

## **1- Course name and introduction**

### **Ph.D. of Physiology**

Physiology is a combination of biology, physics, chemistry and mathematics in which a physiologist try to understand the normal functions of body systems and use this as a basic for their research, education and realizing the pathological conditions in human body. PhD in physiology is the highest academic degree to bestow.

## **2- History**

Physiology is one of the oldest fields of science, which is in the center of attention. When Iranian scientists were trying to become experts in all aspects of human science, physiology has always been one of the research fields as well as educational fields. These emphases on research and education have led to valuable publications.

Iranian famous scientist, Avicenna considered physiological indicators such as pulse, respiratory movements, and body temperature disease diagnoses. In addition, the importance of physiology is highly appreciated in the world as well so that one of the Nobel Prizes is dedicated to the important findings of medicine called the “The Nobel Prize in Physiology or Medicine”.

## **3- Values and beliefs: The program philosophy**

With special attention to the field of physiology in medicine, we believe that accurate understanding of the normal function of organs in healthy conditions (i.e. physiological) is a necessary preliminary to an accurate understanding of disease conditions (e.g. pathological). Therefore, the philosophy behind this program is to educate experts and researchers with high capability and specialized skills at national and international levels in physiology.

## **4- Mission of the program in manpower training**

The mission of the this program is to train meticulous experts in physiology who will be able to provide high-quality education in different academic levels and conduct scientific researches to promote and expand the boundaries of physiology and design and also implement other programs to improve the quality of this mission. It is worthwhile for physiologists to maintain morale, dignity and social commitment in the context of their job responsibilities.

## **5- Prospects of the training program in manpower training**

It is expected that specialists and graduates of this field will be able to keep up with the pace of change in medical sciences. Additionally (moreover), they should be able to keep their knowledge up to date by combining these sciences and transfer it efficiently to the seeker of this science. In addition, by considering the similarities between physiology and other branches of medical sciences, training proficient experts is in the center of attention.

## **6- General objectives**

- A) Train students in the way that they will be able to collect, transfer, and evaluate up-to-date knowledge.
- B) Educate students who will be able to design and implement up-to-date research, analyze and evaluate research findings
- C) Educate students who can play a role in knowledge production in the future
- D) Organizing and managing educational and research affairs

## **7- The role of graduates in the educational program**

Graduates in this field have educational, searching, and communicational roles.

## **8- The professional roles of graduates**

### **A) Educational role**

- Participate in planning and compilation of university educational courses related to physiology
- Participate in the design, development, and evaluation of educational programs related to physiology
- Identify the factors associated with success or failure of educational programs
- Organize and manage educational affairs
- Collaborate with other professionals for educational purposes educate manpower in different levels

### **B) Research role**

-Design, implementation, and guidance of research affairs in the form of research projects

- Identify the factors associate with success or failure of research programs in physiology

- Organize and manage of research affairs

- Collaborate with other experts for research purposes

- Translate scientific findings into research articles

- Understand scientific achievements in physiology

- Present research findings in scientific societies

- Review research projects and articles

- Create research set-ups

### **C) Communicational role**

- Communication with industry

- Communication with other disciplines such as medical engineering, biotechnology and molecular biology

## **9- Educational programs and implementation strategies**

The general training strategy is a combination of teacher-centered and student-centered approaches with the following properties:

- Integrating theoretical and practical courses and improving the level of knowledge and skills of students in order to train multi-professional manpower

- Promote students to conduct seminars, projects, conferences, and journal clubs related to the field

- Strengthening and developing the information system with scientific centers around the world

- Presenting research findings of dissertations in the form of articles in scientific journals

## Tables of the Courses

**Table 1. Compensatory Courses**

Code of the Course	Title of the Course	Number of Credits			Teaching Hours		
		Theoretical	Practical	Total	Theoretical	Practical	Total
<b>01</b>	Physiological methods	2	-	2	17	34	51
<b>02</b>	Molecular biology	2	-	2	34	-	34
<b>03</b>	Statistical Methods & Interpretation of Research Findings	2	-	2	34	-	34
<b>04</b>	Medical Information Systems	1	-	1	9	17	26
<b>Total</b>	-	7	-	7	94	51	145

**Table 2. Core Courses**

Code of the Course	Title of the Course	Number of Credits			Teaching Hours		
		Theoretical	Practical	Total	Theoretical	Practical	Total
<b>05</b>	Recent Topics in Cell Physiology	2	-	2	34	-	34
<b>06</b>	Recent Topics in Neurophysiology & Specific Senses	3	-	3	51	-	51
<b>07</b>	Recent Topics in Physiology Cardiovascular	3	-	3	51	-	51
<b>08</b>	Recent Topics in Endocrinology & Reproductive Physiology	3	-	3	51	-	51
<b>09</b>	Recent Topics in Digestive Physiology	2	-	2	34	-	34
<b>10</b>	Recent Topics in Renal Physiology, Fluids & Electrolytes	2	-	2	34	-	34
<b>11</b>	Recent Topics in Respiratory Physiology	2	-	2	34	-	34
<b>12</b>	Thesis	-	20	20	-	-	-
<b>Total</b>	-	17	20	37	289	-	289

**Table 3. Non- Core Courses**

Code of the Course	Title of the Course	Number of Credits			Teaching Hours			Prerequisites
		Theoretical	Practical	Total	Theoretical	Practical	Total	
13	Exercise physiology	2	-	2	34	-	34	-
14	Physiology research workshop	1	-	1	17	-	17	-
15	Computer programming	2	-	2	34	-	34	-
16	Biocontrol	2	-	2	34	-	34	-
17	Ecophysiology	2	-	2	34	-	34	-
18	Physiology of behavior and cognition	2	-	2	34	-	34	-
19	Neuroendocrinology	2	-	2	34	-	34	08
20	Nutrition and bioenergetics physiology	2	-	2	34	-	34	-
21	Aging and development physiology	2	-	2	34	-	34	05
22	Genetics in physiology	2	-	2	34	-	34	-
23	Radioisotopes application in biology	2	-	2	34	-	34	-

24	Applied electronics	2	-	2	34	-	34	-
25	Scanning electron microscope (SEM)	2	-	2	17	34	51	-
26	Biomechanics	2	-	2	34	-	-34	-
27	Electrophysiology	2	-	2	34	-	34	-
28	Receptrology	2	-	2	34	-	34	-
29	Neurobiology	2	-	2	34	-	34	-
30	Chemistry Physics	2	-	2	34	-	34	-
31	Clinical Biochemistry	2	-	2	17	34	51	-
32	Biotechnology	2	-	2	17	34	51	-
33	Advanced Neuroanatomy	2	-	2	34	-	34	-
34	Embryology	2	-	2	34	-	34	-
35	Histology	2	-	2	34	-	34	-
36	Advanced Mathematics	2	-	2	34	-	34	-
Total	-	47	-	47	850	102	952	-