



## 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 2 - Infectious Diseases, Epidemiology, Microbiology, Parasitology, Virology, Diabetes, Endocrinology
1.3.	DISCIPLINE: Pathophysiology 2
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: <i>Entrepreneurship education and innovation in healthcare</i>						
2.2.	Location of the discipline: Discipline Pathophysiology 2 location - Dr. Calistrat Grozovici street no. 1, Sector 2, Bucharest, National Institute of Infectious Diseases Prof. Dr. Matei Balș, European Academy of HIV/AIDS and Infectious Diseases building						
2.3.	Course tenured coordinator: Assoc. Prof. Roxana Nedelcu						
2.4.	Practicals/clinical rotations tenured coordinator: Assist. Prof. Gabriela Turcu, Lecturer Alice Brinzea						
2.5. Year of study	II	2.6. Semester	II	2.7. Type of assessment	written , oral	2.8. Subject classification	Optional discipline, complementary discipline

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

Number of hours per week	2	Out of which: course	1	Clinical rotation	1
Total number of hours from curriculum	14	Out of which: course	7	Clinical rotation	7
Distribution of allotted time	7 weeks				Hours
Study from textbooks, courses, bibliography, and student notes					7
Additional library study, study on specialized online platforms and field study					11
Preparing seminars / laboratories, assignments, reports, portfolios and essays					14
Tutoring					2
Examinations					2
Other activities					
Total hours of individual study					36
Number of credit points					2

### 4. Prerequisites (where applicable)

4.1. of curriculum	-
4.2. of competencies	-

### 5. Requirements (where applicable)

5.1. for delivering the course	Amphitheater, video projection, internet access
5.2. for delivering the clinical rotation	Seminar rooms with video projection, internet access



## 6. Acquired specific competencies

<b>Professional competencies (expressed through knowledge and skills)</b>	<ul style="list-style-type: none"> <li>• mindset and practices development that can enable students to be more active and competitive as they engage in the development of innovative ideas and medical entrepreneurial projects</li> <li>• students will acquire specific skills that can increase their chances of being able to successfully launch an innovation</li> </ul>
<b>Transversal competencies (of role, of professional and personal development)</b>	<ul style="list-style-type: none"> <li>• students will practice essential qualities to become valuable professionals in the medical field, in addition to clinical ones, including: <ul style="list-style-type: none"> <li>- stimulating the ability to identify problems and opportunities and to offer solutions;</li> <li>- ability to plan and organize;</li> <li>- skills for public presentation;</li> <li>- the ability to communicate effectively with colleagues and work in a team to develop a project;</li> <li>- increasing the level of specialized training, but also the degree of general knowledge;</li> <li>- the ability to understand the socio-cultural situation and the mentality of the era</li> </ul> </li> <li>• students will receive information that will increase their level of education and adaptability as future graduates of the "Carol Davila" University of Medicine and Pharmacy in Bucharest (UMFCD) in real life, in the face of complex challenges in the medical field</li> <li>• students will better identify their strengths, weaknesses, and professional preferences</li> </ul>

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

<b>7.1. General learning objective</b>	The discipline <i>Entrepreneurship education and innovation in healthcare</i> has the general objective of harmonizing the objectives of the national and international education systems in order to highlight the broad meaning of the entrepreneurial spirit that is the basis of the innovation initiation process and the completion of efforts that generate social, intellectual, economic and cultural value, through the involvement of entrepreneurially educated people.
<b>7.2. Specific learning objectives</b>	<ul style="list-style-type: none"> <li>• The involvement of students in the development of projects in the medical field will support other structures of the university (Center for Innovation and e-Health (CIeH), Student Entrepreneurial Society (SAS), Research and Development Department, Doctoral School) and will increase the competitiveness of UMFCD.</li> <li>• Stimulating new ideas will generate a greater number of developed projects, a greater number of applications for funding and support the performance of UMFCD.</li> <li>• The stimulation of entrepreneurial initiatives is aligned with national and international policies, producing favorable effects on both the academic, social and economic environment.</li> <li>• The bilingual nature of the course will contribute to increasing the visibility and prestige of UMFCD.</li> </ul>



## 8. Content

8.1. Course	Teaching methods	Observations
<b>Course 1. Definition of entrepreneurship. The stages of the entrepreneurial process</b> <ul style="list-style-type: none"><li>Entrepreneurship and innovation (notions that encompass more than starting a new business, emphasizing the social, intellectual, economic and cultural values that can be generated);</li><li>Stages of the entrepreneurial process: identifying problems and opportunities and the ability to imagine a solution; the initiative to implement the own vision and acquire the necessary resources; creating an appropriate context for protecting and launching the vision; continuing to improve, consolidate and expand the vision, etc.;</li><li>Key characteristics of entrepreneurs and entrepreneurship</li><li>Defining the main notions analyzed in the case studies (interviews with entrepreneurs): vision, opportunities, risk, resources, development;</li></ul>	Interactive presentation of the course material, according to the program, using multimedia tools, PowerPoint presentations, didactic films, interviews with guests with relevant professional expertise	1h
<b>Course 2. Elements of design, writing and presentation of an entrepreneurial project</b> <ul style="list-style-type: none"><li>Drafting and presentation of an entrepreneurial project: the stages of the graphic model on a page (the Canvas model), the stages of the complex model, the short pitch presentation, presentations within idea competitions;</li><li>Filtering of innovative ideas and events with an educational component to support entrepreneurial ideas: incubator, accelerator, hackathon;</li><li>The process by which an entrepreneurial idea can be capitalized: start-up, spin-off, intrapreneurship, etc.;</li><li>Models for organizing the activity of medical specialists: Individual Medical Practice (Cabinet Medical Individual, CMI), Independent Natural Person (Persoana Fizica Independenta, PFI), Limited Liability Company (Societate cu Raspundere Limitata, SRL), individual employment contract, etc.;</li></ul>	Interactive presentation of the course material, according to the program, using multimedia tools, PowerPoint presentations, didactic films, interviews with guests with relevant professional expertise	1h
<b>Course 3. Content and planning of activities within healthcare entrepreneurial projects</b> <ul style="list-style-type: none"><li>Basic notions regarding the modality of planning activities in entrepreneurial projects: Gantt chart, applications that allow several people to contribute simultaneously to the same document on electronic support, software for project management;</li><li>Basic notions regarding the content of entrepreneurial activities: opportunity and market segment in the medical field, marketing strategy, sustainability and market launch of a new medical product/service, financial projection, etc.;</li></ul>	Interactive presentation of the course material, according to the program, using multimedia tools, PowerPoint presentations, didactic films, interviews with guests with relevant professional expertise	1h



<p><b>Course 4. Ethics, legislation, and regulations related to the implementation of entrepreneurial ideas and innovation in the medical field</b></p> <ul style="list-style-type: none"> <li>Legislative and ethical aspects for the protection of innovative ideas in the medical field – industrial property – inventions (patents), trademarks; discoveries that cannot be patented (e.g. investigative or treatment techniques), copyrights, etc.;</li> <li>Organization modalities for initiating entrepreneurial activity in the medical field;</li> </ul>	<p>Interactive presentation of the course material, according to the program, using multimedia tools, PowerPoint presentations, didactic films, interviews with guests with relevant professional expertise</p>	<p>1h</p>
<p><b>Course 5. Financial projections – basics for doctors. Sources of funding for medical entrepreneurial projects</b></p> <ul style="list-style-type: none"> <li>Basics for doctors on financial projection: cash flow projection, asset depreciation, correlation of financial projections with the descriptive part of the project;</li> <li>Funding sources for medical entrepreneurial projects: national governmental sources of project funding; private national funding sources – investors, banking sources; international sources of project financing; alternative funding sources – crowdfunding, personal funds, Trialect site, Candid.org;</li> </ul>	<p>Interactive presentation of the course material, according to the program, using multimedia tools, PowerPoint presentations, didactic films, interviews with guests with relevant professional expertise</p>	<p>1h</p>
<p><b>Course 6. Entrepreneurship for social and intellectual value generation</b></p> <ul style="list-style-type: none"> <li>social entrepreneurship</li> <li>non-profit associations</li> <li>volunteering</li> <li>academic leadership-connecting research, innovation, entrepreneurship</li> <li>the culture of philanthropy</li> </ul>	<p>Interactive presentation of the course material, according to the program, using multimedia tools, PowerPoint presentations, didactic films, interviews with guests with relevant professional expertise</p>	<p>1h</p>
<p><b>Course 7. Presentation of entrepreneurial projects - possible selection of projects for competitions, grants, incubators, accelerators, hackathons</b></p>	<p>Interactive presentation of the projects, using multimedia tools, PowerPoint presentations</p>	<p>1h</p>
<p><b>8.2. Clinical rotation/LP/Seminar</b></p>	<p><b>Teaching methods</b></p>	<p><b>Observations</b></p>
<p><b>LP1 Introduction. The stages of the entrepreneurial process</b></p> <ul style="list-style-type: none"> <li>Stages of the entrepreneurial process – Case study: <ul style="list-style-type: none"> <li>- identifying problems and opportunities and the ability to imagine a solution;</li> <li>- the initiative to implement the own vision and acquire the necessary resources;</li> <li>- creating an appropriate context for protecting and launching the vision;</li> <li>- continuing to improve, consolidate and expand the vision, etc.</li> </ul> </li> <li>Analysis and discussion of the specific characteristics of successful entrepreneurs - Questionnaire</li> </ul>	<p>verification conversation, independent work activity, case study</p>	<p>1h</p>



<ul style="list-style-type: none"> <li>Developing the entrepreneurial project with a medical theme - Establishing the teams (maximum 4 people/team + 1 laptop/group)</li> </ul>		
<b>LP2. Modalities to capitalize on the entrepreneurial idea; Filtering and selecting the entrepreneurial project idea</b> <ul style="list-style-type: none"> <li>Drafting and presentation models of an entrepreneurial project – examples and practical applications: the Canvas model, the complex model, pitch type presentations, complex presentations;</li> <li>Analyzing proposals for entrepreneurial projects and filtering the ideas proposed by each work team</li> </ul>	verification conversation, independent work activity, case study	1h
<b>LP3. Planning activities within the medical entrepreneurial project</b> <ul style="list-style-type: none"> <li><i>Methods of planning activities in entrepreneurial projects</i> - examples and practical applications: Gantt chart, applications that allow several people to contribute simultaneously to the same document on electronic support, software for project management</li> </ul>	verification conversation, independent work activity, case study	1h
<b>LP4. The content of activities within entrepreneurial projects in the medical field</b> <ul style="list-style-type: none"> <li><i>Content of medical entrepreneurial project activities</i> – examples and practical applications: opportunity and market segment in the medical field, marketing strategy, sustainability, and market launch of a new medical product/service, etc.</li> </ul>	verification conversation, independent work activity, case study	1h
<b>LP5. Drafting the financial projection within the medical entrepreneurial project</b> <ul style="list-style-type: none"> <li>Cash flow projection - cash, expenses, credits, payments/receipts for taxes and duties, dividends;</li> <li>Initial financial balance, final financial balance, net cash flow, total cash uses</li> <li>Correlation of the financial projection with the descriptive part of the project</li> </ul>	verification conversation, independent work activity, case study	1h
<b>LP6. Drafting, oral presentation and refinement of a medical entrepreneurial project - discussions and evaluation criteria</b>	verification conversation, independent work activity, case study	1h
<b>LP7. Presentation of entrepreneurial projects – supporting applications for competitions, grants, incubators, accelerators, hackathons</b>	Interactive presentation of the projects, using multimedia tools, PowerPoint presentations	1h

#### Bibliography for course and clinical rotation

- Prof. Duncan Moore. Entrepreneurship Course, Ain Center for Entrepreneurship, University of Rochester, USA, 2022
- Borasi R, Miller DE. Promoting Innovations in Education. Pressbooks, 2022
- Hoffman SS. Surviving a Startup: Practical Strategies for Starting a Business, Overcoming Obstacles, and Coming Out on Top. Harper Collins, 2021
- Steskal M, Steskal A, Ash A. How to Launch a Startup. Amazon Pub., 2018
- Niccum BA, Sarker A, Wolf SJ, Trowbridge MJ. Innovation and entrepreneurship programs in US medical education: a landscape review and thematic analysis. Medical Education Online, 2017
- Constable G. Talking to humans. 2014
- Goldman S, Nalebuff B, Choi S. Mission in a Bottle: The Honest Guide to Doing Business Differently and Succeeding. Crown publishing, 2013



- Rogoff EG, Bezos J. Bankable Business Plans, 2nd edition. Rowhouse Publishing, 2007
- Bornstein D. How to Change the World: Social Entrepreneurs and the Power of New Ideas. Oxford University Press, 2007

**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 discipline's concepts presented through courses and practical stages are consistent with the requirements of international education, being supported by those from the specialized bibliography, helping to integrate the information obtained in a multidisciplinary context and favoring the development of skills for an optimal professional career.

**10. Assessment**

Type of activity	Assessment criteria	Assessment methods	Assessment weighting within the final grade
<b>Course</b>	Correct understanding of the presented concepts and the appropriate acquisition of notions	Drafting of a medical entrepreneurial project	70%
<b>Clinical rotation</b>	Knowledge about practical applications exemplified during the seminar	Oral presentation of the medical entrepreneurial project	30%
	The attendance at the seminar activities		

**Minimum performance standard**

- Correctly solving at least 50% of the writing and oral presentation stages of the medical entrepreneurial project

**Date of filing:**  
**14.06.2022**

**Signature of the course tenured coordinator**

**Assoc. Prof. Roxana Nedelcu**

**Signature of the seminar tenured coordinator**

**Assist. Prof. Gabriela Turcu**

**Lecturer Alice Brinzea**

**Date of approval in the Council of the Department:**  
**15.07.2022**

**Signature of the Head of the Department**

**Prof. Dr. Adrian Streinu-Cercel**