

**Doctor of Philosophy in Physiology**  
**Program code: 053070**

***INTRODUCTION***

The Department of Physiology (Faculty of Medicine) offers a Ph.D. program in Medical **Physiology**. A graduate successfully completing this program will be expected to have an in-depth knowledge in specific areas of Medical Physiology. In addition, he/she should become an independent thinker, planner and executor of specific ideas relevant to Medical Physiology. A major part of the program is the dissertation, which requires high quality research in a specific area of Medical Physiology.

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***PROGRAM REQUIREMENTS***

**33 TOTAL COURSE CREDITS**

**9-12 Course Credits in the major area of specialization (Physiology)**

0530-601	Advanced Seminars in Physiology	I	(1)
0530-602	Advanced Seminars in Physiology	II	(1)
0530-603	Advanced Seminars in Physiology	III	(1)
0530-604	Advanced Seminars in Physiology	IV	(1)
0530-611	Current topics in Physiology	I	(1)
0530-612	Current topics in Physiology	II	(1)
0530-613	Current topics in Physiology	III	(1)
0530-614	Current topics in Physiology	IV	(1)
0530-621	Advanced Readings in Physiology	I	(3)
0530-622	Advanced Readings in Physiology	II	(3)
0530-623	Advanced Readings in Physiology	III	(3)
0530-631	Advanced Techniques in Physiology	I	(3)
0530-632	Advanced Techniques in Physiology	II	(3)
0530-633	Advanced Techniques in Physiology	III	(3)

**3-6 Courses available in other Graduate programs**

The student may choose an elective course from the following, or from other graduate programs at Kuwait University, or Ph.D programs at other accredited universities related to his/her study, with the approval of the Graduate Program Director.

0510-601	Bio-statistical Methods in Medical Research	(3)
0520-504	Immunity and Infection	(2)
0520-519	Molecular Microbiology	(3)
0520-601	Molecular Techniques and Instrumentation	(3)
0520-604	Advanced Immunology	(3)
0570-506	Immunopathology	(2)

2000-501	Scientific Writing and Communication Skills	(3)
2000-503	Ethics and Professionalism	(2)

## 18 COMPULSORY COURSES

0530-697	Dissertation	(9)
0530-698	Dissertation	(9)

### ***COURSE DESCRIPTION***

#### **(4) FOUR COURSES ON ADVANCED SEMINARS IN PHYSIOLOGY**

- 1) 0530-601 CR: 1
- 2) 0530-602 CR: 1
- 3) 0530-603 CR: 1
- 4) 0530-604 CR: 1

The Students will be required to formally present to faculty and peers comprehensive critical reviews on defined themes in specific areas of physiology relevant to the student's interests. The seminars constitute a series of courses progressing from the first up to the fourth semesters of the program as indicated above.

#### **(4) FOUR COURSES ON CURRENT TOPICS IN PHYSIOLOGY**

- 1) 0530-611 CR: 1
- 2) 0530-612 CR: 1
- 3) 0530-613 CR: 1
- 4) 0530-614 CR: 1

The students will be required to critically analyze, organize and present to their peers and faculty current research articles in physiology, relevant to the student's interests. This is a series of learning experiences running from the first up to the fourth semester of the program.

#### **(3) THREE ADVANCED READING COURSES IN PHYSIOLOGY**

- 1) 0530-621 CR: 3
- 2) 0530-622 CR: 3
- 3) 0530-623 CR: 3

The students will be required to review, under close tutorship by his advisor and co-advisors, to critically analyze, systematize and demonstrate (including lecturing experience) advanced knowledge of classical areas of physiology, relevant to the student's interests. This is a series of courses progressing from the first up to the third semester of the program.

#### **(3) THREE COURSES ON ADVANCED TECHNIQUES IN PHYSIOLOGY**

- 1) 0530-631 CR: 3
- 2) 0530-632 CR: 3
- 3) 0530-633 CR: 3

The students will be required to demonstrate expertise in technical aspects of physiology, relevant to the student's research interests.

A wide variety of quantitative physiological procedures are available to the students ranging from human exercise stress testing, evaluation of respiratory function, cardiac and other organ perfusion, isolated cell preparations, cell culture, electro-physiological techniques such as patch clamping, measurements of intracellular signaling by calcium and cell pH, cell and tissue imaging, isolation and characterization of transport in cell membranes, immunohistochemical and cytochemical techniques, HPLC measurements of neural neurotransmitter, molecular biology techniques such as western blotting, iso-electric focusing, northern blotting and RT PCR are presently available.

The students may take, on agreement with his/her advisory committee, from one to three courses in this series. Upon approval of the advisory committee the students may select some of the advanced techniques relevant to their research interests from graduate programs offered by other departments at Kuwait University or other academic scientific institutions recognized and approved by the CGS of KU.

**0530-697: DISSERTATION  
CR: 9**

**0530-698: DISSERTATION  
CR: 9**