



SUBJECT OUTLINE

1. Programme of study description

1.1.	THE "CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY
1.2.	THE FACULTY OF MEDICINE / THE CLINICAL DEPARTMENT
1.3.	DISCIPLINE: RADIATION ONCOLOGY AND MEDICAL IMAGING, COLȚEA CLINICAL HOSPITAL
1.4.	DOMAIN OF STUDY: Healthcare – regulated sector within the EU
1.5.	CYCLE OF STUDIES: BACHELOR'S DEGREE
1.6.	PROGRAMME OF STUDY: MEDICINE

2. Subject description

2.1.	Name of the subject/compulsory subject/elective subject within the discipline: The organism as a complex adaptive system – an introductory approach based on systems theory						
2.2.	Location of the discipline: Colțea Clinical Hospital						
2.3.	Course tenured coordinator: Prof. Dr. (hab) Nicolae Verga, Asist. Univ. Drd. Olivian Savencu						
2.4.	Practicals/clinical rotations tenured coordinator:						
2.5. Year of study	III	2.6. Semester	II	2.7. Type of assessment	Written exam	2.8. Subject classification	optional

3. Total estimated time (hours/semester of didactic activity) – teaching module

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Number of hours per week	2	Out of which: course	2	Clinical rotation	-
Total number of hours from curriculum	14	Out of which: course	14	Clinical rotation	-
Distribution of allotted time	1 course (2 hours) /week				Hours
Study from textbooks, courses, bibliography, and student notes					
Additional library study, study on specialized online platforms and field study					
Preparing seminars / laboratories, assignments, reports, portfolios and essays					
Tutoring					
Examinations					1 exam
Other activities					
Total hours of individual study					
Number of credit points			2 EMC credits		

4. Prerequisites (where applicable)

4.1. of curriculum	Anatomy, physiology, biophysics, physiopathology
4.2. of competencies	-

5. Requirements (where applicable)

5.1. for delivering the course	Colțea Clinical Hospital Amphitheatre
5.2. for delivering the clinical rotation	

6. Acquired specific competencies

Professional competencies (expressed through knowledge and skills)	At the end of the course, the student must be able to: - Describes the fundamental notions of systems theory. - Understand the distinction between a living system and a non-living system. - List the basic principles of integrative physiology.
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	- Understand what biomedical parameters are in an integrative context.
Transversal competencies (of role, of professional and personal development)	At the end of the course, the student should be able to: - Gain a broader understanding of the body interpretation models offered by the current medical context.

7. Subject learning objectives (based on the scale of acquired specific competencies)

7.1. General learning objective	- Familiarizing the student with the importance of establishing clear medical fundamentals, with the aim of reducing the clinical implications of the problem of excessive use of reactive medicine, at the expense of preventive medicine.
7.2. Specific learning objectives	Accommodating the student with the elementary notions related to the interpretation of biomedical parameters, with the vision of early cultivating the path for the development of the patient's multidisciplinary approach skills.

8. Content

8.1. Course	Teaching methods	Observations
Course 1 Introduction to systems theory	course	2 hours
Course 2 The limitations of reductionist medical thinking	course	2 hours
Course 3 From analytical thinking to integrative medical thinking	course	2 hours
Course 4 Integrative physiology	course	2 hours
Course 5 Interpretation models of biomedical parameters. Clinical case study.	course	2 hours
Course 6 Adaptability of the organism as a predictive tool.	course	2 hours
Course 7 Learning tools for the Medical student	course	2 hours
8.2. Clinical rotation	Teaching methods	Observations
CR 1 -	-	-
CR 2 -	-	-
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Bibliography for course and clinical rotation

- Barabasi, A.L. (2014). Linked: How Everything is Connected to Everything Else and What It Means for Business, Science and Everyday Life. New York. Perseus Publishing.
- Bertalanffy, L.v. (1968). General System Theory. New York: George Brazziller.
- Böhm, D. (2007). Thought as a System. London: Routledge.
- Capra, F., & Luisi, P. (2016). The systems view of health. In The Systems View of Life: A Unifying Vision (pp. 322-338). Cambridge: Cambridge University Press.
- Checkland, P. (2004). Systems Thinking, Systems Practice Soft System Methodology A 30- year Retrospective. Chichester: John Wiley & Sons.
- Hammond, D. (2003). The Science of Synthesis: Exploring the Social Implications of General Systems Theory. Boulder: University Press of Colorado.



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The Quality Assurance Commission**

- Hanaway, P. (2012). Systems Approaches: A Global and Historical Perspective on Integrative Medicine. Global Advances in Health and Medicine.
- Edmondson AC. The kinds of teams health care needs. Harv Bus Rev. December 16, 2015.
- Kauffman, S. A. (1993). The origins of order: Self-organization and selection. Oxford, UK: Oxford Univ. Press.
- Krohs, U., & Callebaut, W. (2007). Data without models merging with models without data. In F. C. Boogerd, F. J. Bruggeman, J.-H. S. Hofmeyr, & H. V. Westerhoff (Eds.), Systems biology: Philosophical foundations (pp. 181–213). Amsterdam: Elsevier.
- Noble, D. (2011). The aims of systems biology: Between molecules and organisms. Pharmacopsychiatry,

Runge, M. S., & Greganti, M. A. (2008). Netter's internal medicine. Philadelphia: Saunders Elsevier.

9. Corroboration of the subject content with the expectations of the representatives of the epistemic community, professional associations, and major employers in the field of the programme of study

The appropriate training of the student at the end of the course ensures a better understanding of the approach to the patient in a hospital context, and has as a result the education of future doctors regarding the efficient use of medical resources.

10. Assessment

Type of activity	Assessment criteria	Assessment methods	Assessment weighting within the final grade
Course	Written exam	Written exam	100%
Clinical rotation	-	-	-
Minimum performance standard			
• The minimum passing grade is 5 (five)			

Date of filing.

Signature of the course tenured coordinator

Prof. Dr. (hab.) Nicolae Verga

Asist. Univ. Drd. Ovidiu Savencu

Date of approval in the Council of the Department:

Signature of the Head of the Department