



## CD 8.5.1 CURRICULUM DISCIPLINĂ

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**FACULTY OF STOMATOLOGY**  
**STUDY PROGRAM 0911.1 STOMATOLOGY**  
**DEPARTMENT OF ORAL AND MAXILLOFACIAL SURGERY AND**  
**ORAL IMPLANTOLOGY „ARSENIE GUȚAN”**

APPROVED

at the meeting of the Committee for Quality Assurance  
and Curriculum Evaluation,

Faculty of Stomatology

Minutes no. 2 from 13.02.2018

Chairwoman of the Committee, PhD MD,  
associate professor

Stepco Elena

APPROVED

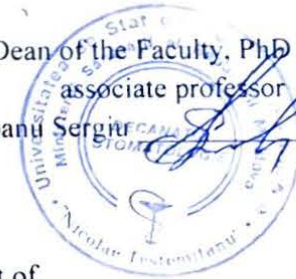
at the meeting of the Faculty Council.

Faculty of Stomatology

Minutes no. 6 from 20.02.2018

Dean of the Faculty, PhD MD,  
associate professor

Ciobanu Sergiu



APPROVED

at the Meeting of the Department of  
Oral and Maxillofacial Surgery and

Oral Implantology *Arsenie Guțan*

Minutes no. 2 of 23.10.2017

Head of the Department PhD MD,  
associate professor

Chele Nicolae

## CURRICULUM

DISCIPLINE: ORAL IMPLANTOLOGY

Integrated studies

Course type: **Mandatory discipline**

Chișinău, 2017



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### I. PRELIMINARY

- ***General presentation of the subject: the role of subject in building skills specific to the instructional and professional training programme /Speciality***

The goal of this course is to offer the students from the Faculty of Dentistry theoretical concepts related to dental implantology and to be able to diagnose the situation and provide proper treatment plans; the components of an implant; various implant surgical techniques; bone augmentation in oral implantology; maintenance of the endosseous implants.

The content of this course is structured in such a way, so it could be easily acknowledged by students.

The pre-clinical and didactic courses are designed to prepare students about the practical concepts on the components of the dental implants; diagnostics and treatment plans in oral implantology; bone augmentation in implantology; long term support of an implant.

Following this course, the Dentistry Faculty student will assess the importance of oral implantology and implant supported prosthesis, will learn about basic aspects and principles in dental implantology, the advantages and disadvantages of implantology and the limits and perspectives of this speciality.

This course has the main purpose of studying this surgical compartment more thoroughly by students in order to offer well trained specialists in the future with contemporary methods of diagnosis, planning and treatment.

- ***Curriculum purpose in the professional training***

This course aims to study the introduction of dental implants, acquiring knowledge related to diagnosis in oral and maxillofacial implantology, study of implant components, implant insertion steps, bone reconstruction in implantology, endosseous implant maintenance study.

It is proposed that at the end of the course students will be able to:

1. To correctly evaluate an edentulous patient correctly establishing the indications and especially the contraindications of the oral implants
2. Know the indications of preimplantation treatment
3. To know the biomaterials used in oral implantology and the principles of tissue integration of oral implants
4. Know the basic types of oral implants
5. Know the stages of oral rehabilitation on implants and insert at least one implant into the calf crest or in a mandible model
6. Know the accidents and complications that may occur in oral implantology
7. Know the principles of patient implant dispensarisation
8. Can select patients with indications for implants
9. Have the necessary knowledge to enable them to pass as a doctor in the postgraduate courses in order to gain competence in oral implantology

- ***Languages of the discipline:*** Romanian, English.

- ***Beneficiaries:*** 4th year students, Dentistry Faculty, Dentistry speciality



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### II. SUBJECT MANAGEMENT

Subject code	<b>S.08.O.094.</b>		
Subject name	<b>Oral Implantology</b>		
Subject leaders	<b>Mostovei Andrei, PhD, MD, assoc.prof.</b>		
Year	<b>IV</b>	Semestrul/Semestrele	<b>2</b>
Numărul de ore total, inclusiv:			<b>90</b>
Curs	<b>24</b>	Lucrări practice/ de laborator	<b>42</b>
Seminare	<b>18</b>	Lucrul individual	<b>6</b>
Forma de evaluare	<b>CD</b>	Numărul de credite	<b>3</b>

### III. LEARNING OBJECTIVES

*At the end of the course the students will be able to:*

- *At knowledge and comprehension level:*
- Know the instruments and how to use them on different implant types.
- Know the types of implants used in oral implantology and the component parts of an implant.
- Know the type of patient file, its content and importance, the patient doctor relationship, specific legislation.
- To know the patient's general balance sheet, the collaboration with other specialties, the loco-regional balance with establishing the bone need and supply, the balance of the patient's oral status, the preimplantation therapy, the implant type and the type and number of implants required.
- Know the clinical examination of patients with various types of edentations.
- To interpret the radiological paraclinical examination used in patients with edentations (retroalveolar X-ray, OPG, CT).
- To know the position of the specific anatomical elements such as: the menton, the mandibular canal, the maxillary sinuses, the anterior nasal spine, the nasal fossa
- To know the medical, clinical and paraclinical evaluation, the analysis of the soft tissue of the alveolar ridges, the analysis of the bone supply, the bone resorption rate of the alveolar ridges, the structural analysis of the bone supply
- Plan surgical treatment of patients with different types of edentations. Study of general techniques for insertion of implants, principles of bone milling, principles of gingival mucosal surgery
- Know the patient's preparation for dental implantation.
- Know the surgical methods in the treatment of patients with edentations.
- Know the principles of bone regeneration, techniques and materials used, resorbable, non-resorbable membranes, the use of implants in graft fixation at the recipient bone.
- To know the principles of lifting the sinus floor, techniques used, augmentation materials used
- To know the errors and complications in implanto-prosthetic treatment.



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- ***At the application level:***

- Interpret the results of the patient's clinical examination: inspection, palpation, percussion,
- Evaluate dento-periodontal conditions.
- Qualitative and quantitative appreciation of soft and hard tissues.
- Appreciate the primary and secondary stability of endo-dental implants.
- To perform the radiological examination (retroalveolar X-ray, OPG, CBCT).
- Be able to establish a diagnosis in different types of editions, to establish indications and contraindications in oral implantology.
- To be able to use the instrumentation, equipment and work equipment used in oral implantology.
- Possess the implant insertion technique on the simulator

- ***At the integration level:***

- Understand the purpose and principles of oral implantology.
- Understand the relationships between oral implantology and other medical specialties.
- be able to evaluate the place and role of oral implantology in the clinical training of the student;
- Be competent to use the knowledge and methodology of oral implantology in the ability to explain the nature of physiological or pathological processes;
- be able to implement the knowledge gained in the research activity;
- be competent to use critically and with confidence the scientific information obtained using the new information and communication technologies;
- be able to use multimedia technology to receive, evaluate, store, produce, present and exchange information, and communicate and participate in networks via the Internet;
- be able to learn to learn, which will contribute to the management of the professional path.

#### **IV. PRELIMINARY REQUIREMENTS**

The IV-th year student requires the following:

- knowledge of the language of instruction;
- confirmed competences in sciences at the university level (biomaterials, physics, anatomy, physiology);
- digital competences (use of the Internet, document processing, electronic tables and presentations, use of graphics programs);
- ability to communicate and team work;
- qualities - tolerance, compassion, autonomy.



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### V. TOPICS AND APPROXIMATE HOUR DISTRIBUTION

Nr. d/o	Subject	Number of hours			
		Lectures	Seminars	Practise	Individual
1.	Instruments and equipment in oral implantology.	1	1	3	
2.	Presentation of implant types and their component parts.	1	1	3	
3.	The medical record of the patient carrying the implants	1	1	3	
4.	General and local clinical aspects of patients in the preimplantary status	2	1	3	
5.	Clinical-anatomical evaluation of dental arches	1	1	3	
6.	Clinical-paraclinical evaluation of periimplantation conditions	1	1	3	
7.	Diagnosis, indications and contraindications in oral implantology	1	1	4	1
8.	Current surgical techniques in oral implantology.	2	2	4	1
9.	Biomaterials in implantology.	3	1	4	1
10.	Surgical techniques for guided bone reconstruction of deficient alveolar ridges.	4	1	4	1
11.	Surgical techniques of sinus - lifting in oral implantology.	4	1	4	1
12.	Accidents, incidents and complications in oral implantology	3	1	4	1
<b>Total</b>		<b>24</b>	<b>18</b>	<b>42</b>	<b>6</b>

### VI. INSTRUCTIONAL OBJECTIVES AND CONTENT UNITS

Objectives	Content units
<b>Chapter 1. "Preliminaries in Oral Implantology"</b>	
<ul style="list-style-type: none"> <li>• Define the notions and terminology in oral implantology</li> <li>• know the types of implants</li> <li>• to know the instruments and devices specific to oral implantology</li> <li>• know the components of the medical record of the patient treated with dental implants</li> <li>• apply theoretical knowledge acquired to other disciplines</li> <li>• to draw conclusions</li> </ul>	Edentation of jaws. Instruments. Types of implants Medical record (informed consent).



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<b>Objectives</b>	<b>Content units</b>
<b>Chapter 2. Clinical and paraclinical evaluation in oral implantology</b>	
<ul style="list-style-type: none"> <li>• know the clinical examination methods used in oral implantology</li> <li>• know the types of bone structures</li> <li>• determine the position of specific anatomical features</li> <li>• appreciate dento-periodontal conditions</li> <li>• qualitatively and quantitatively appreciate soft and hard tissues</li> <li>• to analyze and comment on the data of radiological investigations in patients with edentulous jaws</li> <li>• to know about bone offerings in oral implantology (in width, height, length and angulation)</li> <li>• to possess knowledge about postextractional bone resorption</li> <li>• to establish the indications and contraindications of oral implantology</li> </ul>	<p>Patient examination. Pre-implantary dento-periodontal conditions Radiological examination. Principles and types of radiological examination. Indications of use. Paraclinical Examination Methods: Retroalveolar Radiography; OPG; CT.</p>
<b>Chapter 3. Surgical Techniques and Methods Used in Oral Implantology. Biomaterials</b>	
<ul style="list-style-type: none"> <li>• to know the surgical methods of treatment for edentulous patients</li> <li>• to develop own opinions on the planning and choice of surgical methods in the treatment of edentulous patients</li> <li>• to know the general techniques for inserting the implants,</li> <li>• to know the principles of bone drilling (milling???)</li> <li>• to know the principles of muco-gingival surgery</li> <li>• to know the principles of material biocompatibility</li> <li>• to know the materials used in bone augmentation techniques</li> <li>• to know regeneration membranes</li> </ul>	<p>Methods of placing an endosseus dental implant. Surgical principles used for the insertion of endosseus implants. Determination of primary and secondary stability of endosseus implants. Principles and types of incisions used in oral implantology. Types of sutures used in oral implantology. Postoperative management of the patient after surgery. Biocompatibility of materials. Mechanical compatibility. Functionality of biomaterials. Materials used in bone augmentation techniques. Regeneration membranes. Bone addition materials.</p>



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<b>Objectives</b>	<b>Content units</b>
<b>Chapter 4. Accidents and complications in oral implantology</b>	
<ul style="list-style-type: none"><li>• to know the particularities of dental extraction in patients with concomitant diseases.</li><li>• to know the accidents and complications during the installation of endosseus implants.</li><li>• be aware of accidents after the osteointegration period of dental implants.</li><li>• to know the complications that occurred during the osteointegration period.</li><li>• know the complications that may occur after the osteointegration period.</li><li>• be aware of the late complications of dental implant surgery.</li></ul>	Hemorrhage. Infection. Nerve damage. Perforation of the sinus membrane. Lack of implant stability. Lack of osteointegration. Peri-implantitis. Fracture of the implant. Gingival retraction.

### **VII. PROFESSIONAL (SPECIFIC (SS) AND TRANSVERSAL (TS) SKILLS AND LEARNING OUTCOMES**

#### ✓ **Professional (specific) skills (SS)**

CP1: Knowledge, understanding and use of terminology specific to oral implantology, as well as pathologies or types of edentations for further surgical treatment with dental implants.

CP2: Explanation and interpretation of the clinical picture and correct assessment of paraclinical investigations in implantology; To be able to use the instrumentation, equipment that are used in oral implantology. Possess dental implant insertion technique on the simulator

CP3: Development of a diagnostic plan and choice of optimal surgical methods in oral implantology; Knowledge and simulation of the principles of surgical implant insertion techniques and preimplantary surgery; Knowledge of the principles of sinus-lifting, techniques used, augmentation materials used

CP4: Analysis of radiological clusters, assessment and description of anatomical formations based on (CBCT) cone-beam computed tomography and establishment of a implant-prosthetic treatment plan.

CP5: To know the errors and complications both intraoperative and non-operative in implant treatment, as well as methods for their prevention. Knowing the way of patient care and postoperative wound post-implantation

CP6: Demonstration and application of acquired knowledge in the clinical and paraclinical assessment of the patient. Selection and argumentation of communication techniques, data collection and patient preparation for surgical implantation and / or augmentation. Promoting the principles of tolerance and compassion towards patients.



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### ✓ **Transversal skills (competences) (CT):**

CT1: Application of professional assessment standards, professional ethics, and applicable legislation. Promoting logical reasoning, practical applicability, assessment and self-assessment in decision-making.

CT2: Performing activities and exercising the roles specific to teamwork within the OMF cabinet / section. Promoting the spirit of initiative, dialogue, cooperation, positive attitude and respect for others, empathy, altruism and continuous improvement of their own activities;

CT3: Systematically assessing personal skills, roles and expectations, applying self-assessments to learned processes, acquired skills and professionalism needs, effective use of language skills, knowledge in information technologies, research and communication skills to deliver quality services and adapting to the dynamics of policy requirements in health and for personal and professional development.

### ✓ **Learning outcomes**

**At the end of the course, the students will be able to:**

- To know the terminology specific to oral implantology;
- To know and interpret the clinical picture and paraclinical investigations in implantology;
- Know the basic types of oral implants
- Know the stages of oral rehabilitation on implants and insert at least one implant into the calf or simulator crest
- Know the accidents and complications that may occur in oral implantology
- Know the principles of patient implant dispensarization
- Be able to implement the knowledge gained in the research activity;
- Be competent to use critically and confidently the scientific information obtained using the new information and communication technologies.





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### VIII. THE STUDENT'S INDIVIDUAL WORK

Nr.	Expected product	Achievement strategies	Evaluation criteria	Deadline
1.	Work with information sources:	<p>Read the lecture or the material in the manual to the theme carefully.</p> <p>Read questions on the subject, which require a reflection on the subject.</p> <p>To get acquainted with the list of additional information sources on the topic. Select the source of additional information for that theme.</p> <p>Reading the text entirely, carefully and writing the essential content.</p> <p>Wording of generalizations and conclusions regarding the importance of the theme / subject.</p>	<p>Ability to extract the essentials; interpretative skills; the volume of work</p>	During the semester
2.	Solving the problems of the situation	<p>Solving case problems, arguing the conclusions at the end of each practical work. Verification of the finalities and appreciation of their achievement.</p> <p>Selection of additional information, using electronic addresses and additional bibliography.</p>	<p>The quality of problem solving and clinical case, the ability to formulate and interpret clinical and paraclinical data.</p> <p>Ability to analyze selected information from national and international professional websites.</p>	During the semester
3.	<p><b>Evaluation of perception (basic knowledge) in clinical and paraclinical examination of patients.</b></p> <p>Each student will complete the patient's medical record, systematize the stages of the clinical examination and collect the anamnesis. Establish indications for paraclinical investigations, arguing their need.</p>			
	Data recording and patient history	Working with the medical record and the systematisation of stages of collection and clinical examination.	Assess the correctness and succession of the analysis.	During the semester
	Appreciation of radiographic examination guidelines.	The student should study the particularities of the radiographic examination and argue for the need to indicate each type of radiographic exam.	Assessing the accuracy of the information described by the student.	During the semester



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<b>Nr.</b>	<b>Expected product</b>	<b>Achievement strategies</b>	<b>Evaluation criteria</b>	<b>Deadline</b>
	Preparing the project.	Students will prepare information on the selected topic from the thematic plan with schematic and graphics in Power Point.	Evaluating the quality of the selected material, the design of the project and the ability to reproduce the information.	During the semester

### IX. TEACHING- LEARNING-ASSESSMENT METHODOLOGY

#### • *Teaching and learning methods*

The teaching of the Oral Implantology discipline uses different methods and didactic methods, oriented towards the efficient acquisition and achievement of the objectives of the didactic process. In the theoretical lessons, along with traditional methods (lesson-exposure, lesson-conversation, synthesis lesson), modern methods (lesson-debate, lecture-conference, problem-lesson) are also used. Practical forms of individual, face to face, group, virtual lab work are used in the practical works. In order to acquire deeper material, different semiotic systems (scientific language, graphical and computerized language) and teaching materials (tables, diagrams, photophotographs, radiographs) are used. During the lessons and extracurricular activities, Informational Technologies are used for PowerPoint presentations and online lessons.

#### • *Recommended learning methods*

- Analysis - Imaginary decomposition of the whole into component parts. Highlighting the essential elements. Studying each element as part of the whole.
- Scheme / figure analysis - Selection of required information. Recognition based on knowledge of structures and the selected information indicated in schemes and drawings. Analysis of the functions / role of recognized structures.
- Comparison - Analysis of the first object / process in a group and determination of its essential features. Analysis of the second object / process and the determination of its essential features. Comparing objects / processes and highlighting common features. Comparing objects / processes and determining differences. Establishment criteria for decommissioning. Formulation of conclusions.
- Classification - Identification of the structures / processes to be classified. Determining the criteria on which classification is to be made. Distribution of structures / processes by groups according to established criteria.
- Elaboration of the scheme - Selection of elements, which must be included in the scheme. Rendering the Elements Selected by Different Symbols / Colors and Indicating Their Relationships. Wording of an appropriate title and legend of the symbols used.
- Experiment - Formulation of a hypothesis, based on known facts, on the process / phenomenon studied. Verifying the hypothesis by performing the processes / phenomena studied under laboratory conditions. Formulation of conclusions, deduced from arguments or findings.



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- **Applied didactic strategies / technologies (discipline specific);**

Face-to-face, individual, brainstorming, group discussion, clinical case analysis, teambuilding, clinical exam simulation, mini-research, comparative analysis.

- **Methods of assessment (including an indication of how the final grade is calculated).**

**Current:** Current checks during seminars and practical papers, 2 tests in writing. For the individual work done during the semester, the student is evaluated, the grade being included in totals. At the end of the semester, based on the deductions from the totals, the average annual grade is calculated.

**Final:** The course ends with a differentiated colloquium. The grade on the differentiated colloquium is based on the average annual score and the grade obtained at the oral interview. Notes 5 and above are equivalent to "attested", which will be passed to the notes book. The average annual score will be expressed in numbers according to the scoring scale indicated in the table.

**The final mark** will consist of the average score of 2 control papers (share 0.5) and differential colloquium (share of 0.5).

The average annual mark and the marks of all final stages of the final examination - all will be expressed in numbers according to the scoring scale (according to the table), and the final mark obtained will be expressed in two decimal places to be entered in the notes book.

### Scoring scale

THE INTERMEDIATE GRADES GRILL (annual average, grades from the exam stages)	National Annotation System	ECTS Equivalent
1,00-3,00	2	F
3,01-4,99	4	FX
5,00	5	E
5,01-5,50	5,5	
5,51-6,0	6	
6,01-6,50	6,5	D
6,51-7,00	7	
7,01-7,50	7,5	C
7,51-8,00	8	
8,01-8,50	8,5	B
8,51-8,00	9	
9,01-9,50	9,5	A
9,51-10,0	10	



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*Failure to attend the examination without good reason is recorded as "absent" and is equivalent to 0 (zero). The student is entitled to 2 repeated claims of the unsuccessful exam.*

### ***X. RECOMMENDED BIBLIOGRAPHY***

#### ***A. Mandatory:***

1. Lecture materials
2. Chele N. Implantarea dentară imediată. Riscuri și beneficii. Chișinău: S.n., 2017.
3. Mihai A.: Implantologia orală – Editura Sylvi București 2000; 9, 99-110.
4. Ioan Sârbu și colab. - Curs practic de implantologie orala, Ed.II, Editura Centrului Tehnic Editorial al Armatei, București, 2006
5. Carl Mich - Implant Contemporary Dentistry, Editura Mosby, 2007
6. Carl J. Drago - Implant Restorations: A Step-by-Step Guide, 2007, Editura Blackwell
7. Lindthe J., Karring T., Lang N. P.: Clinical Periodontology and Implant Dentistry – Blackwell Munksgaard 2003; 809-975.

#### ***B. Supplementary:***

1. Джон А.Хоббек.,Роджер М.Уотсон.Руководство по дентальной имплантологии.Москва "Медпресс-информ" 2007.
2. Федерико Эрнандес Альфаро.Костная пластика в стоматологической имплантологии.
3. Etape clinice și de laborator în protezarea pe implante. Editura Sylvi 2000, București.
4. Michael S., Block Color Atlas of dental implant surgery, 3<sup>rd</sup> edition