



## DISCIPLINE SHEET

### 1. Study programme

<b>1.1.</b>	<b>"CAROL DAVILA" UNIVERSITY OF MEDICINE AND PHARMACY BUCHAREST</b>
<b>1.2.</b>	<b>FACULTY OF DENTISTRY</b>
<b>1.3.</b>	<b>DEPARTMENT 3<sup>rd</sup></b>
<b>1.4.</b>	<b>DISCIPLINE Embryology and Microbiology</b>
<b>1.5.</b>	<b>STUDY DOMAIN: Health, sectoral regulated within the European Union</b>
<b>1.6.</b>	<b>STUDY LEVEL: I (Bachelor's degree) and II (Master's degree)</b>
<b>1.7.</b>	<b>STUDY PROGRAMME: DENTAL MEDICINE IN ENGLISH</b>

### 2. Discipline

<b>2.1.</b>	<b>Discipline name according to the study curriculum: EMBRYOLOGICAL DEVELOPMENT OF THE DENTO-MAXILLARY APPARATUS IN RELATION TO POSTNATAL DYNAMICS</b>				
<b>2.2.</b>	<b>Discipline code: MD02OP20EN</b>				
<b>2.3.</b>	<b>Discipline type (FD/SD/CD): -</b>				
<b>2.4.</b>	<b>Discipline optionality (COD/ED/FAD): ED</b>				
<b>2.5.</b>	<b>Lectures tenure: Prof. dr. Andreea Didilescu, Senior Lecturer dr. Anca Coricovac, Senior Lecturer dr. Claudiu Călin, Senior Lecturer dr. Mihai Andrei</b>				
<b>2.6.</b>	<b>Practical classes / seminar tenure: Senior Lecturer dr. Anca Coricovac, Senior Lecturer dr. Claudiu Călin, Senior Lecturer dr. Mihai Andrei, Assistant Prof. dr. Raluca-Paula Vacaru</b>				
<b>2.7. Year of study</b>	<b>II</b>	<b>2.8. Semester</b>	<b>IV</b>	<b>2.9. Evaluation (E/C/V)</b>	<b>C</b>

### 3. Estimated total time (hours/ semester of teaching and training activity /individual study)

<b>I. University training</b>						
<b>3.1. Number of hours per week</b>	<b>2</b>	<b>from which:</b>	<b>3.2. lecture</b>	<b>1</b>	<b>3.3. practical class/ seminar</b>	<b>1</b>
<b>3.4. Total hours in the study curriculum</b>	<b>28</b>	<b>from which:</b>	<b>3.5. lecture</b>	<b>14</b>	<b>3.6. practical class/ seminar</b>	<b>14</b>
<b>II. Preparation/ individual study</b>						
<b>Time distribution</b>						<b>hours</b>
<b>Study of lecture materials, textbooks, books, study of the minimum recommended bibliography</b>						<b>20</b>
<b>Additional documentation activity in the library, on online platforms</b>						<b>4</b>
<b>Specific preparation activities for projects, practical classes, preparation of assignments, reports</b>						<b>4</b>
<b>Preparation for presentations or evaluations, preparation for the final examination</b>						<b>4</b>
<b>Tutoring activity</b>						<b>-</b>
<b>Other activities</b>						<b>-</b>
<b>3.7. Total hours of individual study</b>						<b>32</b>
<b>3.8. Total hours per semester (3.4.+3.7.)</b>						<b>60</b>

<b>3.9. Number of credits</b>	2
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#### 4. Prerequisites (where appropriate)

<b>4.1. curriculum</b>	Embryology – 1st year of study
<b>4.2. proficiencies</b>	-

#### 5. Conditions (where appropriate)

<b>5.1. for lecture activity</b>	Lecture hall; Video projector, laptop, Powerpoint/ Keynote software, laser pointer; Internet access (Moodle platform).
<b>5.2. for practical class/ seminar activity</b>	Laboratory; Video projector, laptop, Powerpoint/ Keynote software, laser pointer; Internet access (Moodle platform).

#### 6. Learning outcomes\*

<b>Knowledge</b>	<b>Skills</b>	<b>Responsibility and autonomy</b>
<p>Students should demonstrate an understanding of:</p> <p><b>Embryology</b></p> <ul style="list-style-type: none"> <li>- the formation and development of the oral and maxillofacial complex from neural crest cells;</li> <li>- the chronology of tooth development from initiation to eruption;</li> <li>- the molecular signaling pathways that control odontogenesis and craniofacial morphogenesis;</li> <li>- critical periods of development and their clinical significance.</li> </ul> <p><b>Anatomical structure and function:</b></p> <ul style="list-style-type: none"> <li>- normal anatomy of the developing dentition and supporting structures;</li> <li>- growth patterns of the maxilla and mandible;</li> <li>- age-related changes in dental and skeletal morphology.</li> </ul> <p><b>Common developmental abnormalities affecting the teeth and jaws:</b></p>	<p>Students should be able to:</p> <ul style="list-style-type: none"> <li>- perform a complete examination of the developing dentition.</li> <li>- interpret radiographic findings related to tooth development and eruption;</li> <li>- recognize early signs of developmental disorders;</li> <li>- correlate clinical findings with underlying biological processes.</li> </ul>	<p><b>Ethics:</b></p> <ul style="list-style-type: none"> <li>- commitment to continuing education in the field of developmental biology;</li> <li>- collaboration with interdisciplinary team members, when appropriate.</li> </ul> <p><b>Professional development:</b></p> <ul style="list-style-type: none"> <li>- advanced knowledge in areas of interest or special need;</li> <li>- critical evaluation of new research in the field of dento-maxillary development.</li> </ul>

- environmental and genetic factors that influence normal development; - recognition of syndromic conditions affecting craniofacial development.		
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## 7. Discipline objectives (correlated with learning outcomes)

<b>7.1. General objective</b>	- Acquisition of advanced knowledge related to the embryological development of the dento-maxillary complex, in relation to the factors that can determine anatomical, structural and functional modifications, with echoes in the postnatal dynamics.
<b>7.2. Specific objectives</b>	- Knowledge of the stages and peculiarities of the embryological development of the dento-maxillary complex. - Understanding the factors involved in the development of the dento-maxillary complex. - Understanding the postnatal dynamics of the dento-maxillary complex.

## 8. Contents

8.1. Lecture	Teaching methods	Observations
1. Advanced knowledge about the embryological development of the cranium and the dento-maxillary complex - evolutionary aspects	Interactive presentations of the material according to the analytical program, using multimedia means, power point presentations	2 hours
2. The factors involved in the pre- and postnatal development of the dento-maxillary complex - mechanisms of action and effects		2 hours
3. The main anomalies of craniofacial development - characteristics, imaging aspects		2 hours
4. Odontogenesis in relation to the dynamics of craniofacial development		2 hours
5. Tooth eruption and the factors involved in the occurrence of disturbances in the tooth eruption process		2 hours
6. The main disturbances of tooth development in relation to the factors involved. Etiology. Particular aspects		2 hours
7. Advanced knowledge about the development of the temporomandibular joint in relation to the dynamics of craniofacial development - evolutionary aspects		2 hours
<b>Recent bibliography:</b> 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 (elective). 3. Sadler TW, Langman J (2011). Langman's Medical Embryology. Philadelphia, Pa.; London: Lippincott Williams & Wilkins; 12th edition (elective). 4. 3D Atlas of Human Embryology (2016) <a href="https://www.3dembryoatlas.com">https://www.3dembryoatlas.com</a> (elective). <b>Periodical publications (optional)</b> 5. Journal of Dental Research 6. Romanian Journal of Morphology and Embryology		

8.2. Practical classes/ seminar	Teaching methods	Observations
1. Advanced knowledge about the embryological development of the cranium and the dento-maxillary complex – examples of medical imaging	PowerPoint presentation; drawings, explanations; microscopic examination of histological sections, embryos and human fetuses; imaging study.	2 hours
2. Teratogenic factors affecting the development of the dento-maxillary complex – applied notions and clinical cases.		2 hours
3. Functional factors involved in the development of the dento-maxillary complex - characteristics, mechanisms of action, examples of medical imaging		2 hours
4. Biology of the teeth and of the pulp-dentin complex – applied notions and imaging examples		2 hours
5. Biology of the supporting complex of the teeth – applied notions and imaging examples		2 hours
6. Postnatal dynamics of teeth – applied notions and imaging examples		2 hours
7. Postnatal dynamics of the temporomandibular joint - examples of medical imaging		2 hours
<b>Recent bibliography:</b> 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 (elective). 3. Sadler TW, Langman J (2011). Langman’s Medical Embryology. Philadelphia, Pa.; London: Lippincott Williams & Wilkins; 12th edition (elective). 4. 3D Atlas of Human Embryology (2016) <a href="https://www.3dembryoatlas.com">https://www.3dembryoatlas.com</a> (elective).		
<b>Periodical publications (optional)</b> 5. Journal of Dental Research 6. Romanian Journal of Morphology and Embryology		

## 9. Assessment

<b>Activity type</b>	<b>9.1. Evaluation criteria</b>	<b>9.2. Evaluation methods</b>	<b>9.3. Percentage of final grade</b>
<b>9.4. Lecture</b>	<b>A. Knowledge for mark 5:</b> elementary notions of embryological development of the dento-maxillary complex in relation to postnatal dynamics.  <b>B. Additional knowledge for mark 10:</b> in-depth notions of embryological development of the dento-maxillary complex in relation to postnatal dynamics; possibility of interrelationship.	<b>Colloquium:</b> 20 questions (single choice).  Attendance and active participation in the course will be taken into account.	<b>70%</b>
<b>9.5. Practical classes/ seminar</b>	<b>A. Knowledge for mark 5:</b> elementary notions of embryological development of the dento-maxillary	<b>Practical assessment:</b> the presentation of a	<b>30%</b>

	<p>complex in relation to postnatal dynamics; correct interpretation of microscopic images.</p> <p><b>B. Additional knowledge for mark 10:</b> in-depth notions of embryological development of the dento-maxillary complex in relation to postnatal dynamics; possibility of interrelation; correct interpretation of microscopic images.</p>	<p>topic from the scientific literature that reflects the notions learned in the lecture and the practical sessions.</p> <p>Attendance and active participation in the seminar sessions will be taken into account.</p>	
<b>9.5.1. Individual project (if any)</b>	-	-	-
<b>Minimum performance standard</b>			
<p>- <b>Knowledge of the basic concepts of embryological development of the dento-maxillary complex in relation to the teratogenic and functional factors involved in the postnatal dynamics and in the appearance of the main anomalies.</b></p>			