



## DISCIPLINE FILE

### 1. Data about programme

1.1.	<b>“CAROL DAVILA” UNIVERSITY OF MEDICINE AND PHARMACY</b>
1.2.	<b>FACULTATY OF MEDICINE / CLINICAL DEPARTMENT 2</b>
1.3.	<b>DISCIPLINE : PHYSIOLOGY I</b>
1.4.	<b>STUDY DOMAIN : HEALTH</b>
1.5.	<b>STUDY CYCLE: LICENCE</b>
1.6.	<b>STUDY PROGRAME: MEDICINE – ENGLISH MODULE</b>

### 2. Data about discipline

2.1.	<b>Name of the discipline: Physiology</b>							
2.2.	<b>Location of the discipline : Facultaty of Medicine, 8 Bdul Eroilor Sanitari 050474</b>							
2.3.	<b>Lecture activity holder:</b>							
2.4.	<b>Seminary activities holder:</b>							
2.5.	<b>Year of study</b>	<b>I</b>	<b>2.6. Semester</b>	<b>1</b>	<b>2.7. Type of evaluation</b>	<b>Written exam and practical exam</b>	<b>2.8. Regimen of discipline</b>	<b>Mandatory Fundamental Discipline Code DFI 6 M</b>

### 3. Total estimated time (hours/semester of didactic activity)

<b>Nr hours/week</b>	<b>5</b>	<b>From which: lecture</b>	<b>2</b>	<b>seminary/ laboratory</b>	<b>3</b>
<b>Total ohours of educational plan</b>	<b>70</b>	<b>From which: lecture</b>	<b>28</b>	<b>seminary/ laboratory</b>	<b>42</b>
<b>Distribution of total time</b>	<b>14 weeks</b>				<b>ore</b>
<b>Study using manual, lecture support, bibliography and notes</b>					<b>30</b>
<b>Suplimentary documentation in library, on specialty electronic platforms and on field</b>					<b>30</b>
<b>Seminary preparation / laboratoaries, homeworks, repherates, portofolios and essays</b>					<b>20</b>
<b>Tutoring</b>					<b>5</b>
<b>Examination</b>					<b>10</b>
<b>Other activities</b>					<b>5</b>
<b>Total individual study hours</b>					<b>100</b>
<b>Total hours per semester</b>					<b>70</b>
<b>Number of credits</b>					<b>5</b>

#### 4. Preconditions (if is the case)

4.1. of curriculum	Biochemistry, Biophysics, Anatomy, Cell Biology
4.2. of competences	

#### 5. Conditions (if is the case)

5.1. to conduct the lecture	Power Point presentation, video projector use
5.2. to conduct the seminar / laboratory	Endowment with the necessary equipment to carry out the practical work

#### 6. Accumulated specific competences

Professional competences (express through knowledge and skills)	<p><b>A. Useful in later development as a student:</b></p> <p>1. General notions taught through the Physiology course allow understanding of the functioning of the body as a whole.</p> <p>2. The themes of practical physiology work allow to know the limits of variation of normal values, of laboratory and paraclinical investigations, notions necessary for the students in the following years of study.</p> <p><b>B. For further professional activity:</b></p> <p>1. By acquiring theoretical knowledge and practice in physiology, the future physician can appreciate the health of the body by taking appropriate decisions, contributing to the prophylaxis, thus preventing the occurrence of other diseases.</p>
Transversal competences (of role, professional development, personal)	<p>Establish the basis on the minimal level of knowledge necessary for the understanding and appropriation of the subjects of the following years of study, such as: pathophysiology, pharmacology, semiology, internal medicine, surgery, etc.</p> <p>It assures the ability to work in a team, communication, as well as acquiring some notions of medical behavior and deontology</p>

#### 7. Objectives of the discipline (based on the specific competences grid)

7.1. General objective	Acquiring knowledge about hydric compartments, functions of the digestive system, endocrine, energy metabolism and thermoregulation
7.2. Specific objective	<p>The course provides notions regarding fundamental properties of living matter, in conjunction with its structural organization.</p> <p>It develops knowledge about the functions of the digestive and endocrine system as well as the regulatory mechanisms involved in adapting the functioning of these systems to different internal and external demands.</p>

#### 8. Contents

8.1. Lecture	Teaching methods	Observations
<p style="text-align: center;"><b>Theme (by chapter)</b></p> <p style="text-align: center;"><b>14 weeks x 2 hours = 28 hours ( 1st Semester 1st Year )</b></p> <p><b><u>I. Introduction to physiology</u></b></p> <p><b><u>II. Homeostasis of the main water compartments</u></b></p> <p><b><u>III. Physiology of the digestive system</u></b></p>	Interactive	<p>1 h</p> <p>2 h</p> <p>8h</p>

<p><b><u>IV. Physiology of energy metabolism; balanced energy balance</u></b>  <b><u>V. Endocrine gland physiology</u></b></p> <p><b><u>I. Introduction to Physiology:</u></b>  The subject of physiology as a science of the logic of life with integrative character  Romanian physiology: contributions, perspectives  Modern methods of research and functional exploration</p> <p><b><u>II. Homeostasis of the main compartments:</u></b>  Extracellular, intracellular, transcellular water: volumes; sub-divisions; composition, physiological variations  The concept of "Internal Environment" with constant composition  Dynamics of water and electrolyte exchange between compartments  Electrolytic and osmotic hydrological balance: definition, determinants, neuro-endocrine regulation mechanisms  Possibilities and Limits of Homeostasis: Clinical models of hydric and osmotic disturbances</p> <p><b><u>III. Physiology of the digestive system:</u></b>  General characters of secretory functions:  Nerve regulating mechanisms  Functions of the digestive tract mucosa  The diffuse endocrine system of the digestive tract  Smooth muscle motor function: basic electrical rhythm; innervation; NANC mediators</p> <p><b><u>Salivary secretion</u></b>  Production and compositional mechanisms; digestive and extra-digestive roles; adjustment</p> <p><b><u>Gastric secretion</u></b>  Production and compositional mechanisms; roles; regulation; clinical implications of hypo and gastric hypersecretion</p> <p><b><u>Exocrine secretion of the pancreas</u></b>  Mechanisms of production, composition; roles; regulation; mechanisms  "Autolytic defense" (clinical significance)</p> <p><b><u>Bile secretion</u></b>  Mechanisms of production, composition; hepatic ball / vesicle ball (comparison); the role and significance of the main components; regulation (cholestatic and anti-choleretic factors); principles of functional exploration</p> <p><b><u>Secretion of the small intestine mucosa</u></b>  Secretory mechanisms, composition; roles in digestion  Secretion in the large intestine  Secretory mechanisms, composition; roles; balanced saprophytic flora; Regulation.</p> <p><b><u>Absorption</u></b>  Slow intestine as preferential headquarters; morpho-operative specializations; the other sites of absorption  Transport mechanisms for final digestion products; absorption of monosaccharides; absorption of amino acids; absorption of fatty</p>	<p>exposition of the material according to the analytical program, using multimedia means, powerpoint presentations, didactic films</p>	<p>1 h 16 h</p> <p>1 h</p> <p>2 h</p> <p>8 h 0,5 h</p> <p>1 h</p> <p>2 h</p> <p>1 h</p> <p>1 h</p> <p>0,25 h</p> <p>0,25 h</p> <p>1 h</p>
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acids; absorption of vitamins; absorption of water and electrolytes; malabsorption		
<b><u>The alimentary tract motor function</u></b>		
Mastication and swallowing: mechanisms, stages, adjustment; stomach storage, mixing and evacuation function; gall bladder motility; motility of the small and thick intestine; general and local neuro-humoral regulation mechanisms		1 h
Clinical physiology of major motor dysfunctions		
<b>IV. Physiology of energy metabolism; balanced energy balance:</b>		
<b>Expenditure on energy</b>		1 h
Variable and fixed energy expenditures: energy and basal metabolism; Hungry-satiety balance and eating behavior.		
Energy value of food principles (food ration)		
<b>Thermoregulation</b> - mechanisms of thermodispersion and thermogenesis; the role of the hypothalamic thermostat and the cerebral cortex; physiological variations		
Adaptation and acclimatization to extremes of ambient temperature (exogenous hyperthermia, hypothermia)		
Fever		
<b><u>V. Endocrine Gland Physiology:</u></b>		
Introduction to endocrine physiology		16 h
General mechanisms of action and regulation of endocrine secretions		
Neurosecretion, neuromodelling, neurotransmission		1 h
Neuro-endocrine transducers		
Current review of classic definitions of hormones; local hormones, paracrine and autocrine regulation mechanisms		
Romanian School of Endocrinology.		
<b><u>Pituitary gland and hypothalamo-hypophysis</u></b>		1 h
The anterior lobe of the hypophysis		
Portal system (Gr. Popa and U. Fielding);		
Hypothalamic neuro-hormones (releasing / inhibiting)		
Previous hypophysis hormones: synthesis, secretion, circulating forms; interaction with receptors; physiological role; adjustment		
The hypothalamic-pituitary tract and posterior pituitary		
ADH, oxytocin: synthesis, secretion, circulating forms; interaction with receptors; physiological role; regulation: experimental and clinical models		1 h
<b><u>Physiology of the thyroid gland</u></b>		
Thyroid hormones: synthesis, secretion, circulating forms; interaction with receptors; physiological role; adjustment		2 h
Hypo- and hyperthyroidism		
<b><u>Endocrine regulation of phospho-calcic equilibrium. (EFC)</u></b>		
Definition of echilibrului; balance components: intake, circulating forms, storage (functional bone structure), excretion		2 h
PTH role: synthesis, secretion, circulating forms; interaction with receptors; regulation. The role of calcitonin: synthesis, secretion, circulating forms; interaction with receptors; adjustment		
Vitamin D as hormone (I, 24, dihydroxy-cholecalciferol)		
<b><u>Adrenal gland</u></b>		
<b><u>Adrenal medulla (MSR)</u></b>		

<p>Catecholamines: synthesis, secretion, circulating forms; interaction with receptors; physiological role; adjustment</p> <p>Other MSR hormones</p> <p><b><u>Corticosuprarenal gland (CSR)</u></b></p> <p>Morpho-functional organization</p> <p>General biosynthesis of hormones</p> <p>Glucocorticoids: synthesis, secretion, circulating forms; interaction with receptors; physiological role; regulation; stress reaction; advantages and precautions in therapeutic use</p> <p>Mineralocorticoids; synthesis, secretion, circulating forms; interaction with receptors; physiological role; adjustment</p> <p>CSR Sexosteroids</p> <p><b><u>Pineal gland</u></b></p> <p><b><u>Endocrine pancreas</u></b></p> <p>Functional organization of the Langerhans islands</p> <p><u>Insulin</u>: the history of the discovery (N.C.Paulescu, 1921); synthesis, secretion, circulating forms; interaction with receptors; physiological role; regulation; insulin deficiency and excess; clinical significance</p> <p><u>Glucagon</u>: synthesis, secretion, circulating interactions with receptors; physiological role; adjustment</p> <p>Other pancreatic hormones (somatostatin, pancreatic polypeptide)</p> <p>Conclusions on glycemic homeostasis.</p> <p><b><u>Endocrine function of the gonads</u></b></p> <p>Brief presentation of the four sexual differentiation programs: chromosomal sex; sex gonadal; phenotypic sex; behavioral sex.</p> <p>testicle</p> <p>Functional structure</p> <p>Steroid and peptide hormones: synthesis, secretion, circulating forms; interaction with receptors; physiological role; adjustment</p> <p>Puberty and andropause</p> <p>Deficit and excess of testicular hormones.</p> <p>ovary</p> <p>Functional structure</p> <p>Cyclical activity in adult women outside of pregnancy; ovarian cycle; uterine and menstrual cycle; hypothalamo-pituitary coordination; the importance of pulsatile secretion of Gn-RH</p> <p>Estrogenes, progesterone and peptide hormones: synthesis, secretion, circulating forms; interaction with receptors; physiological role; adjustment.</p> <p>Physiological variations in secretion: childhood and puberty; pregnancy and endocrine function of the placenta; menopause, dysfunctions.</p>		<p>2 h</p> <p>1 h</p> <p>2 h</p> <p>1 h</p> <p>1 h</p> <p>2 h</p> <p><b>Total : 28 hours</b></p>
<p><b>References</b></p> <p>1. <b>Medical Physiology, Walter Boron</b> , Ed. Saunders, 2011</p>		



neuro-muscular excitability; c) electromyogram in the diagnosis of tetanus and spasmophilia.  - Exploring insulin secretion by: a) Oral glucose tolerance test (OGTT); b) the induced hyperglycemia and radioimmunoassay of insulin (RIA).  - Verification of theoretical knowledge  - Analysis bulletins		<b>1 x 3 h</b>  <b>1 x 3 h</b>  <b>1 x 3 h</b>  <b>Total: 42 hours</b>
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**References**

- 1. Guide for practical lessons. Physiology (manual in English), Carol Davila University Publishing House , Bucharest, 2009, Papacocea R., coordinator and author, ISBN: 978-973-708-386-9**
- 2. Multiple Choice Questions in PHYSIOLOGY, First Edition. Coordinator: Prof. Univ. Dr. Ioana Anca Bădărău, Autori: Conf.Univ.Dr.Ioana Raluca Papacocea, Conf.Univ.Dr.Ioan Buraga, Șef de lucrări Dr.Cătălina Mariana Ciornei, Șef de lucrări Dr. Constantin Căruntu, Șef de lucrări Dr.Toma Papacocea, Asist.Univ.Drd. Magda Bunea, Asist.Univ.Drd.Cristian Scheau, Colaboratori: Drd. Romina-Marina Sima, Drd. Mihai Popescu, Drd.Alexandra Bănică. Carol Davila University Publishing House , Bucharest, 2013, ISBN:978-973-708-723-2**

### **9. Corroboration of the contents of the discipline with the expectations of epistemic community representatives, professional associations and representative employers in the field of the program**

The notions of the discipline presented by the courses and practical works are in accordance with the requirements of the European education, being supported by the ones in the specialized bibliography, helping to integrate the information obtained in a multidisciplinary context, thus creating the development of competences in establishing a diagnosis.

### **10.Evaluation**

<b>Type of activity</b>	<b>10.1. Evaluation criteria</b>	<b>10.2. Methods of evaluation</b>	<b>10.3. Importance for the final grade</b>
<b>10.4. Lecture</b>	Theoretical Exam	Multiple-Answer Question TEST	50%
<b>10.5. Seminary / laboratory</b>	Presentation of projects / control papers	Oral/swritten	25%
	Practical Exam	Practic Oral, practical	25%

		applications	
<b>Minimal performance standard</b>			
<ul style="list-style-type: none"> <li>- Mandatory presence</li> <li>- Performing all practical laboratories</li> <li>- Acquiring the knowledge about hydric compartments, functions of the digestive system, endocrine, energy metabolism and thermoregulation</li> </ul>			

**Date of completion:**  
02.03.2018

**Signature of course holder**

**Signature of seminary holder**

**Date of approval in the Council of  
Department**

**Director of Department Signature**

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