B. Sc. Zoology Honors with Research 8th Semester

ENDOCRINOLOGY

Course Code: ZOLR1822M Credits 4 Hours 64 hours

Course Objectives:The course aims to:

1. Introduce the **scope and principles of endocrinology**, including endocrine glands, hormones, and their mechanisms of action.
2. Provide comprehensive knowledge about the **structure, functions, and regulation of central and peripheral endocrine glands**.
3. Explain the **role of hormones in metabolism, reproduction, and homeostasis**.
4. Develop an understanding of **hormonal signaling pathways, regulation, and physiological integration**.
5. Familiarize students with **common endocrine disorders** and their impact on human health.

Learning Outcomes: By the end of this course, students will be able to:

1. **Explain** the scope, principles, and classification of endocrinology.
2. **Describe** the structure, functions, and regulation of major endocrine glands.
3. **Analyze** hormone mechanisms of action and regulatory pathways.
4. **Evaluate** the roles of hormones in metabolism, reproduction, and homeostasis.
5. **Identify** common endocrine disorders and their physiological effects.

Unit 1: Introduction to Endocrinology

1.1: History & scope of Endocrinology

1.2: Overview of endocrine glands.

1.3: Classification, and Characteristics of Hormones

1.4: Mechanism of Hormone action - signal transduction & regulation.

Unit 2: Central and Peripheral Endocrine Glands

2.1: Hypothalamus and pituitary gland: Structure, Hormones and their functions.

2.2: Pineal gland and regulation of circadian rhythms

3.1: Thyroid, and Parathyroid glands- Structure, hormones, functions and regulation.

3.2: Adrenal gland- Structure, hormones, functions and regulation

Unit 3: Endocrinology of Metabolism, Reproduction and Disorders

3.1: Pancreas-Structure, Hormones, and Functions.

3.2: Testis & Ovary- Structure, Hormones, & Functions.

3.3: Role of endocrine hormones in mammalian reproductive cycles.

3.4: Disorders of endocrine glands.

Unit 4: Hormones in Metabolism and Homeostasis

4.1: Role of Hormones in Carbohydrate Metabolism

4.2: Role of Hormones in Protein Metabolism

4.3: Role of Hormones in Fat and Calcium Metabolism.

4.4: Role of Hormones in Osmoregulation (RAAS).

SUGGESTED READINGS

- Turner, C. D. (1971) General Endocrinology, Pub- Saunders Toppan.
- Nussey, S.S.; and Whitehead, S.A. (2001) Endocrinology: An Integrated Approach,Oxford: BIOS Scientific Publishers.
- Hadley, M.E. and Levine J.E. (2007) Endocrinology (6th edition) Pearson Prentice-Hall,New Jersey.
- David, O.N. (2013) Vertebrate Endocrinology.
- Wilson, JW et al.: Williams Textbook of Endocrinology, 9th edition, Saunders, 1998.