



UNIVERSITATEA  
DE MEDICINĂ ȘI FARMACIE  
VICTOR BABEȘ | TIMIȘOARA

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**DEPARTAMENTUL ȘTIINTE FUNCTIONALE**

**DISCIPLINA DE FIZIOLOGIE**

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## **TOPICS**

**For the Professor position,  
Faculty of Medicine, Department III Functional Sciences, Physiology,  
Position 3 (Fiziologie; Physiology – MEN)**

### **Lecture subjects:**

1. Cell membrane physiology
2. Total blood volume. Blood functions and properties. Hematopoiesis. Substances required for hematopoiesis. Regulation of erythropoiesis.
3. Erythrocyte's physiology. The role of erythrocytes in the homeostasis of oxygen, carbon dioxide and acid-base balance. Physiological hemolysis
4. Physiology of the leukocyte series. Granulocyte functions. Monocyte-macrophage system. The role of lymphocytes in the body's defense mechanisms
5. Platelet physiology. Primary and secondary hemostasis. Blood clotting factors. Mechanisms of blood clotting. Fibrinolysis.
6. Secretory function of the digestive tract
7. Motor function of the digestive tract
8. Liver physiology
9. Organization of cardiovascular system. Functional structure of the heart. Functional organization of myocardial fiber. Cardiac bioelectrical potentials.
10. Physiology of nodal system. Cardiac automatism.
11. Myocardial excitability. Myocardial conduction function.
12. Cardiac cycle. Ventricular systole and diastole. Correlations between mechanical and electric phenomena during the cardiac cycle.
13. Physiology of circulation. Hemodynamic parameters. Physiology of trans-capillary exchanges.
14. Cardiovascular regulatory mechanisms. Autoregulation and neuro-humoral regulation of circulation.
15. Physiology of pulmonary ventilation.
16. Regulation of respiration.
17. Glomerular filtration
18. Functions of renal tubules: reabsorption and secretion processes.
19. Renal control of water, ionic and acid-base balance
20. Endocrine hypothalamus
21. Physiology of pituitary gland

22. Physiology of thyroid hormones
23. Adrenal gland hormones
24. Physiology of the hormones involved in phospho-calcium balance
25. Neuron physiology. Neuronal resting and action potential. Excitability and conduction function of the neuron.
26. Synapse physiology. Systems for regulation and control of body functions – feed-back mechanism. Elementary reflex activity.
27. Physiology of striated muscle fiber. Physiology of skeletal muscle
28. Physiology of the somato-sensitive nervous system
29. Physiology of the somato-motor nervous system
30. Physiology of the cerebral cortex

## Bibliography

1. W.F. Boron, E.L. Boulpaep, L.G. Zagrean, ...C. Panaitescu, G. Tanasie, C Tatu, *Fiziologie Medicală* ediția a 3-a, , Editura Hipocrate, București, 2017, ISBN: 978-973-88372-3-2
2. Bunu C, *Physiology of Cardiovascular and Respiratory System*, Ed. Mirton, 2006
3. Guyton AC, Hall JE, W.B. Saunder , *Medical Physiology*, 13<sup>th</sup> ed., Elsevier, 2016
4. Berne RM, Levy MN, *Physiology*, Elsevier, 7th ed., 2017
5. KE Barrett, SM Barman, HL Brooks, J. Yuan, *Ganong's Review of Medical Physiology*, 26<sup>th</sup> ed., McGraw-Hill Education, 2019
6. C. Panaitescu, C. Tatu, D. Nistor, G. Tănasie, M. Cotarcă, E. Ciurariu, L. Marusciac, S. Groza, M. Georgescu, L. Cernescu, C. Calma, A. Gherbon, *Fiziologie umană, Lucrări practice: Fiziologie generală, digestiv, sânge, renal*, Editura Eurostampa, Timișoara, 2017, ISBN: 978-606-32-0355-8
7. C. Panaitescu, D. Nistor, G. Tanasie, C. Tatu, L. Marusciac, D. Plesca, L. Gotia, A. Gherbon, L. Cernescu, S. Groza, E. Ciurariu, M. Cotarca, M. Georgescu, P. Tamaș, C. Calma, D. Crîșnic, O. Harich, *Fiziologie umana - lucrari practice – cardiovascular, respirator, endocrin, sistem nervos*, Editura Eurostampa, Timisoara, 2017
8. Paunescu V, Bunu C et al., *Physiology. Experiments and Demonstrations.*, Ed. Orizonturi Universitare, 2002

Physiology Coordinator:  
Prof. Dr. Carmen Panaitescu