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## **ACADEMIC STANDARD FOR THE DISCIPLINE „SPECIAL SURGERY, INCLUDING LOCAL ANESTHESIA AND ANALGESICS IN DENTAL MEDICINE“**

### **1. Purpose of the education**

The discipline “Special surgery, including local anesthesia and analgesics in dental medicine” teaches students fundamental surgical procedures and methods of providing local anesthesia. The aim of the course is to give some fundamental knowledge and practical guidance to the students in dental medicine, who acquire theoretical knowledge and practical skills to perform patient examination, provide local anesthesia and extract teeth.

### **2. Educational form**

In accordance with the rules of the structure, operation, and education organization of Medical University – Plovdiv the education of students in Dental medicine includes in auditorial and extra-auditorial work: lectures, seminars and practical classes, master classes, taking part in circle activity, other modern and interactive forms of education and self-preparation.

In national or regional state of emergency and corresponding order by the Rector of MU – Plovdiv the education can continue in online form, which is equal to the regular form in regards of the educational content and required credits for the respective specialty and academic discipline.

Online form of education is organized and conducted according to specific ruleset, which is accepted by the Academic council after receiving positive accreditation resolution for such form.

### 3. Educational content

Oral surgery is a part of dental medicine concerned with correcting problems or damage to the mouth, teeth, and jaws. Oral surgery deals with the diagnosis of, and the surgery required by, diseases, injuries, and defects of the human jaws and associated structures. Both dentists and physicians refer a wide variety of special dental problems to the oral surgeon. Oral surgery is dental specialty.

Discipline	Exam	Academic Hours			Academic Hours in Years and Semesters			
	Semester	Total	Lectures	Practicals	III			
					V		VI	
					L	P	L	P
Special surgery, including local anesthesia and analgesics in dental medicine	VI	180	60	120	2	4	2	4

**Type of discipline:** compulsory

**Degree:** Master's degree

**Form of training:** Lectures, seminar exercises, self-preparation

**Course length:** Two semesters

**Academic Hours:** 60 lecture hours, 120 exercise hours

**Training methods:** Multimedia presentation, discussion, monitoring tests, figures, interpretation of case reports, practical tasks solving.

**Forms of assessment:** Ongoing monitoring, participation of seminars and colloquia, monitoring tests, semester examination

**Formation of ongoing monitoring:** Average assessment grade per semester

**Semester examination:** Test, written and oral examination.

**State examination:** Written and oral examination in special surgery, including local anesthesia and analgesics in dental medicine; oral and maxillo-facial surgery.

**Tutor:** Habilitated Professor of Oral surgery

**Department:** Oral surgery

### 4. Basic tasks of the education

The goal of the training in the discipline "Special surgery, including local anesthesia and analgesics in dental medicine" is for the students to acquire knowledge and abilities to : apply contemporary methods for asepsis and antisepsis, use modern anesthetic solutions in dental practice, master the methods of anesthetizing the tissues within the oral cavity during tooth extraction, be

capable of diagnosing and managing the occurring complications associated with the administration of local anesthetic solutions and tooth extraction. The acquired knowledge presents a fundament for the consecutive training in the discipline "Oral and maxillofacial surgery". After finishing the training students should possess the knowledge and skills to as follows: obtain patient's history, determine their status, provide asepsis and antisepsis, use modern anesthetic solutions, use analgesics, manage occurring complications during local anesthesia and teeth extraction.

## **5. Academic resources**

The department should have the required number of lecturers, according to the accepted norms for the educational workload of a single lecturer in the Medical university, Faculty of dental medicine – Plovdiv. The lecturer should possess an excellent theoretical and practical qualification and "Oral surgery" specialty, should be actively involved in the execution of the scientific work, according to department's plan, being guided by the contemporary achievements in the area of the discipline, that is being taught.

## **6. Physical resources**

For the execution of the training the department should have the necessary number of clinical rooms, equipped with dental units, special instruments and computers. The operation rooms should be equipped with modern dental units, operation table, as with equipment for piezosurgery, laser therapy and implantology.

## **7. Lecture education**

The textbook, written by the department, on which the lecturing and practical training of the students are based and being had, is available on the website of the faculty.

## **8. Preclinical classes**

Practical classes take place in seminar rooms and groups of 5-8 students. Multiple choice questions are provided and are intended to check:

- ✓ Students' preparation
- ✓ Knowledge and skills for the specific class.

The students are trained and directed in patient's medical history and evaluation, preliminary diagnosis, as well as work on models (anesthetic technique, tooth extraction technique and basic surgical principles of suturing, placing a drainage, etc.) by their assistant professor.

**„Special surgery, including local anesthesia and analgesics in dental medicine“**

**Lecture schedule**

**III year, V semester**

<b>№</b>	<b>TOPIC</b>
1.	Historical development of oral and maxillofacial surgery. Scope and aims. Oral and maxillofacial surgery in Bulgaria.
2.	Asepsis and antisepsis in oral and maxillofacial surgery.
3.	Patient evaluation in oral and maxillofacial surgery – patient history and physical examination.
4.	Laboratory and imaging studies in oral and maxillofacial surgery.
5.	Pain – definition, etiology, classification. Pathways for superficial and deep somatic pain in the oral and maxillofacial region.
6.	Anesthesia in oral surgery. General information. Types of anesthesia. Preparation of the patient for anesthesia (premedication).
7.	Local anesthetics. Pharmacology.
8.	Vasoconstrictors. Pharmacology, indications, and contraindications for use in oral surgery.
9.	Terminal local anesthesia - topical anesthesia, local infiltration anesthesia, intraligamentary anesthesia.
10.	Regional block anesthesia of the maxilla (intra- and extraoral). Anatomical considerations. Technique.
11.	Regional block anesthesia of the mandible (intra- and extraoral). Anatomical considerations. Technique.
12.	Anesthesia in children. Anesthetic considerations in oral and maxillofacial infections.
13.	Complications of local anesthesia.
14.	General anesthesia in oral and maxillofacial surgery – types of anesthetic agents. Delivery and monitoring of general anesthesia, complications, and prevention.
15.	Pharmacological management of pain – non-opioid, opioid and adjuvant analgesics. Types, mechanism of action.

**„Special surgery, including local anesthesia and analgesics in dental medicine“**

**Lecture schedule**

**III year, VI semester**

<b>№</b>	<b>TOPIC</b>
16.	Common surgical instruments – types, design, and principles of use.
17.	Dental extraction. Indications and contraindications. Preparation of the patient.
18.	Instruments for dental extraction – types, design, and principles of use.
19.	Anatomical and mechanical considerations for dental extraction. Steps and techniques of tooth extraction. Extraction wound healing – characteristics of the process.
20.	Surgical (open) extraction, extraction of impacted teeth, germectomy.
21.	Dental extraction in medically compromised patients (disorders of cardiovascular and respiratory systems, blood and hematopoietic system, endocrine and renal disorders, hepatic disorders, patients on corticosteroid therapy, received radiotherapy; pregnant woman).
22.	Complications during dental extraction.
23.	Complications after dental extraction.
24.	Surgical incisions, hemostasis, curettage, surgical suturing, bone osteosynthesis – principles, types, modern osteosynthesis methods and materials.
25.	High frequency electrosurgery, piezo surgery and lasers in oral surgery.
26.	Inflammatory processes in the oral cavity and maxillofacial area. Incidence, etiology, and pathogenesis. Pathways of infection dissemination. General characteristics of the inflammation in the oral cavity and maxillofacial area. Patient assessment.
27.	Tooth eruption disorders. Etiology and pathogenesis. Methods of diagnosis and treatment.
28.	Periodontitis. Etiology and pathogenesis. Classification. Acute periodontitis. Clinical signs. Methods of diagnosis and treatment.
29.	Chronic periodontitis. Clinical signs. Methods of diagnosis and treatment.
30.	Surgical treatment of chronic periodontitis - apical osteotomy, hemisection, replantation, hemisection, root amputation, extraction.

„Special surgery, including local anesthesia and analgesics in dental medicine“

Practical training schedule

III year, V semester

№	TOPIC
1.	Introduction in the oral surgery. The history of the oral surgery in Bulgaria. Aims and purposes.
2.	Asepsis and antisepsis. Preparation of the patient and surgical team for operation.
3.	Patient examination in the oral surgery. History and status.
4.	Paraclinical tests in the oral surgery. Laboratory and instrumental tests. X-rays.
5.	Pain – definition, types. Pain tracts of the superficial and deep sensation. The pain tracts from the oral cavity and maxillofacial region.
6.	Anesthesia in the oral cavity and maxillofacial region. General and local anesthesia. Indications and contraindications. Preparation of the patient.
7.	Anesthetic agents for local anesthesia. Vasoconstrictors. Pharmacologic features. Doses.
8.	Anatomic, topographic, and physiologic features in the maxillofacial region. Terminal anesthesia – types, techniques.
9.	Anatomic, topographic, and physiologic features in the maxillofacial region. Anesthesia of the upper jaw. Techniques.
10.	Anatomic, topographic, and physiologic features in the maxillofacial region. Anesthesia of lower jaw. Techniques.
11.	Anatomic, topographic, and physiologic features in the maxillofacial region. Anesthesia in children. Anesthesia by inflammatory processes.
12.	<b>Colloquium:</b> Local anesthesia – techniques and anesthetic agents.
13.	Local complication by local anesthesia.
14.	General complication by local anesthesia. Injection techniques and infusion treatment.
15.	Demonstration of local anesthesia.

„Special surgery, including local anesthesia and analgesics in dental medicine“

Practical training schedule

III year, VI semester

№	TOPIC
16.	Common surgical instruments – types, design, and principles of use. Instruments for dental extraction – types, design, and principles of use.
17.	Dental extraction. Indications and contraindications. Preparation of the patient. Anatomical and mechanical considerations for dental extraction. Steps and techniques of tooth extraction. Extraction wound healing – characteristics of the process.
18.	Extraction of maxillary teeth. Extraction of mandibular teeth. Extraction of dental roots.
19.	Tooth extraction in child. Tooth extraction during pregnancy.
20.	Atypical (surgical/ open) extraction, extraction of impacted and semi-impacted teeth.
21.	Dental extraction in medically compromised patients.
22.	Complications during dental extraction. Clinical signs, diagnosis, management.
23.	Complications after dental extraction. Clinical signs, diagnosis, management.
24.	Dental extraction – demonstration.
25.	<b>Colloquium:</b> Dental extraction. Indications and contraindications. Preparation of the patient. Extraction of different teeth – details. Complications related with local anesthesia and dental extraction – causes, clinical signs, management.
26.	Basic surgical manipulations - hemostasis, suturing, drainage, curettage, incisions.
27.	High frequency electrosurgery, piezo surgery and lasers in oral surgery.
28.	Tooth eruption disorders. Clinical signs, diagnosis, management.
29.	Acute periodontitis. Etiology and pathogenesis. Classification. Clinical signs. Methods of diagnosis and treatment.
30.	Chronic periodontitis. Etiology and pathogenesis. Classification. Clinical signs. Methods of diagnosis and treatment.

## **Examination syllabus**

### **„Special surgery, including local anesthesia and analgesics in dental medicine“ 3<sup>rd</sup> year students of Dental medicine**

1. Historical development of the oral and maxillofacial surgery. Scope and aims. Oral surgery in Bulgaria.
2. Asepsis and antisepsis in oral surgery. Preparation of the patient and surgical team.
3. Patient evaluation in oral surgery. Patient history and physical examination.
4. Paraclinical tests in oral surgery. Laboratory, microbiology, histology, cytology, and imaging studies in oral surgery.
5. Pain – definition, etiology, classification. Pathways for superficial and deep somatic pain.
6. Basic surgical principles: wounds, hemostasis, wounds healing, impairment of the healing process, tissues and teeth replacement.
7. Anesthesia in oral surgery. General information. Types of anesthesia. Preparation of the patient for anesthesia (premedication).
8. Local anesthetics. Pharmacology.
9. Vasoconstrictors. Pharmacology, indications, and contraindications for their use in oral surgery.
10. Anatomical and physiological characteristics of the maxillofacial area. Terminal local anesthesia - topical anesthesia, infiltrative anesthesia, intraligamentary anesthesia. Techniques.
11. Regional block anesthesia of the maxilla (intra- and extraoral). Anatomic and topographic features. Techniques.
12. Regional block anesthesia of the mandible (intra- and extraoral). Anatomic and topographic features. Techniques.
13. Anesthesia in children - characteristics. Features of regional anesthesia in oral and maxillofacial areas in inflammatory processes.
14. Local complications of local anesthesia. Clinical signs, diagnosis, management.
15. General complications of local anesthesia. Clinical signs, diagnosis, management.
16. General anesthesia in oral surgery. Types of anesthetic agents. Management and guidance of anesthesia. Complications, prevention.
17. Pharmacological management of pain – non-opioid, opioid and adjuvant analgesics. Types, mechanism of action.
18. Common surgical instruments – types, design, and principles of use.
19. High-frequency electrosurgery, piezosurgery and lasers in oral surgery.
20. Surgical sutures and suturing – instruments and materials. Types of sutures and knots. Techniques.
21. Tooth extraction (exodontia). Indications and contraindications. Preparation of the patient.
22. Instruments for tooth extraction – types, design, and principles of use.
23. Anatomical and mechanical considerations for tooth extraction - steps and methods. Dentist's and patient's care for the extraction wound. Extraction wound healing – characteristics of the process.



24. Surgical (open, atypical) extraction. Indications, techniques.
25. Removal of partially erupted and impacted teeth. Indications, contraindications, techniques, complications. Gernectomy.
26. Tooth extractions in medically compromised patients (disorders of cardiovascular and respiratory systems). Management.
27. Tooth extractions in medically compromised patients (disorders of blood and hematopoietic system). Management.
28. Tooth extractions in medically compromised patients (endocrine and renal disorders). Management.
29. Tooth extractions in medically compromised patients (hepatic disorders, patients on corticosteroid therapy, received radiotherapy; pregnant woman). Management.
30. Complications during tooth extraction. Local complications. Clinical signs, diagnosis, management.
31. Complications during tooth extraction. General complications. Clinical signs, diagnosis, management.
32. Complications after tooth extraction. Clinical signs, diagnosis, management.
33. Inflammatory processes in the oral cavity and maxillofacial area. Incidence, etiology and pathogenesis. Pathways of infection dissemination. General characteristics of the inflammation in the oral cavity and maxillofacial area. Patient assessment.
34. Tooth eruption disorders. Classification. Retained tooth eruption. Etiology and pathogenesis. Clinical signs. Methods of diagnosis and treatment.
35. Tooth eruption disorders. Classification. Complicated tooth eruption. Etiology and pathogenesis. Clinical signs. Methods of diagnosis and treatment.
36. Periodontitis. Etiology and pathogenesis. Classification. Acute apical periodontitis. Clinical signs. Methods of diagnosis and treatment.
37. Chronic apical periodontitis. Clinical signs. Methods of diagnosis and treatment (hemisection, replantation, root amputation).
38. Apical osteotomy. Indications, contraindications. Preoperative preparation of the tooth. Techniques, complications, prevention.

#### **Sources:**

- ✚ *Pechalova P, Introduction to oral surgery, a textbook for the third-year students of dental medicine, Plovdiv 2016*
- ✚ *Andersson L, Kahnberg KE, Pogrel A. Oral and Maxillofacial Surgery (2010) Blackwell Publishing Ltd. ISBN 978-1-4051-7119-9*
- ✚ *Hupp JR, Ellis E III, Tucker MR. Contemporary oral and maxillofacial surgery, fifth edition (2008) Mosby, Inc affiliate of Elsevier Inc. ISBN 9780323049030*
- ✚ *Malamed SF. Handbook of local anesthesia, sixth edition (2013) Mosby, Inc affiliate of Elsevier Inc. ISBN: 978-0-323-07413-1*
- ✚ *Fragiskos FD. Oral surgery (2007) Springer-Verlag Berlin Heidelberg. ISBN-13: 978-3-540-25184-2.*

## **8. Midterm controls and assessment**

The students should be dynamically and intensively engaged during the midterms. Midterm control is implemented through MCQs and oral questions in every practical class and a colloquium twice a year. Students are provided in a timely manner with information and explanation on the results, which should aid their continuing training. These control results are included in the verification of the midterm.

## **9. Personal engagement of the student**

Assistant professors direct the personal work of the students in their classes. The MCQs for personal training are issued in a book and are accessible on MU-Plovdiv's website.

## **10. Student-educator cooperation**

The engagement of the student to the teacher and his/her education resides in active participation during the practical classes as well as:

- Taking advantage of the teacher's consultation hours.
- Participation in science courses at the Department of Oral surgery

## **11. Formative assessment and grade**

In accord with the educational plan for the specialty, interval assessment is based on:

- Results from the midterm colloquium
- Assessment on the overall performance of the student during the midterm

## **12. Grading standards:**

The standards for students' grading and assessment should be defined and formed in such a way, so that the students are graded objectively and free of the teacher's subjectivity. Exam grade therefore is the combination of three components:

First component is the interval assessment of the student's theoretical and practical performance during the midterms (no more than 20% of the overall exam grade). This also includes midterm controls and formative assessment – colloquiums and individual work of the student as defined in the education plan.

Second component includes assessment of the written exam (no more than 30% of the overall exam grade). The regulation for conducting the exam is of essential importance, thus reducing the possibility for manipulation of the exam results.

Third component is the assessment of the oral exam (no more than 50%).

- **Excellent (6)** – for excellent mastering of the material and good knowledge of information sources. Thoroughly mastered basic and advanced knowledge and skills. Accurate exposition and rich language culture. Skillful handling of the study material and ability for independent thinking, judgments, and conclusions.
- **Very good (5)** – for very good mastering of the material and good knowledge of information sources. Mastered basic and advanced knowledge and skills. Rich language culture. Some difficulties in making reasoned independent judgements and conclusions.
- **Good (4)** – for sufficient mastering of the material, mastered basic and advanced knowledge and skills. Lackluster interpretation of the material and making reasoned independent judgements and conclusions.
- **Fair (3)** – for basic mastering of the material. Exposition is done in plain language. Acquired basic knowledge and skills for solving simple tasks.
- **Poor (2)** – for scarce knowledge of the material. Poor language. Lacking individual clinical thinking, problem solving and interpretation skills.

At the beginning of the course, students should be informed about the grading standards, midterm and interval assessment procedures and the opportunities to receive feedback on their progress during the semester.

### 13. Final grade

The final grade determines the extent to which the student has achieved the goal of education set at the beginning. It is multicomponent and includes assessments from:

- Formative assessments in the midterms
- Final written examination
- Final oral examination

For each component of the final grade, a coefficient of significance (from 0 to 1) is determined, and the total sum of the coefficients must always be 1. The final grade is obtained as the sum of the six-point system scores from the various components multiplied by the respective sign coefficients.

$$Q_{\text{final grade}} = \kappa_1 Q_{\text{formative assessment}} + \kappa_2 Q_{\text{written exam}} + \kappa_3 Q_{\text{oral exam}}$$

$$\kappa_1 = 0.20; \quad \kappa_2 = 0.30; \quad \kappa_3 = 0.50$$

**If one of the components 2 and 3 of the final grade is Poor 2, then the final grade is necessarily Poor 2.**

**In case of poor grade of the written work, the student is not admitted to the oral exam.**

The examination results are announced no later than five working days after the end of the examination. The examination materials are stored in the office of the department. Within five working days after the announcement of the results, the student has the right to become acquainted with his written exam. During the examination of the exam paper, it is not allowed to export, copy, record or copy it, as well as to provide a copy of it. After the expiration of the specified term, the written exam papers are archived, and the students do not have access to them.

The present discipline has a characteristic to which in this form the student is given access at the beginning of the course.

This requirement is set in accordance with the Higher Education Act Art. 56. para. 1, "teachers are obliged to develop and publish in an appropriate manner and description of the lecture course conducted by them, including titles and sequence of topics from the curriculum, recommended reading, method of forming the assessment and form of testing knowledge and skills".

***The academic standard for the discipline “Special surgery, including local anesthesia and analgesics in dental medicine” was approved by a Decision of the Department council (Protocol № 208 / 22.04.2021) and is published on the website of Medical University - Plovdiv.***