the documentation should be provided to the evaluators.
- It is necessary that the training process during the course be relatively satisfactory to the learners and approved by the evaluators.
- It is necessary to inform the learners about the **dress code** at the beginning of the course and to monitor it, there should be appropriate executive mechanisms approved by the evaluators in the department.
- It is necessary that learners are aware of the **ethical codes** in the curriculum and act upon them, and their actions should be approved by the evaluators.
- It is necessary that in the educational group, a **training portfolio** be formed for all learners and the results of evaluations, certificates of educational activities, inside and outside the educational group, incentives, reminders, and other necessary documents should be kept in it.
- It is essential that learners have an acceptable **logbook** in accordance with the general and specific competencies contained in the program under evaluation.
- It is necessary that learners in each academic year develop adequate **exclusive interventional skills** based upon the points in the curriculum and record it in their log book and get it signed by the supervising professors.
- It is necessary for the **logbook** to be continuously completed by the learners and monitored by the relevant professors and they should be provided with the necessary written feedback.
- It is essential that learners participate in the **department research projects** throughout their course and that documentation is available.
- It is necessary that the learners have passed **the units outside the educational department** (if any) according to the academic year and have received a certificate from the person in charge of the relevant field and its documents should be presented to the evaluation group.
- It is necessary that there is **pre-planned and determined interdisciplinary scientific collaborations** between the main department and other departments, and that documents indicating these collaborations be available.
- It is necessary that instructions utilize at least 70% of the **methods and techniques stipulated** in the curriculum.
- It is necessary that learners be **evaluated** during the course using the methods outlined in the program and the documentation will be provided to the assessment team.
- It is necessary that the evaluated university or educational centers has adequate criteria stipulated in the educational program.

Chapter Five

Educational Program Evaluation

Program Evaluation

The conditions for Formative Evaluation of the program:

The evaluation of this program is done through interviews with students, interviews with faculty members, examination of program content, and how the program is implemented.

The conditions for the final evaluation of the program:

This program will be evaluated in the following conditions:

1- 4 years have passed since the implementation of the program
2- Major technological changes that warrant the need to revise the program
3- The decision of the main policy makers related to the program

Criteria for Program Evaluation:

Criteria:

*Degree of satisfaction of graduates with the program (70%)

*Degree of satisfaction of faculty members with the program (70%)

*Degree of satisfaction of health system managers with the results of the program (70%)

*Degree of needs assessment and solving health problems by graduates of the field (According to the evaluators)

*Quantity and quality of intellectual and research products by graduates of the field (According to the evaluators)

Program Evaluation Method:

- A survey on the faculty members involved in the program, assistants and graduates with pre-revised questionnaires
- Using the existing questionnaires in the evaluation and accreditation unit of the Secretariat

Program Evaluation Supervisor:

The one in charge of the evaluation of the program is the Council for the Development of Medical Science Universities in cooperation with the program development or review group and other educational secretariats and other faculty members.

Program Review Method:

- Gathering information obtained from surveys, comparative and field research, suggestions and opinions of experts
- Request from the Secretariat to form a committee to review the program
- Introducing the collected information in the review committee of the program
- Review in the required parts of the program and presenting the draft of the revised educational program to the Secretariat of the High Council of Medical Sciences

Appendices

Appendix No. 1 **Charter of Patients' Rights in Iran**

1- Optimal receipt of health services is the patient's right.

- Presenting health services should be:

1-1) Worthy of human dignity and respect values, cultural and religious beliefs;

1-2) Based on honesty, fairness, politeness and kindness;

1-3) Free from any discrimination, including ethnic, cultural, religious, type of disease and gender;

1-4) Based on updated knowledge;

1-5) Based on the superiority of the patient's interests;

1-6) Fair and based on patients' treatment priorities as regards the distribution of health resources;

1-7) Based on the coordination of care elements including prevention, diagnosis, treatment and rehabilitation;

1-8) With the provision of all basic and essential welfare facilities and away from imposing suffer and unnecessary restrictions;

1-9) Pay special attention to the rights of vulnerable groups in society, including children, pregnant women, the elderly, the mentally ill patients, prisoners, mentally and physically disabled, and unaccompanied persons;

1-10) In the fastest possible time and with respect to the patient's time;

1-11) Considering variables such as language, age and gender of service recipients;

1-12) In necessary and urgent cases (emergency), services should be provided regardless of the cost. In case of non-urgent cases (elective), it should be defined according to the standard terms;

1-13) In necessary and urgent cases (emergency), if it is not possible to provide appropriate services, it is necessary to provide the necessary services and necessary explanations in order to transfer the patient to an equipped unit;

1-14) In the final stages of life, when the patient's condition is irreversible and death is imminent, the goal is to maintain the patient’s comfort. Comfort means reducing the patient's pain and suffering, paying attention to the psychological, social, spiritual and emotional needs of him and his family at the time of death. The dying patient has the right to be with the person he wants in the last moments of his life.

2- The information should be provided to the patient in a satisfactory and sufficient manner.

2-1) The information needs to cover the following content:

2-2-1) The content of the charter of patients' rights at the time of admission;

2-1-2) Standards and predictable costs of the hospital such as treatment and non-treatment costs, insurance rules and introducing supportive oppression at the time of admission;

2-1-3) Name, responsibility and professional rank of members of the medical team responsible for providing care, including doctors, nurses and students and their professional relationship with each other;

2-1-4) Diagnostic and therapeutic methods and the strengths and weaknesses of each method and its possible side effects, diagnosis of the disease, prognosis and its side effects, as well as all the information influencing the patient's decision-making process;

2-1-5) How to access the treating physician and key members of the medical team during treatment;

2-1-6) All actions with a research nature.

2-1-7) Provide necessary training to continue treatment

2-2) Presenting information should be provided as follows:

2-2-1) Information should be timely and appropriate to the patient's condition, including anxiety, pain and his characteristics including language, education, and comprehension, unless:

-Delay in initiating treatment by providing the above information is considered harmful to the patient; (In this case, the transfer of information after the necessary action, should be done at the first appropriate time.)

-Despite being informed of the right to receive information, the patient refuses to do so, in which case the patient's request should be respected; unless not being informed put the patient at serious risk with others;

2-2-2) The patient can access all the information recorded in his clinical file and receive its image and request the correction of errors contained in it.

3- The patient's right to choose and decide freely in receiving health services must be respected.

3-1) The scope of selection and decision-making needs to be about the following:

3-1-1) Selection of the treating physician and the center providing health services within the framework of the criteria;

3-1-2) Selection and conference with the second physician as the consultant;

3-1-3) Participation or non-participation in any research, with the assurance that his decision will not affect the continuity of how to receive health services.

3-1-4) Accepting or rejecting the proposed treatments after being aware of the possible side effects of accepting or rejecting it, except in cases of suicide or in cases where refusing to treat would put another person is in serious danger;

3-1-5) Announcing the patient's previous opinion about future treatment measures when the patient has the capacity to make decisions and as a guide to medical procedures in the

absence of his decision making authority in accordance with legal standards considered by health care providers and the decision maker replaces the patient.

3-2) The conditions for selection and decision-making include the following:

3-2-1) The patient's choice and decision-making should be free and informed, based on receiving sufficient and comprehensive information (mentioned in paragraph 2);

3-2-2) After providing information, the patient should be given the necessary and sufficient time to make a decision and select.

4- The provision of health services should be based on respect for the patient's privacy (right to privacy) and the principle of confidentiality.

4-1) Observance of the principle of confidentiality regarding all information about the patient is mandatory, except in cases where the law has excluded it;

4-2) In all stages of care, both diagnostic and therapeutic, the patient's privacy must be respected. It is necessary for this purpose to provide all the necessary facilities to ensure the privacy of the patient;

4-3) Only the patient and group therapy and authorized persons on behalf of the patient and persons who are considered authorized by law can access the information;

4-4) The patient has the right to be accompanied by a trusted person in the diagnostic process, including examinations. Accompanying one of the child's parents in all stages of treatment is the child's right, unless it is contrary to medical necessities.

5. Access to an efficient complaints system is the patient’s rights.

5.1) Every patient has the right to file a complaint to the competent authorities in the event of a violation of his or her rights, which is the subject of this charter, without interfering the quality of health services;

5.2) Patients have the right to be informed of the procedure and the results of their complaint;

5.3) Damage resulting from the error of health care service providers must be compensated as soon as possible after review and proof in accordance with regulations.

In the implementation of the provisions of this charter, if the patient for any reason does not have the capacity to make decisions, the exercise of all the rights of the patient - mentioned in this charter - will be the responsibility of the alternative legal decision maker. Of course, if a substitute decision-maker obstructs the patient's treatment, contrary to the physician’s opinion, the physician can appeal to review the decision through the relevant authorities.

If a patient is without required qualities to make decisions, but can make a reasonable decision in a part of the treatment, his decision must be respected.

Appendix No. 2

Executive Regulations for Dress Code and Students' Professional Ethics In Laboratory-Clinical Environments

The dress code and behavior of all the staff in the professions related to the medical sciences department needs to be in a way that besides maintaining the professions' dignity, provides effective professional communication with patients, patients' companions, colleagues, and others in educational settings.

Therefore, it is morally necessary for all those who are studying or providing services in clinical and laboratory educational settings to observe the following rules.

Chapter 1: Dressing and Dress Code

The students' clothes to enter educational environments, especially clinical and laboratory environments, should be uniform and include the following set of features:

1- White knee-high non-stick cape with long sleeves
2- The cape must be sealed with the logo of Medical Sciences University and the relevant medical health services.
3- All buttons on the cape must be completely closed during the entire period of attendance in educational environments.
4- Using a valid identification card (ID) with a photo attached (containing first name, last name, faculty name, and field of study) on the cover, in the left chest area during the entire period of attendance in educational environments is mandatory.
5- Female students should cover the entire head, neck, under the neck and hair with a suitable cover.
6- Pants should be long, conventional, plain, and non-stick; use of ripped jeans and the like is not appropriate for the medical dignity.
7- It is essential to wear simple socks that cover the entire foot and leg.
8- It is forbidden to wear lace socks with embellishments.
9- Shoes should be comfortable and appropriate, there should be no noise when walking.
10- The cape, dress, and shoes must be comfortable, clean, neat, and conventional, and they should not have sharp and inappropriate colors.
11- It is forbidden to use inappropriate badges for the medical field and hang them on the cape, pants, and shoes.
12- It is forbidden to use and expose any ring, bracelet, necklace, and earrings (except wedding ring) in educational environments.
13- The use of slippers and sandals in educational environments except in operating room and delivery room is prohibited.

Chapter 2: Personal hygiene and make-up standards in educational environments of the country

1- Those related to the medial professions are models for personal cleanness and hygiene. Thus, cleanness in appearance and hygiene are essential in medical science educational environments.
2- Nails should be short and clean. Using nail polish and nail stickers in any form is prohibited. The use of artificial nails and long nails increases the chances of transmitting the infection and the possibility of damage to others and medical equipment.

3- Unconventional make-up of the head and face is far from the practice of the medical profession.
4- It is forbidden to show any make-up in the form of a tattoo and using a ring with a jewel in the nose or any part of the hands and face.
5- Eau de cologne and perfumes with a strong smell and allergens are prohibited in educational environments.

Chapter 3: Criteria for students' behavior in medical education environments

1- Observance of the principles of professional ethics, humility and modesty in dealing with patients, patients' companions, professors, students and staff is mandatory.
2- Speaking in educational settings should be accompanied by calm and courtesy, and making any loud noise or uttering words that are not appropriate in the medical profession is prohibited.
3- Smoking at all times when a person is present at educational environments is prohibited.
4- Chewing gum and the like is prohibited in laboratories, conference halls, patient rounds and in the presence of professors, staff and patients.
5- When attending classes, laboratories and rounds of patients, the mobile phone should be turned off and at other times, its use should be reduced as necessary.
6- Any discussion or joke in related public places such as elevators, coffee shops and restaurants is prohibited.

Chapter 4: Supervising the administration and follow-up cases of violations of regulations

1- Supervising the principles of this regulations in educational hospitals and other clinical education medical environments is the responsibility of the deputy of the hospital, director of the department, chairman of the department, and educational and student experts.
2- People who do not observe the professional ethics and principles of this regulation will be warned first and if they insist on committing a violation, they will be referred to the Student Disciplinary Council.

Appendix No. 3 Rules of Working with Laboratory Animals

Animals have a very important role in promoting and expanding medical research, and the ethical principles and instructions of the divine religions dictate that we adhere to their rights. Therefore, researchers are required to observe the relevant ethical principles in the researches they conduct on animals. Consequently, according to the approvals of the Publications Commission, it is mandatory to mention the code of the Ethics Committee in research articles submitted to scientific journals. The following are the principles and rules of working with laboratory animals:

1- The storage space and building have the necessary facilities for animal health.
2- Before the arrival of the animals, depending on the type and species, the necessary conditions should be provided for keeping them.
3- Cages, walls, floors, and other building parts should be washable and disinfectable.
4- In Indoor conditions, the required conditions such as light, oxygen, humidity, and temperature should be provided.
5- If kept outdoors, the animal should have a shelter.
6- The space and cage should fit the animal species.
7- Cages allow the animal to rest.
8- In animal transportation, the heating and cooling conditions, light and breathing air from the place of purchase to the permanent place of the animal need to be observed.
9- The animal transport vehicle has appropriate conditions and has the necessary license.
10- The health of the animal should be monitored by the recipient.
11- The quarantine of the newly arrived animal should be observed.
12- Animals should not be placed near their predators.
13- Cages should be kept at the sight of the observer.
14- There should be no possibility of animal escape from the cage.
15- Remove extra noises from the environment that annoy the animal.
16- There should be no possibility of injury to the animal as a result of movement.
17- The bed and resting place of the animal should be cleaned regularly.
18- Storage space should be regularly washed and disinfected.
19- Use standard disinfectants to clean the environment and sanitize work equipment.
20- The animal's food and water should be appropriate and hygienic.
21- Ventilation and evacuation of excretion should be done continuously so that there is no annoying odor and no possibility of allergens and disease transmission to staff, as well as laboratory animals.
22- There should be a suitable space for disposal of corpses and carcasses of animals.
23- There should be adequate, comfortable and hygienic space for office staff, technicians, and caregivers.
24- Do not use sick animals or animals with special conditions such as pregnancy and lactation in research.
25- Before conducting any research, the necessary opportunity should be provided for the animal to adapt to the environment and the people.
26- Employees must have received training in working with animals.

Conditions for Conducting Animal Research

✓ The minimum animal required to be used for statistical and true research accuracy.

✓ It should not be possible to use optimal replacement programs instead of using the animal.

✓ Minimal harassment should be used in different stages of research and in the method of animal death after research.

✓ Observe animal labor codes throughout the study.

✓ The results should lead to improving the health of the community