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|---|---|---|
| 1 | Course title | Endocrinology |
| 2 | Course number | 0602951 |
| 3 | Credit hours (theory, practical) | 3 , 0 |
| 4 | Program title | Ph.D in Animal Production |
| 5 | School | Agriculture |
| 6 | Department | Animal Production |
| 7 | Year of study and semester (s) | 2nd semester, 2023/2024 |

**8. Course Coordinator:**

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|---|---|---|
| **Prof. Mufeed A. Alnimer** | **Office number: 032** | **phone number: 22383** |
| **Email: amufeed@ju.edu.jo** | **office hours: 13.00 – 14.30 Sun. + Tue.** | |

**9. Course Description:**

The course will address the knowledge of hypothalamic-pituitary regulation of physiological systems, including reproduction, growth, immune function, digestion, and behaviour. Endocrine glands will be studied from the standpoint of their structure, physiological function in relation to the organism, the chemical nature and mechanisms of action of their secretory products, and the nature of anomalies manifested with their dysfunction.

**10. Course aims and outcomes:**

**A- Aims:**

This course is designed to provide a broad overview of vertebrate endocrinology. Course topics will include the various classes of hormones, sources of hormones, production and synthesis of hormones, receptors and target tissues, mechanisms of action and regulation, and methods used in endocrinology. Lectures and readings from the primary literature will focus on classical endocrine systems.

**B- Intended Learning Outcomes (ILOs):**

Upon completing this course, students should be capable of effectively communicating how endocrine systems function. Students should develop the ability to integrate across multiple endocrine systems to understand the complexity of endocrine-related disorders better. Students should also be capable of critically evaluating information from the media and literature on the topic. Lastly, students should gain a general understanding of the approaches used to study various facets of endocrinology.

**11. Topic Outline and Schedule:**

| Topic | Week | References |
|---|---|---|
| Introduction to Endocrinology; definitions, a brief history of endocrinology, key figures and research | 1 | **Chapter 1 and 2** |
| Protein vs. steroid Hormones Differences—Chemical Structure | 1 | **Chapter 2** |
| Protein vs. Steroid hormone actions on cells metabolism, degradation, storage, etc, | 1 | **Chapter 2** |
| Mechanisms of Hormone Action (signal transduction) –G-coupled, Tyrosine kinase | 2 | **Chapter 1** |
| Mechanisms of Hormone Action- Continue tyrosine kinase and Steroid hormones | 2 | **Chapter 1** |
| Hypothalamus- Anatomy, TRH, GnRH, GHRH, Somatostatin | 3 | **Chapter 3** |
| Hypothalamus- CRH, PIF, PRF | 3 | **Chapter 3** |
| Pituitary Development- Anterior- GH and Prolactin | 4 | **Chapter 3** |
| Anterior Pituitary- Glycoprotein Hormones- FSH, LH, TSH | 4 | **Chapter 3** |
| Posterior pituitary- Anatomy, Vasopressin effects on social behaviour | 5 | **Chapter 4** |
| Posterior Pituitary- Oxytocin | 5 | **Chapter 4** |
| Parathyroid Gland/Hormonal Regulation of Calcium Homeostasis | 5 | **Chapter 9** |
| Parathyroid Gland/Hormonal Regulation of Calcium Homeostasis | 6 | **Chapter 9** |
| Thyroid Gland | 6 | **Chapter 5** |
| Thyroid Gland | 6 | **Chapter 5** |
| **First Exam** | **7** | |
| Pancreas/Regulation of Metabolic Function | 8 | **Chapter 6** |
| Pancreatic Gland / Regulation of Metabolic Function | 8 | **Chapter 6** |
| Metabolic Hormones/GI Hormones | 9 | **Chapter 7** |
| GI Hormones | 9 | **Chapter 7** |
| Adrenal Gland/Medulla- Catecholamines and Sympathoadrenal System | 10 | **Chapter 11** |
| Adrenal Cortex | 10 | **Chapter 11** |

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| Adrenal Cortex | 11 | **Chapter 10** |
| Hormones in Kidney that regulate Blood Pressure and effect Heart | 11 | **Chapter 10, 15,17** |
| Endocrinology of Sex Differentiation, Development and Behaviour | 12 | **Chapter 12** |
| Hormones and Male Reproductive Physiology | 12 | **Chapter 12** |
| Hormones and Male Reproductive Physiology, Cancer | 12 | **Chapter 11** |
| **Second Exam** | **13** | |
| Hormones and Female Reproductive Physiology | 14 | **Chapter 13** |
| Hormones and Female Reproductive Physiology | 14 | **Chapter 13** |
| Hormones and Female Reproductive Physiology, Hormones Involved in Pregnancy and Parturition | 14 | **Chapter 14** |
| Lactation, Pineal Gland, Cancer | 15 | **Chapters 14, 16, 17** |

**12. Evaluation Methods and Course Requirements:**

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

**First exam: 20%**

**Second exam: 20%**

**Oral presentations: 20%**

**Final exam: 40%**

**13. References:**

Required book (s), assigned reading and audio-visuals:

- **Hormones, Anthony W. Norman and Helen L. Henry, 2015, 3rd ed., Elsevier Science.**
- **Applied Animal Endocrinology. E. James Squires. 2003, CABI publishing.**
- **Textbook of Endocrinology. Williams 2003, 10thPhiladelphia: WB Saunders**.

**INTENDED GRADING SCALE**

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|---|---|
| **0-61** | **C** |
| **62-64** | **C+** |
| **65-67** | **B-** |
| **68-73** | **B** |
| **70-73** | **B** |
| **74-76** | **B+** |
| **77-79** | **A-** |
| **80-100** | **A** |