

COURSE: PHYSIOLOGY

SEMESTER: FIRST

NUMBER OF UNITS: 6 Units

COURSE DURATION: 6 hours per week

**COURSE LECTURERS: Prof. (Mrs). Ebomoyi Maureen Isoken
Prof. Iyalomhe Godfery Bolade Samuel**

INTENDED LEARNING OUTCOMES

At the end of this semester, the student should demonstrate:

- i. Theoretical and practical knowledge of basic physiological functions.
- ii. The understanding of physiological mechanisms in various human systems.

COURSE DETAILS

Week 1: General Principles: *Introduction and History of Physiology. Structure and function of cell membranes with emphasis on transport across cell membrane*

Week 2. Cardiovascular and Respiratory: *Biophysical principles. Osmosis, diffusion, active transport. Homeostasis and control systems. Blood and Body Fluids: Fluids of blood cellular components, blood groups, haemoglobin and haemopoiesis. Body fluids and electrolytes: their measurement and regulation.*

Week 3: Cardiovascular and Respiratory: *Organisation and Structure of aorta and large arteries and arterioles – as resistance vessels, capillaries as sites of tissue fluid exchange. Heart – properties and function of cardiac muscle.*

Week 4: Cardiovascular and Respiratory: *Regulation of heart rate and cardiac output. Baroreceptors and control of arterial blood pressure. Regional circulation: heart, brain, haemorrhage, exercises, posture, altitude.*

Week 5-6: Cardiovascular and Respiratory: *The respiratory tracts: structure and function. Pulmonary gas exchange, mechanics of respiration, compliance, surfactant, lung volumes and capacities, uptake and delivery of respiratory gases with reference to O₂ and CO₂ transport. Pulmonary function tests. Response to hypoxia, high altitude, exercises. Artificial respiration, chemical and neural control of respiration.*

Week 7-8: Gastro-Intestinal and Renal Physiology and Metabolism: *Gastrointestinal tract, innervation and visceral sensations of the Gut, mobility and secretions, gastrointestinal hormones, pancreatic and biliary secretions, its adaptability to absorption of carbohydrates, protein, nucleic acids, fat, water, mineral etc. liver function tests.*

Week 9-10: Gastro-Intestinal and Renal Physiology and Metabolism *The Nephron, Urine formation Urinalysis, Urinary Concentration, ADH and Osmolality, Acids/Base Balance, Micturition, Endocrine function of the kidney.*

Week 11-12: Revision.



PHYSIOLOGY by Prof. (Mrs). Ebomoyi Maureen Isoken and Prof. Iyalomhe Godfery Bolade Samuel is licensed under the [Creative Commons Attribution- Non Commercial-Share Alike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/)

RESOURCES

- **Lecturer's Office Hours:**

Prof. (Mrs). Ebomoyi Maureen Isoken. Wednesdays and Thursdays: 8.00 am-10.00 am

Prof. Iyalomhe Godfery Bolade Samuel. Mondays 8.00-10.00am

- **Course lecture Notes**

- **Books:**

Essentials of Anatomy and Physiology, 2009 3rd Edition

Anatomy and Physiology, 2010, 8th Edition

- Homeworks + Project: ~ 30% of final grade.

- **Exams:**

- Final, comprehensive (according to university schedule): ~ 70% of final grade

Assignments & Grading

- **Academic Honesty:** All classwork should be done independently, unless explicitly stated otherwise on the assignment handout.

- You may discuss general solution strategies, but must write up the solutions yourself.

- If you discuss any problem with anyone else, you must write their name at the top of your assignment, labeling them "collaborators".

- **NO LATE HOMEWORKS ACCEPTED**

- Turn in what you have at the time it's due.

- All homework are due at the start of class.

- If you will be away, turn in the homework early.

- Late Programming Assignments (projects) will not be accepted, but penalized according to the percentages given on the syllabus

COURSE CONTENT: PHYSIOLOGY

General Principles Introduction and History of Physiology. Structure and function of cell membranes with emphasis on transport across cell membrane. Biophysical principles. Osmosis, diffusion, active transport. Homeostasis and control systems. Blood and Body Fluids: Fluids of blood cellular components, blood groups, haemoglobin and haemopoiesis. Body fluids and electrolytes: their measurement and regulation.

Cardiovascular and Respiratory: Organisation and Structure of aorta and large arteries and arterioles – as resistance vessels, capillaries as sites of tissue fluid exchange. Heart – properties and function of cardiac muscle. Regulation of heart rate and cardiac output. Baroreceptors and control of arterial blood pressure. Regional circulation: heart, brain, haemorrhage, exercises, posture, altitude. The respiratory tracts: structure and function. Pulmonary gas exchange, mechanics of respiration, compliance, surfactant, lung volumes and capacities, uptake and delivery of respiratory gases with reference to O₂ and CO₂ transport. Pulmonary function tests. Response to hypoxia, high altitude, exercises. Artificial respiration, chemical and neural control of respiration.

Gastro-Intestinal and Renal Physiology and Metabolism: Gastrointestinal tract, innervation and visceral sensations of the Gut, mobility and secretions, gastrointestinal hormones, pancreatic and biliary secretions, its adaptability to absorption of carbohydrates, protein, nucleic acids, fat, water, mineral etc. liver function tests. The Nephron, Urine formation Urinalysis, Urinary Concentration, ADH and Osmolality, Acids/Base Balance, Micturition, Endocrine function of the kidney.



PHYSIOLOGY by Prof. (Mrs). Ebomoyi Maureen Isoken and Prof. Iyalomhe Godfery Bolade Samuel is licensed under the Creative Commons Attribution- Non Commercial-Share Alike 4.0 International License