VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

M.D.

Physiology

Postgraduate study

Apart from undergraduate course M.D. study include:

I. Comparative Physiology

II. Animal Physiology

III. History of Physiology

IV. History of medical science

V. Recent advances

VI. Evolution

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT.

M.B.B.S.

Physiology

1) GENERAL PHYSIOLOGY:

i) Cell structure, organelles & function
ii) Biophysics
iii) Homeostasis

II. Body fluid

i) Distribution
ii) ECF
iii) ICF
iv) Interstitial fluid
v) Applied aspects

2) HEMATOLOGY

i) Function of Blood
ii) Properties of Blood
iii) Composition of Blood
iv) Erythrocytes
    (a) Structure,
    (b) Function,
    (c) Development
    (d) Applied
v) Leukocytes
    (a) Identification.
    (b) Classification,
    (c) Structure,
    (d) Function,(includes immune system)
    (e) Development
    (f) Applied
vi) Thrombocytes
    (a) Structure
    (b) Function,
    (c) Development
    (d) applied
vii) Plasma: composition
    (a) Plasma proteins
    (b) Classification
    (c) Function
    (d) applied

3) EXCITABLE TISSUES(NERVE & MUSCLE PHYSIOLOGY) & BIO-POTENTIALS

i) Resting membrane potential & Action Potentials
ii) Nerve ,synapse & synaptic transmission
    (a) Classification

(b) Structure
(c) Properties
(d) Function

iii) Muscle : Skeletal ,cardiac & smooth
(a) Types
(b) Structure
(c) Properties
(d) Neuromuscular junction: Structure & mechanism of contraction
(e) Applied Physiology

4) CARDIO VASCULAR PHYSIOLOGY

I. Cardiac system
a. Anatomy
b. Cardiac cycle
c. Heart rate
d. Cardio dynamics
e. Conduction system ,ECG
f. Coronary Circulation, Pulmonary & Systemic circulation
g. Cardiac output
h. Venous return

II. Circulatory system
a. Anatomy
b. Hemo dynamics
c. Arterial pressure ,Volume & regulation

III. Applied physiology

5) DIGESTIVE SYSTEM

i) Anatomy & function (GIT,Liver,Pancreas,Gallbladder…)
ii) Secretion
iii) Digestion
iv) Absorption
v) Control of secretion
a. Nervous
b. Hormonal
c. Higher centers
vi) Motility in GIT
a. Mastication
b. Deglutition
c. Intestinal movements
d. Defecation
vii) GI hormones
viii) Applied
(a) Vomiting
(b) Diarroea

6) EXCRETORY SYSTEM(RENAL & SKIN :BODY TEMPERATURE)

I. Anatomy(Kidney,Ureter,Bladder)
i) structure
ii) functions
iii) Control

II. Functions of kidneys
   i) Homeostasis
      a. Body fluid regulation(ECF)
      b. Urine formation & regulation
      c. Ph regulation
      d. Excretion of waste products
   ii) Hormonogenesis
      a. Renin
      b. Erythropoietin
   iii) Vit-D activation
   iv) Body-temperature regulation
   v) Gluconeogenesis during starvation…
   vi) Applied

7) RESPIRATORY PHYSIOLOGY

a. Anatomy & functions
b. Respiratory mechanics
c. Pressure & volumes
d. Compliance & Elastance
e. Work of respiration
f. Resistance
g. PFT
h. Ventilation –perfusion
i. Gaseous exchange
j. Gas transport
k. Regulation of respiration
l. Applied Physiology

8) CENTRAL NERVOUS SYSTEM

a. Anatomy & Histology of Brain(Fibers in CNS)
b. Synapse
c. Neurotransmitters
d. Reflexes
e. Receptors
f. CSF
g. ANS
   - ♦ Receptor
   - ♦ Sympathetic system
   - ♦ Parasympathetic nervous system

h. Sensory system
   - ♦ Receptors
   - ♦ Properties
   - ♦ Pathways

i. Motor system
   - ♦ The Pyramidal System, Major voluntary Motor, Crosses in Medulla
   - ♦ The Extrapyramidal System

j. Spinal cord
k. Cerebral cortex

l. Corpus Callosum
m. The Basal nuclei (ganglia)
n. Caudate nucleus
o. The limbic system
p. Thalamus
q. Hypothalamus
r. Pons
s. Medulla Oblangata
t. Cerebellum
u. EEG & Sleep
v. Learning & memory
w. Cranial nerves
x. Special senses
    - Vision
    - Hearing
    - Gustatory
    - Olfaction

9) ENDOCRINOLOGY

a. General endocrinology
    - Physical &Chemical characteristics Of hormones
    - Mechanisms of Action
    - Hormonal control system

b. Pituitary & Hypothalamic hormones
    - Structure
    - Secretion
    - Function
    - Physiological effects
    - Applied physiology

c. Thyroid gland
    - Structure
    - Secretion
    - Function
    - Physiological effects
    - Applied physiology

d. Parathyroid gland
    - Calcium metabolism
    - Vit-D
    - PTH

e. Pancreas :Anatomy
    - Glucagon
    - Somatostatin
    - PPfactor
    - Insulin
        a. Structure
        b. Secretion

c. Function
d. Physiological effects
e. Control
f. Applied physiology

f. Adrenal gland
- Cortical hormones
- Medullary secretion

10.) REPRODUCTIVE SYSTEM

a. Male reproductive system
- Anatomy
- Secretion by testis ,Spermatogenesis
- Function
- Physiological effects
- Control
- Applied physiology

b. Female reproductive Physiology
i. Non-pregnant Stage
- Anatomy
- Secretion
- Uterine sexual cycle
- Oogenesis
- Control
- Applied physiology

ii.Pregnancy
- Hormones
- Changes during pregnancy

iii.Lactation