

# **In the name of God**

**National Nutrition and Food Technology Research Institute**

**Faculty of Nutrition Sciences and Food Technology**

## **Nutritional Sciences**

**Doctor of Philosophy (PhD)**

### **Total Course Credits**

- Core: 16
- Non-core (Elective): 12
- Dissertation: 20

### **Program Description**

Sufficient food, in terms of both quality and quantity, has been known to be a vitally important determinant of maintaining and improving health status in the individual and society. This is considered the fundamental right of the public. In addition to meeting the nutritional requirements, food should be consistent with the socio-economic and cultural norms. These challenges have led to a growing demand for trained nutritionists to work in a range of contexts to achieve this aim at national and international levels. This field of study will offer the graduates the specialized, scientific knowledge and practical skills in accordance with the requirements of the individual and society. The aim of training nutritionists is to educate the experts with appropriate and specialized knowledge and communication skills to help in the treatment and prevention of the nutritional problems of the individual and society, using a holistic and community-oriented approach. The Ph.D. program in Nutritional Sciences provides interdisciplinary training and integrated sciences of Biology and Social Sciences to prepare the nutritionist to expand the border of knowledge and to apply this knowledge in public and clinical health care settings through proper programming and research. This field includes a number of comprehensive and participatory activities that require deep knowledge of physiology, biomedicine, food and nutrients metabolism and epidemiology on the one hand, and ecological, cultural and socio-economic factors affecting the access to, choice, and consumption of food, on the other hand.

The goal of the Ph.D. program in Nutritional Sciences is to train professionals who can work efficiently as leaders and active participants in nutritional research and education at the national level and help to expand the boundaries of nutrition knowledge for public health promotion.

### **Admission Requirements**

- Having a master's degree (MSc) in one of the fields of Nutrition, Public Health in Nutrition, or Doctor of Medicine, or Pharm-D or Doctor of Veterinary Medicine
- Being eligible for entering the program according to the PhD educational rules and regulation

**Table 1: Complementary modules**

Credits	Credits	Credits			Hours			Foundation
		Practical	Theoretical	Total	Practical	Theoretical	Total	
01	Principles of medical communication and computer applications	0.5	0.5	1	17	9	26	-
02	Nutritional Epidemiology	-	2	2	-	34	34	-
03	Bio statistical modelling for nutrition	-	2	2	-	34	34	-
04	Research Methodology in Nutritional Science	-	2	2	-	34	34	-
05	Advanced Nutritional Physiology	-	2	2	-	34	34	-
06	Advanced Nutrition I	-	3	3	-	51	51	-
07	Advanced Nutrition II	-	3	3	-	51	51	-
08	Advanced clinical Nutrition	-	3	3	-	34	34	-
	Total							17

**Table 2: Core modules**

Credits	Credits	Credits			Hours			Foundation
		Practical	Theoretical	Total	Practical	Theoretical	Total	
09	Advanced Research Methodology in Nutritional Science	-	2	2	-	34	34	02 04
10	Advanced Bio-statistical modelling	1	2	3	34	34	68	03
11	Metabolic Regulation	-	2	2	-	34	34	05 06 07
12	Nutrition in Health and Disease I	1	1	2	34	17	51	-
13	Nutrition in Health and Disease II	1	1	2	34	17	51	-
14	Diet Planning and Weight Management	1	1	2	34	17	51	-
15	Advanced Cellular and Molecular Nutrition	-	2	2	-	34	34	-
16	Seminar	-	1	1	-	17	17	-
	Total							16

\*Dissertation: 20 credits and will be offered in the research step.

**Table 3: Non- Core Modules – Mycology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Medical Bacteriology	2	34	17	51	-
02	Fungal Physiology	2	-	34	34	-
03	Epidemiology of Fungal Infections	2	-	34	34	-
04	Immunomycology	2	-	34	34	-
05	Advanced Bacteriology	2	34	17	51	01
06	Fungal Biochemistry	2	34	17	51	11
	Total		12			

**Table 4: Non- core modules- clinical Biochemistry**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Biochemistry of Hormones	2	-	34	34	-
02	Molecular Biology	2	-	34	34	-
03	Clinical Biochemistry of Hormones	2	-	34	34	01
04	Biochemistry of Cancer	2	-	34	34	02
05	Neurochemistry	2	-	34	34	-
06	Clinical Biochemistry	2	-	34	34	-
	Total		12			

**Table 5: Non- core modules – Physiology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Research Topics in Heart Physiology and Circulatory System	3	-	51	51	-
02	Research Topics in Endocrine and Reproduction Systems	3	-	51	51	-
03	Research Topics in Cellular Physiology	2	-	34	34	-
04	Research Topics in Gastrointestinal Physiology	2	-	34	34	-
05	Research Topics in Renal Physiology	2	-	34	34	-
	Total	12				

**Table 6: Non- Core Modules- Food Science and Technology (Quality and hygiene control)**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Food processing and formulation	2	-	34	34	-
02	Advanced Food Biochemistry	3	34	34	68	-
03	Bioactive ingredients	2	-	34	34	-
04	Food quality control and safety management	1	34	-	34	-
05	Food Cellulogy	3	34	34	68	-
	Total	11				

**Table 7: Non- core Modules- Immunology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Advanced Immunology	2	34	17	51	-
02	Immunochemistry	2	34	17	51	-
03	Advanced Immunology	2	-	34	34	-
04	Clinical Immunology	2	-	34	34	-
05	Immunology of Human Body	2	-	34	34	-
	Total			12		

**Table 8: Non- Core Modules- Bacteriology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Medical Bacteriology I	4	34	51	85	-
02	Medical Bacteriology II	4	34	51	85	-
03	The Role of Bacteria in Medical Biotechnology	2	-	34	34	-
04	Advanced Virology	2	34	17	51	-
05	Genetic Engineering methods	2	34	17	51	-
06	Electron Microscope	2	34	17	51	-
	Total			16		

**Table 9: Non- Core Modules- Health Education**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Patterns and Methods of Behavioral Changes I	2	-	34	34	-
02	Patterns and Methods of Behavioral Changes II	2	-	34	34	01
03	Health Communication	2	-	34	34	-
04	Planning Health Promotion Programs	2	-	34	34	01 02
05	Health Education and Socioeconomic Development	2	-	34	34	-
	Total			10		

**Table 10: Non- Core Modules- Political Science**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Methodology in Political Science	2	-	34	34	-
02	Innovations in Political Analysis	2	-	34	34	-
03	Politics of Culture in Iran	2	-	34	34	-
04	Political Development in Iran	2	-	34	34	-
05	General Policymaking	2	-	34	34	-
06	General Project Planning	2	-	34	34	-
07	Institutional and Policymaking	2	-	34	34	-
08	Economical and Policymaking	2	-	34	34	-
09	Sociological and Policymaking	2	-	34	34	-
	Total		18			

**Table 11: Non- Core Modules- Economics**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Advanced Microeconomics I	3	-	51	51	-
02	Advanced Macroeconomics I	3	-	51	51	-
03	Selected Topics in Economics	2	-	51	51	-
04	Advanced Econometrics I	3	-	51	51	01 02
05	Advanced Econometrics II	3	-	51	51	04
	Total		14			

**Table 12: Non- Core Modules- Theoretical economics**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Advanced Microeconomics I	3	-	51	51	-
02	Advanced Macroeconomics I	3	-	51	51	-
03	Selected Topics in Economics	2	-	51	51	-
04	Advanced Microeconomics II	3	-	51	51	01
05	Advanced Macroeconomics II	3	-	51	51	02
	Total		14			

**Table 13: Non- Core Modules- Genetics**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Medical Genetics I	3	-	51	51	-
02	Medical Genetics II	3	51	34	85	-
03	Advanced Community Genetics	3	34	34	68	-
04	Cytogenetic II	3	34	34	68	-
05	Molecular Cytogenetic	2	34	17	51	-
06	Advanced Molecular Genetics	3	34	34	68	-
07	Genetics Engineering II	3	34	34	68	-
08	Cancer Genetics II	3	34	34	68	-
09	Advanced Molecular Medicine	2	-	34	34	-
10	Advanced Immunogenetics	2	34	17	51	
	Total		27			

**Table 14: Non- Core Modules- Pharmaceutical biotechnology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Molecular and Cellular Biology	3	-	51	51	-
02	Genetics and Molecular Genetics Engineering	3	-	51	51	-
03	Biotechnology Products I	2	-	34	34	-
04	Biotechnology Products II	2	-	34	34	-
05	Biotechnology Methodology	3	102	-	102	-
06	Bioinformatics	2	51	17	68	-
	Total		15			

**Table 15: Non- Core Modules- Medical Biotechnology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Cellular Culture and Histology	2	34	17	51	-
02	Human and Plant Molecular Genetics	2	-	34	34	01
03	Advanced Molecular Biology	2	-	34	34	01
04	Genetics Engineering I	2	34	17	51	02
05	Genetics Engineering II	2	34	17	51	04
06	Protein Engineering	2	-	34	34	-
	Total		12			

**Table 16: Non- core Modules- Pharmacology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Principles of Toxicology	2	-	34	34	-
02	Immunopharmacology	2	-	34	34	-
03	Neurological Science	2	-	34	34	-
04	Endocrine Pharmacology	2	-	34	34	-
05	Pharmacokinetics	2	-	34	34	-
06	Advanced Pharmacology in Central Nervous System (CNS)	2	-	34	34	-
07	Cardiovascular Pharmacology	2	-	34	34	-
08	Chemotherapy	2	-	34	34	-
	Total		16			

**Table 17: Non- core Modules- Sociology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Contemporary theories in Sociology	2	-	34	34	-
02	An Overview of the Sociological Theories	2	-	34	34	-
03	Qualitative and Quantitative Methods in Social Research	2	-	34	34	-
04	Sociology of Economics	2	-	34	34	-
05	Urban Sociology	2	-	34	34	-
06	Rural Sociology	2	-	34	34	-
07	Institutional Sociology	2	-	34	34	-
08	Socioeconomic Sociology	2	-	34	34	-
09	Social Inequality	2	-	34	34	-
10	Development sociology	2	-	34	34	-
	Total	20				

**Table 18: Non- core Modules- Theoretical Sociology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Contemporary theories in Sociology	2	-	34	34	-
02	An Overview of the Sociological Theories	2	-	34	34	-
03	Qualitative and Quantitative Methods in Social Research	2	-	34	34	-
04	Community Sociology	2	-	34	34	-
05	Family Sociology	2	-	34	34	-
06	Mental Sociology	2	-	34	34	-
07	Youth Sociology	2	-	34	34	-
08	Psychological Sociology	2	-	34	34	-
09	Women Sociology	2	-	34	34	-
10	The Sociology of Minority Groups	2	-	34	34	-
	Total	22				

**Table 19: Non- core Modules- Epidemiology**

Credits	Name of the module	Credits	Hours			Foundation
			Practical	Theoretical	Total	
01	Epidemiology I- Methods	2	-	34	34	-
02	Epidemiology II- Scientific Inference	2	-	34	34	-
03	Epidemiology III- Trials	2	-	34	34	-
04	Epidemiology IV- Case Control Trials	2	-	34	34	-
05	Epidemiology V- Ecologic, Descriptive and Cohort Studies	2	-	34	34	-
06	Epidemiology VI- secondary studies	2	-	34	34	-
07	Statistics II- Statistics in Epidemiology	2	-	34	34	-
08	Qualitative studies	2	-	34	34	-
	Total			16		