DISCIPLINE GRID

1. Programme:

1.1.	**CAROL DAVILA UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST**
1.2.	**FACULTY OF DENTISTRY / 3rd DEPARTMENT**
1.3.	DIVISION: **Embryology and Microbiology**
1.4.	STUDY DOMAIN: **Health, sectoral regulated within European Union**
1.5.	STUDY LEVEL: **LICENCE**
1.6.	STUDY PROGRAMME: **DENTAL MEDICINE IN ENGLISH**

2. Discipline:

2.1.	DISCIPLINE NAME: **Embryology**						
2.2.	LOCATION: **8 Eroii Sanitari Blvd., Faculty of Medicine**						
2.3.	Lectures tenure: **Prof. dr. Andreea Didilescu, Senior Lecturer dr. Claudiu Călin, Senior Lecturer dr. Mihai Andrei**						
2.4.	Practical classes tenure: **Senior Lecturer dr. Anca Coricovac, Senior Lecturer dr. Claudiu Călin, Assistant Professor dr. Raluca Vacaru**						
2.5. Study year	**I**	**2.6.** Semester	**II**	**2.7.** Evaluation	**Exam**	**2.8.** Type of discipline	**Compulsory, Fundamental CD/FD**

3. Estimated total time (hours/semester)

No. hours/week	**4**	out of which	**Lectures: 2**	**Laboratory session: 2**
Total hours out of learning schedule	**56**	out of which	**Lectures: 28**	**Laboratory sessions: 28**

Time distribution	**hours**
Textbook study, lecture support, bibliography and notes	**28**
Supplementary documentation activity in the library, on online platforms	**4**
Practical activity support material, homework, portfolio and essays	**9**
Tutorial activity	**-**
Examinations	**3**
Other activities	**-**
Total hours of individual study	**44**
Total hours per semester	**100**
Credits	**4**

4. Preconditions

4.1. curriculum	-
4.2. proficiencies	-

5. Conditions

5.1. for lecture activity	-
5.2. for laboratory activity	-

6. Accumulated skills

6.1. Proficiencies ***(knowledge and abilities)***	**I. Knowledge (cognitive dimension)** - Basic understanding of general embryology. - In-depth essentials of the cephalic extremity development. **II. Abilities (functional dimension)** - Correct interpretation of microscopic images. - Identification of the main anomalies in the cephalic extremity.
6.2. Transversal skills ***(role, professional and personal development)***	**III. Role skills** - Possibility to interrelate with other information acquired in the fundamental disciplines. **IV. Professional and personal development skills** - Efficient use of information sources and communication resources.

7. Objectives (based on the grid of acquired specific skills)

7.1. General Objective	- Acquiring knowledge about the prenatal development of human structures.
7.2. Specific Objectives	- Knowledge of the stages and peculiarities of the development of the cephalic extremity. - Relating information to applications in clinical embryology.

8. Content

8.1. Lectures	**No. hrs/topic**	**Teaching method**	**Obs.**
1. Pre-embryonic period. Processes that take place in the gonads: spermatogenesis, ovogenesis. Embryonic period. The main processes that take place in the fallopian tube: fertilization.	2	Interactive display of the teaching material according to the analytical program, using multimedia means, power point presentations.	
2. Embryonic period. The main processes that take place in the fallopian tube: segmentation. Processes that take place in the uterus: nesting and blastocystogenesis.	2		
3. Embryonic period. Processes that take place in the uterus: gastrulation and neurulation.	2		
4. Formation of germ layers and early derivatives. Clinical applications and abnormalities in early development	2		

5. Generalities about the development of the cephalic extremity. Facial buds. Development of the face, nostrils and palate.	2		
6. The branchial region. Branchial (pharyngeal) arches, pouches and grooves.	2		
7. The main anomalies in the formation of the face, nostrils and palate: mechanisms, clinical aspects.	2		
8. Mesobranchial field. Development of the tongue, thyroid gland and pituitary gland. Developmental abnormalities.	2		
9. Tooth development. Stages of proliferation and histodifferentiation. Amelogenesis and dentinogenesis.	2		
10. Tooth development. Development of the dental root and the tooth supporting structures. Tooth eruption.	2		
11. The main anomalies in tooth development. Etiology. Clinical aspects.	2		
12. Development of the temporomandibular joint (TMJ). Mandibular condyle in the human fetus at early stages – embryologic evolution. The articular disc. The temporal component of the TMJ.	2		
13. Molecular basis for embryonic development of the head and neck.	2		
14. Teratology - infectious, medicinal, chemical and physical agents.	2		

8.2 Laboratory Sessions	**No. hrs/topic**	**Teaching method**	**Obs.**
1. Gametogenesis. Adjustment mechanisms. Clinical applications: abnormalities in spermatogenesis	2	PowerPoint presentation; drawings, explanations; microscopic examination of histological sections, embryos and human fetuses; imagistic study.	
2. Gametogenesis. Microscopic images.	2		
3. Extraembryonic tissues and membranes.	2		
4. Feto-placental circulation.	2		
5. Skull development. Endochondral and intramembranous neurocranium and viscerocranium. Microscopic images.	2		
6. Branchial (pharyngeal) arches, pouches and grooves. Microscopic images. Development of the salivary glands.	2		
7. The main anomalies in the development of the cephalic extremity - imaging examples.	2		
8. Mesobranchial field - derivatives. Microscopic images.	2		
9. Biology of the pulpo-dentinal complex. Microscopic images.	2		
10. Biology of the tooth supporting structures. Microscopic images.	2		
11. Dental development anomalies – imagistic examples.	2		
12. Directions for postnatal growth and remodeling of the skull and TMJ.	2		
13. Signaling pathways in odontogenesis.	2		
14. Teratogenic agents: mechanisms of action and effects.	2		

8.3. Bibliography for lectures and laboratory/practical sessions

Lecture and laboratory/practical sessions bibliography:

1. Carlson BM (2013). Human embryology and developmental biology. Saunders; 5th edition.
2. Moore KL, Persaud TVN, Torchia MG (2015). The Developing Human. Clinically Oriented Embryology. Tenth edition. Saunders Elsevier.

3. Sadler TW, Langman J (2011). Langman's Medical Embryology. Philadelphia, Pa.; London : Lippincott Williams & Wilkins ; 12th edition.
4. 3D Atlas of Human Embryology (2016) https://www.3dembryoatlas.com

Periodical publications (optional)
5. Journal of Dental Research
6. Romanian Journal of Morphology and Embryology

9. Corroborating the contents of the discipline with the expectations of epistemic community representatives, professional associations and employers in the fields representative for the program

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Evaluation

10.1 Evaluation			
Activity type	**Evaluation Criteria**	**Methods of evaluation**	**% out of final grade**
Lecture	**A. Knowledge for mark 5:** Basic understanding of general embryology **B. Additional knowledge for mark 10:** In-depth understanding of embryology	**Theoretical exam** - written exam - 45 grid questions (single-choice questions)	**80%**
Laboratory Sessions	**Periodic check. Seminary.**	**Seminary** from the subjects presented in the course and practical works.	**10%**
	A. Knowledge for mark 5: Basic essentials of embryology and microscopy **B. Additional knowledge for mark 10:** In-depth essentials, the possibility of interrelation, and correct interpretation of microscopic images	**Practical assessment** Lab exam	**10%**
Minimum performance standards			
- Basic knowledge in Embryology			

Date:
23.08.2024

Chair of Embryology Division,
Prof. dr. Andreea Didilescu

Department director,
Prof. dr. Ecaterina Ionescu