Tripura University

(A Central University)

Suryamaninagar

West Tripura

Syllabus for

Four Years Undergraduate Programme Subject:

Human Physiology

(As per NEP-2020)

4th Semester (Major)

Revised as on October, 2025

SEMESTER-IV

Paper-7 (Theory)
HP-401C
Total Mark = 100 (IA = 40 + ESE = 60) Credit = 04

Unit-I (Endocrinology-I)

1. Concept of autocrine, paracrine and endocrine system. Anatomical organization of endocrine glands. Mode of action of hormones, signal transduction and concept of second messenger system. Feedback regulation of hormone action.
2. Hypothalamus and Pituitary-Hypothalamus as a neuroendocrine organ. Hypothalamic releasing factors. Hypothalamo-hypophyseal portal system, Anterior and posterior pituitary- histological structure of the gland.
3. Pituitary hormones, functions and regulation of secretion of hormones.
4. Thyroid and Parathyroid-Histological structure of the glands. Thyroid and parathyroid hormones, chemical nature, mechanism of action, functions and regulation of secretion of the hormones. Calcium-phosphate homeostasis.

Unit-II (Endocrinology-II)

1. Adrenal gland-Histological structure of the gland. Adrenal cortical and medullary hormones, mechanism of action, functions and regulation of secretion of these hormones.
2. Endocrine Pancreas- Histological structure. Hormones of Islet of Langerhans, Insulin, glucagon and other hormones, mechanism of action, functions and regulation of secretion of the hormones.
3. Hormonal control of blood sugar. Diabetes mellitus-types.
4. Gastro-intestinal hormones–Gastrin, Secretin, CCK, somatostatin, ghrelin and GRP--functions of these hormones.
5. Effect of hypo and hyper secretion of hormones of different endocrine glands.

Unit-III (Reproductive Physiology-I)

1. Anatomical organization of male and female reproductive organs. Primary and accessory sex organs and secondary sex characters.
2. Histology of testis. Blood testis barrier,
3. Endocrine functions of testis. Spermatogenesis and its regulation
4. Hypothalamic control of testicular functions. Cryptorchidism.

Unit-IV (Reproductive Physiology-II)

1. Histology of ovary. Ovarian hormones and their functions.
2. Oogenesis and ovulation. Formation and functions of corpus luteum.
3. Physiology of puberty. Menstrual cycle- ovarian and uterine changes and its hormonal regulation. Onset of menopause and postmenopausal changes. Abnormalities in menstrual cycle.
4. Physiology of lactation and parturition.

Paper-8A (Theory)
HP-402C
Total Mark = 60 (IA = 24 + ESE = 36) Credit = 02

Unit-I (Nerve muscle Physiology-I)

1. Structure, properties and classification of Neurons and Neuroglia.
2. Nerve fibers structure and types. Properties of nerve fibers, modern concept of generation of resting membrane potential, graded potential.
3. Action potential, ionic basis, characteristics of AP, propagation in different types of nerve fibers. Rheobase and chronaxae.
4. Nerve injury-Degeneration and regeneration of nerve fibers, Factors affect Nerve growth.

Unit-II (Nerve muscle Physiology-II)

1. Synapse, structure, classification, properties, Transmission of nerve impulse through synapse, EPSP, IPSP. Neuromuscular Junction, structure, motor unit, motor point, propagation of nerve impulse through the neuro-muscular junction, MEPP, EPP.
2. Receptors, classification, types, properties, mechanism of transduction of stimuli from sensory receptors, Reflex, arc, classification, properties.
3. Muscle: Structural properties of skeletal and smooth muscles,
4. Sarco-tubular system, Mechanism of skeletal and smooth muscle contraction, EC coupling, Rigor-mortis.
5. Properties of skeletal muscle.

Paper-8B (Practical)
HP-402C
Total Mark = 40 (IA = 16 + ESE = 24) Credit = 02

CONTENTS:

1. Study and identification of histological slides of endocrine glands and reproductive system.
2. Study of Models for anatomical position and functions of organs of endocrine glands and reproductive system
3. Staining of skeletal and cardiac muscle by methylene blue.
4. Demonstration on the nerve-muscle preparation and interpretation of kymographic recording of isotonic muscle twitch, effects of temperature, load and two successive stimuli on muscle twitch.
5. Study of Charts on—Spermatogenesis and oogenesis.
6. Study of Charts for identification of—Primary, secondary and mature graafian follicles.
7. Determination of onset of puberty from the velocity growth curve of stature of school children.