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**Department of Biology**

**College of Science**

**Salahaddin University - Erbil**

**Subject: Endocrinology**

**Course Book – Year 4**

**Lecturer names:**

**Zana Rafiq Majeed, PhD / Theory**

##### **Hawzheen Kareem Othman, M.Sc./ Practical**

**Academic Year: 2022-2023**

**Course Book**

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| **1. Course name** | **Endocrinology** |
| **2. Lecturer in charge** | **Dr. Zana Rafiq Majeed (Theory)****Hawzheen Kareem Othman, M.Sc. (Practical)** |
| **3. Department/ College** | **Department of Biology/College of Science** |
| **4. Contacts** | **E-mails:**  **zana.majeed@su.edu.krd** **hawzheen.othman@su.edu.krd** |
| **5. Time (in hours) per week** | **Dr. Zana: 4 hrs theoretical & 8 hrs. practical supervision** |
| **6. Office hours** | **Dr. Zana: Tuesday and Friday: 8:30-12:30 am**  |
| **7. Course code** | **Endocrinology** |
| **8. Teacher's academic profile** | **Zana Rafiq Majeed, Ph.D. in Biology/Physiology** **EDUCATION** 1. Department of Biology, College of Arts and Sciences, University of Kentucky, Lexington, Kentucky, USA. **PhD in Biology/Physiology Jan 2011-May 2016** **Dissertation title:** Modulatory Actions of Serotonergic System in Cardiac Function, Behavior, and Sensorimotor Circuit Activity in *Drosophila melanogaster.* **Dissertation Director:** Dr Robin L. Cooper 2. Department of Biology, College of Science, Salahaddin University-Erbil, Erbil, Iraq. **MSc in Biology/Animal Physiology November 2004-August 2006 Thesis project:** Effects of L-Carnitine and Melatonin on Biochemical and Hematological Parameters in Male Albino Rats. **Thesis Director:** Dr Almas M.R. Mahmud 3. Department of Biology, College of Science, Salahaddin University-Erbil, Erbil, Iraq. **B.Sc. in Biology October 1999-July 2003 Research Project:** Incidences of Bacterial Urinary Tract Infection in Pregnant Women in Pediatric and Maternity Hospital, Erbil, Iraq. 4. Rizgari High school, Erbil, Iraq. **Baccalaureate degree October 1996-July 1999** **PROFESSIONAL EXPERIENCES** 1. Lecturer, College of Science, Salahaddin University-Erbil, Erbil, Iraq.  **October 2010-Present**
2. Assistant Lecturer, College of Science, Salahaddin University-Erbil, Erbil, Iraq.  **November 2006- 2010**
3. Biology Assistant, College of Science, Salahaddin University-Erbil, Erbil, Iraq.  **October 2003- November 2004**

**AWARDS** 1. Awarded the First Place Prize for oral presentation of Graduate Research Competition (Physiology and Biochemistry Section) at the Kentucky Academy of Science meeting (2012).2. Awarded the second Place Prize for oral presentation of Graduate Research Competition (Physiology and Biochemistry Section) at the Kentucky Academy of Science meeting (2013).  **TEACHING EXPERIENCES** 1. English Language Course for Biology Students (2016-2017).
2. Lab-based comparative anatomy course for four years (2006-2010).
3. Lab-based genetics, introductory biology, and principles of experimental animal physiology.

**SCHOLARSHIP** 1. PhD scholarship by the Higher Committee for Education Development in Iraq (HCED) (6 years). **PEER REVIEWED selected PUBLICATIONS** 1. Miller BF, Hamilton KL, **Majeed ZR**, Abshire S., Confides A, Hayek A, Hunt E, Shipman P, Peelor FF III, Butterfield T, Dupont-Versteegden E (2018) Enhanced skeletal muscle regrowth and remodeling in massaged and contralateral non- massaged hind limb. J Physiol. 2018 Jan 1;596(1):83-103.
2. **Majeed ZR,** Koch, F, Morgan, J, Anderson, H, Wilson, J, and Cooper, RL (2017) A novel educational module to teach neural circuits for college and high school students: NGSS-neurons, genetics, and selective stimulations. F1000Research. F1000Research: Immediate & Transparent Publishing for Life Scientists. F1000 Research Ltd, Middlesex House, 34-42 Cleveland St, London W1T 4LB, UK.
3. Anderson KL, Frazier HN, Maimaiti S, Bakshi VV, **Majeed ZR**, Brewer LD, Porter NM, Lin AL, Thibault O (2017) Impact of Single or Repeated Dose Intranasal Zinc-free Insulin in Young and Aged F344 Rats on Cognition, Signaling, and Brain Metabolism. The journals of gerontology. Series A, Biological sciences and medical sciences 72(2): 189-197.
4. **Majeed ZR,** Abdeljaber E, Soveland R, Cornwell K, Bankemper A, Koch F, Cooper RL (2016) Modulatory Action by the Serotonergic System: Behavior and Neurophysiology in Drosophila melanogaster. Neural Plasticity vol. 2016, 23 pages. http://www.hindawi.com/journals/np/2016/7291438/
 |
| **9. Keywords** | **Integument, skeleton, muscle, neurons, digestion, respiration.** |
| **10. Course overview:**  This course covers principles in Endocrinology. It is designed to introduce fourth year biology students with various aspects of endocrine glands.  |
| **11. Course objective:**The main aims of this course are:- to provide comprehensive coverage of the fundamental concepts of hormone biological action.- to contrast the terms endocrine, paracrine, and autocrine.- to understand the major differences in mechanisms of action of peptides,steroids, and thyroid hormones.- to describe the physiologic and anatomic relationships between the hypothalamus and the anterior and the posterior pituitary.- to understand the mechanisms that regulate anterior pituitary hormone production and describe their actions on target organs.- to describe the distribution of iodine and the metabolic pathway involved in thyroid hormone synthesis.- to describe the regulation of parathyroid hormone secretion and the role of the calcium-sensing receptor.- to understand the cellular mechanism of action of adrenal cortical hormones and identify their major physiologic actions, particularly during injury and stress.- to understand the nutrient, neural, and hormonal mechanisms that regulate pancreatic hormone release.- to describe the endocrine regulation of testicular function by gonadotropin-releasing hormone, follicle-stimulating hormone, luteinizing hormone, testosterone, and inhibin.- to describe the cellular mechanisms of action for estrogen and progesterone. |
| **12. Student's obligation*** Attendance will be taken in the first 5min of each lecture. During which if you are not present, you will be recorded as an absentee.
* The students are required to keep their mobile devices quiet at all times during the lectures.
* The students are expected to remain respectful and civil to their fellow students.
* Any verbal and/or written form of cheating is not tolerated.
* The exams once set, will not be postponed. You will be reminded with a note on the students’ note-board several days before the exam.
* English language is used in the lectures. Students are expected to answer exam questions in English language only.

**Students’ lab obligations:****Exam policy:** Student Should take 2 exams during the course; There will be no make-up exams for absent students without medical report. **Quizzes:** students are quizzed every week.**Seminar:** during the course, the students will do a seminar. |
| **13. Forms of teaching**PowerPoint presentation, videos, in class activities, and sample identification |
| **14. Assessment scheme**Student assessment will be based on scores obtained in the written exams. There will be at least two written exams. (15 theoretical+ 35 practical).  |
| **15. Student learning outcome:**This course discusses the endocrine glands and their functions that make human life possible. Our goals are to help you develop a three-dimensional understanding of endocrine gland relationships, prepare for more advanced courses in physiology and related subjects, and make informed decisions about your personal health.  |
| **16. Course Reading List and References:****Theory:**Molina, PE (2018). Endocrine physiology. Fifith Edition. Published by McGraw-Hill Education, Inc., United States of America.**Practical:**   |
| **17. The Topics:** | **Timeline** |
| **Lecture 01:** An Overview of Endocrine System | Week 1 |
| **Lecture 02:** Mechanisms of hormone actions | Week2 |
| **Lecture 03:** TheHypothalamus and Pituitary Gland | Week3 |
| **Lecture 04:** Control of Pituitary Secretion | Week4 |
| **Lecture 05:** Thyroid and Parathyroid Glands | Week5 |
| **Lecture 06:** The Adrenal Glands | Week6 |
| **Examination 1** | Weeks7 |
| **Lecture 07:** The Endocrine Pancreas | Week8 |
| **Lecture 08:** Metabolic actions of insulin  | Week9 |
| **Lecture 09:** Female reproductive endocrinology | Week10 |
| **Lecture 10:** Male reproductive endocrinology | Week11 |
| **Lecture 11:** Endocrine pathologies (I) | Week12 |
| **Lecture 12:** Endocrine pathologies (II) | Week13 |
| **Examination 2** | Weeks 14 |
| **18. Practical Topics**  |  |
| **Lab 01:** An Overview of Endocrine System | **Week One** |
| **Lab 02:** Mechanisms of hormone actions | **Week Two** |
|  **Lab 03:** TheHypothalamus and Pituitary Gland | **Week Three** |
| **Lab 04:** Control of Pituitary Secretion | **Week Four** |
| **Lab 05:** Thyroid and Parathyroid Glands | **Week Five** |
| **Lab 06:** The Adrenal Glands | **Week Six** |
| **Examination 1** | **Week Seven** |
| **Lab 07:** The Endocrine Pancreas | **Week Eight** |
| **Lab 08:** Metabolic actions of insulin  | **Week Nine** |
| **Lab 09:** Female reproductive endocrinology | **Week ten** |
| **Lab 10:** Male reproductive endocrinology | **Week eleven** |
| **Lab 11:** Endocrine pathologies (I) | **Week twelve** |
| **Examination 2** | **Week Thirteen** |
| **19. Examinations:****Theory:****Exams will be mixture of the following styles:**1. Multiple choice
2. Short assay
3. True or false
4. Drawing

**During Answering**: the student should:1. Understand the questions.
2. Answer the questions asked during the assigned exam time.
3. Answer should be precise.

**Practical:** **1. I identify:** samples.**2. Compositional:** In this type of exam the questions usually starts with Explain how, What are the reasons for…? Why…? How….?**3.** **True or false type of exams:*** In this type of exam a short sentence about a specific subject will be provided, and then students will comment on the trueness or falseness of this particular sentence.

**4. Multiple choices:*** In this type of exam there will be a number of phrases next or below a statement, students will match the correct phrase.
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| **20. Extra notes:** |
| **21. Peer review پێداچوونه‌وه‌ی هاوه‌ڵ**This course book has to be reviewed and signed by a peer. The peer approves the contents of your course book by writing few sentences in this section.*(A peer is person who has enough knowledge about the subject you are teaching, he/she has to be a professor, assistant professor, a lecturer or an expert in the field of your subject).*ئه‌م کۆرسبووکه‌ ده‌بێت له‌لایه‌ن هاوه‌ڵێکی ئه‌کادیمیه‌وه‌ سه‌یر بکرێت و ناوه‌ڕۆکی بابه‌ته‌کانی کۆرسه‌که‌ په‌سه‌ند بکات و جه‌ند ووشه‌یه‌ک بنووسێت له‌سه‌ر شیاوی ناوه‌ڕۆکی کۆرسه‌که و واژووی له‌سه‌ر بکات.هاوه‌ڵ ئه‌و که‌سه‌یه‌ که‌ زانیاری هه‌بێت له‌سه‌ر کۆرسه‌که‌ و ده‌بیت پله‌ی زانستی له‌ مامۆستا که‌متر نه‌بێت.‌‌ |

**Peer reviewed by:**

**Mr Mohammed Ali Saleem**

**Head of Biology Department**