Vice Chancellor for Education, Ahvaz University of Medical Sciences
Center for Studies and Development of Medical Sciences Education

Course Title: Hormone and Kidney Biochemistry
Field and Level of Study: Medicine - Professional Doctorate
Faculty: Medicine
Course Code: 1121834
Academic Year: 1404-1405
Prerequisite: Molecular-Cell Biochemistry and Biochemistry Discipline
Number of Credits: 1
Semester: Third, First and Second Half
Credit Breakdown: 1 Theory Credit
Teaching Group:

Class Day and Time: Saturday and Monday, 8:00 - 10:00
Responsible Instructor: Dr. Mohammadzadeh
Email:
Office Hours: Daily, 8:00 - 14:00

Overall Course Objectives:
By the end of this course, regarding the topic of hormones, the student should be familiar with the importance of hormones from the hypothalamus, anterior and posterior pituitary, thyroid and parathyroid, pancreas, adrenal cortex and medulla, and sex hormones. The student should understand the importance of the integrated endocrine system as a coordinating tool and its role in establishing homeostasis, and comprehend its role in controlling the body's overall exchanges and needs.

Regarding the topic of the kidney, students should be familiar with the clinical importance of maintaining water balance, maintaining blood pH, and the function of elements. These elements include major elements and trace elements. Students should also know the disorders resulting from water and sodium imbalance and be able to calculate water or sodium deficits in patients. They should also know the types of acid-base disorders and how to diagnose the type of acid-base disorder from laboratory reports and ABG data. Students should know how to calculate osmolality and anion gap and use them in determining acid-base disorders. Students will learn the importance and activity of approximately 25 elements along with disorders and diseases caused by their deficiency or toxicity.

Specific Objectives:

1. Familiarization with and understanding of the basic principles of endocrine gland hormone function, including hormone definition, types of hormone receptors, target tissues, and hormone concentration.
2. Understanding the wide variety and mechanisms of action of endocrine hormones and understanding the types and roles of secondary messengers.
3. Describing the stages of production, transport, and storage of endocrine gland hormones (hypothalamus, anterior and posterior pituitary, thyroid and parathyroid, pancreas, adrenal cortex and medulla, and gonads).
4. Understanding the biochemical basis of endocrine diseases (hypothalamus, anterior and posterior pituitary, thyroid and parathyroid, pancreas, adrenal cortex and medulla, and gonads).

5. Explaining the role of receptors and G-proteins in hormone signal transduction and disorders related to their function.
6. Familiarization with methods of using enzymes in disease diagnosis and understanding the use of non-functional plasma enzymes in diagnosing myocardial infarction, liver diseases, stroke, some cancers, and neural tube defects during fetal development.
7. Familiarization with water, sodium, and acid-base disorders and their diagnostic methods. Also understanding the method of interpreting ABG.

Course Description:
In this course, in the hormone section, the student becomes familiar with the importance and role of each of the hormones from the hypothalamus, anterior and posterior pituitary, thyroid and parathyroid, pancreas, adrenal cortex and medulla, and sex hormones in related diseases. In the kidney section, students become familiar with water, sodium, and acid-base disorders in patients and their diagnostic methods. They also learn how to interpret ABG. They learn the importance of electrolytes and the elements sodium and potassium and the disorders resulting from their deficiency in the body.

Session	**Main Topics (Concepts to be Taught)**	**Learner Activities**	**Teaching Method**	**Instructor Name**
First	Introduction to Hormonology, Mechanism of Hormone Action, Types of Hormone Receptors and Related Disorders	Punctual and full-time attendance and active participation in class (attention, discussion participation, Q&A, etc.)	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Mohammadzadeh
Second	Structure and Role of Hypothalamus and Pituitary Gland Hormones and their Functional Disorders	Punctual and full-time attendance and active participation in class (attention, discussion participation, Q&A, etc.)	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Mohammadzadeh
Third	Structure and Role of Thyroid and Parathyroid Gland Hormones and their Functional Disorders	Punctual and full-time attendance and active participation in class (attention, discussion	Interactive Lecture (Q&A during teaching), Encouraging students for	Dr. Mohammadzadeh

		participation, Q&A, etc.)	more participation	
Fourth	Structure and Function of Adrenal Gland Hormones and their Functional Disorders	Punctual and full-time attendance and active participation in class (attention, discussion participation, Q&A, etc.)	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Mohammadzadeh
Fifth	Structure and Role of Pancreatic Hormones and their Functional Disorders	Punctual and full-time attendance and active participation in class (attention, discussion participation, Q&A, etc.)	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Mohammadzadeh
Sixth	Structure and Role of Gonadal Hormones and their Functional Disorders	Punctual and full-time attendance and active participation in class (attention, discussion participation, Q&A, etc.)	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Mohammadzadeh
Seventh	Clinical Enzymology and the Use of Enzymes in Clinical Practice	Punctual and full-time attendance and active participation in class (attention, discussion participation, Q&A, etc.)	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Mohammadzadeh
Eighth	Metabolism of Water, Minerals, and Electrolytes	Punctual and full-time attendance and active participation in class (attention, discussion	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Ghasemian

		participation, Q&A, etc.)		
Ninth	pH Regulation, Acidosis and Alkalosis, and the Role of Lungs and Kidneys in pH Regulation, ABG Diagnosis, Anion Gap	Punctual and full-time attendance and active participation in class (attention, discussion participation, Q&A, etc.)	Interactive Lecture (Q&A during teaching), Encouraging students for more participation	Dr. Ghasemian

Student Assignments:

Answering questions in each teaching session.

Course Evaluation Method:
Assignment Score: 20%
Midterm Exam Score: 40%
Final Exam Score: 40%

Main Course Resources Approved by the Ministry:

Harper's Biochemistry, 2023
Medical Biochemistry, Volume Two, authored by the Authors' Committee of Tehran University of Medical Sciences