Federal State Autonomous Educational Institution of Higher Education

**I.M. Sechenov First Moscow State Medical University**

**Ministry of Health of the Russian Federation**

**(Sechenov University)**

“Approved”

Academic council of FSAEI HE

I.M. Sechenov First Moscow

State Medical University

(Sechenov University)

“\_\_\_\_\_” of \_\_\_\_\_\_\_\_\_\_\_ 20\_\_\_

Protocol №\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SYLLABUS OF THE ELECTIVE

\_\_\_ ADHESIVE TECHNOLOGIES IN DENTISTRY \_\_\_\_\_\_\_\_\_

\_ Basic professional educational program of higher education – specialty program

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_31.05.03 Dentistry \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2020-2021 year of admission

Discipline complexity \_\_\_\_\_\_\_\_ 2.0 \_\_\_\_\_\_\_\_\_ credit units

**1. Goals and objectives of mastering the elective course "Adhesive technologies in dentistry"**

**Purpose** Mastering theoretical and practical aspects of the use of adhesive technologies for the diagnosis, prevention, treatment and rehabilitation in dentistry.

**Objectives of the discipline.**

***To know:***

- know the history of the development of adhesive systems;

- know the principles of the classification of adhesive systems;

- know the methods of working with contemporary adhesive systems;

- know modern methods of dental treatment;

- know the indications and contraindications for the use of various adhesive systems;

- know the errors and complications that arise when working with adhesive systems;

***To be able to:***

- be able to work with contemporary adhesive systems;

- be able to choose an adhesive system in various clinical situations;

- be able to prevent errors and complications that may occur when using adhesive systems.

***To demonstrate:***

-examination of a dental patient;

- working with contemporary adhesive systems;

- caries and non-carious lesions management;

- correcting errors that occur at the stages of using adhesive systems.

**2. Place of the Discipline in the structure of University Educational Program**

2.1. The Discipline is a part of Educational Unit С.3.18 Dentistry

2.2. To study the discipline, following knowledge and skills formed by previous disciplines / practices are necessary:

- Human anatomy – head and neck anatomy

Knowledge: anatomical, physiological, age- and gender-associated features of human organism, human body development and growth;

Skills: palpation of main bone structures, mussels and lymph nodes, description topography of human organs, vascular and nerve trunks;

-Histology, embryology, cytology – oral cavity histology

Knowledge: cells’, tissues’ and organs’ structure, physiology and development; cells and tissues examination methods and techniques;

Competences: use educational and scientific literature for professional goals; use of laboratory equipment;

Skills: analyze histological and physiological condition of human cells, tissues and structures, assess results of cytological and histological studies;

- professional courses (internal diseases, clinical pharmacology; medical rehabilitation; general surgery, surgical diseases; dentistry).

- mathematical, natural science course (physics, mathematics; biological chemistry - biochemistry of the oral cavity; normal physiology - physiology of the maxillofacial area; pathophysiology - pathophysiology of the head and neck);

Competences: use educational and scientific literature for professional goals;

-Operative dentistry

Knowledge: basic methods of dental patient examination; dental instruments for examination, dental deposits removal, cavity preparation and filling and for endodontics; bases of cavities preparation, basis of endodontics;

Competences: use educational and scientific literature for professional goals; use of dental instrumentation and equipment;

Skills: carious cavity preparation and filling, root canal instrumentation and filling;

2.3. The study of the discipline is necessary for the knowledge, skills and abilities formed by other professional disciplines / practices: dentistry, maxillofacial surgery, pediatric dentistry, orthodontics and children's prosthetics.

Mastering the discipline is necessary for knowledge, abilities and skills, formed by following disciplines:

- post-graduate course of restorative dentistry

Knowledge: etiology, pathogenesis, treatment and prevention of main oral diseases;

Competences: use educational and scientific literature for professional goals;

Skills: modern treatment methods of caries, non-carious lesions, endodontic diseases, periodontal diseases and oral mucosa diseases

**3. Requirements for the results of mastering the discipline.**

The goal of mastering the discipline is formation of following professional competences (PC):

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| n / # | Code of PC | Competence content | As the result of mastering the discipline students must: | | | |
| Know | Be competent | Have skills | Assessment tools \* |
|  | PC-5 | Readiness for collection and analysis of patient complaints, data his/her history, examination results, laboratory, instrumental, post-mortem and other studies in order to recognize the condition or the presence or absence of dental disease | Basic and additional methods of examination using | Conduct and interpret the data of the basic and additional methods of examination | Methods of the basic and additional examination of the patient | Questioning, test, clinical tasks |
|  | PC-6 with the | Ability to determine the patients’ basic pathological conditions, symptoms, syndromes, dental diseases, clinical entities, in accordance with the International Statistical Classification of Diseases and problems related to health (ICD). | Pathological conditions, symptoms and syndromes of dental diseases, the International Classification of Diseases (ICD) | To identify patients basic pathological symptoms and syndromes of diseases using biophysical technologies, and classify them according to ICD | Basic diagnostic methods to detect pathological conditions and dental diseases using biophysical technologies | Questioning, test, clinical tasks |
|  | PC-9 | Willingness to treat dental diseases in outpatient and inpatient conditions. | Basic treatment methods of dental diseases | To treat dental disease | Methods for dental diseases treatment | Questioning, test, clinical tasks |

*\* kinds of evaluating tools, which can be used during the development of competence*: *colloquium control work, interview on situational tasks, written or computer testing, standard calculations , individual tasks, essay*

**4. Sections of discipline and competences that are formed during the study:**

|  |  |  |  |
| --- | --- | --- | --- |
| p / No. | Code of PC | Section of the discipline | Content |
| 1 | PC-5,  PC-6,  PC-9. | Theoretical and historical aspects of the application of adhesive systems in dentistry | The history of the development of adhesive systems. Terminology in adhesive dentistry. Requirements for adhesive systems. Principles of the classification of adhesive systems. Indications and contraindications for the use of adhesive systems for dental restoration. Functionality of adhesive systems. The formation of a hybrid layer on the enamel. The formation of a hybrid layer on the dentin. |
| 2 | PC-5,  PC-6,  PC-9 | The sequence and technique of using different types of adhesive systems in different clinical cases | Clinical sequence of application with contemporary adhesive systems. Advantages and disadvantages of adhesive systems. Influence of the filler type on the properties of adhesive systems. Influence of the solvent type on the properties of adhesive systems. Errors and complications when working with adhesive systems, methods of their prevention. |

**5.Distribution of discipline labour intensity**

**5.1 Distribution of discipline labour intensity and academic work in semesters.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Academic works | Labour intensity | | Labour intensity (academic hours) in semester | | | | | |
| credits | academic hours |
| 5 | 6 | 7 | 8 | 9 | 10 |
| Classroom work | 2,0 |  |  |  |  |  |  |  |
| Lectures (L) |  |  |  |  |  |  | 8 |  |
| Lab works (LW) |  |  |  |  |  |  |  |  |
| Practical classes (PC) |  |  |  |  |  |  |  |  |
| Clinical classes (CC) |  |  |  |  |  |  | 28 |  |
| Seminars (S) |  |  |  |  |  |  |  |  |
| Self-study (S-S) |  |  |  |  |  |  | 20 |  |
| Intermediate attestation |  |  |  |  |  |  | 4 |  |
| TOTAL | 2.0 |  |  |  |  |  | 60 |  |

**5.2. Discipline sections, academic works and current assessment tools**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| n / No. | Discipline sections | | Academic works (academic hours) | | | | | Assessment tools |
|  |  |  | L | CC | S | SS | total |  |
| 1 | Theoretical and historical aspects of the application of adhesive systems in dentistry | | 4 | 12 |  | 10 | 26 | Test, clinical tasks |
| 2 | The sequence and technique of using different types of adhesive systems in different clinical cases | | 4 | 16 |  | 10 | 30 | Test, clinical tasks |
| 3 | Intermediate attestation | |  |  |  |  | 4 |  |
|  | TOTAL | | 8 | 28 |  | 20 | 60 |  |

**5.3. Distribution of lectures**

|  |  |  |
| --- | --- | --- |
| n / a. | Themes of the lectures | Academic hours |
| 1. | The history of the development of adhesive systems. | 2 |
| 2. | Principles of the classification of adhesive systems. | 2 |
| 3. | Clinical sequence of application with contemporary adhesive systems. | 2 |
| 4. | Errors and complications when working with adhesive systems, methods of their prevention. | 2 |
|  | TOTAL | 8 |

**5.4. Distribution of clinical classes**

|  |  |  |
| --- | --- | --- |
| n / № | The name of the topics of practical classes | AH |
| 1 | The history of the development of adhesive systems. | 2 |
| 2 | Terminology in adhesive dentistry. | 1 |
| 3 | Requirements for adhesive systems. | 2 |
| 4 | Principles of the classification of adhesive systems. | 1 |
| 5 | Indications and contraindications for the use of adhesive systems for dental restoration. | 2 |
| 6 | The formation of a hybrid layer on the enamel. | 2 |
| 7 | The formation of a hybrid layer on the dentin. | 2 |
| 8 | Clinical sequence of application with contemporary adhesive systems. | 4 |
| 9 | Advantages and disadvantages of adhesive systems. | 4 |
| 10. | Influence of the filler type on the properties of adhesive systems. | 2 |
| 11 | Influence of the solvent type on the properties of adhesive systems. | 2 |
| 12 | Errors and complications when working with adhesive systems, methods of their prevention. | 4 |
|  | TOTAL | 28 |

**5.5. Distribution of self-study by types**

|  |  |  |
| --- | --- | --- |
| № | Type of self-study work | Academic hours |
| 1. | Work with literary and other sources of information for the studied section | 10 |
| 2. | Work with electronic educational resources | 10 |
|  | TOTAL | **20** |

**6. Assessment tools**

**Examples of assessment tools**

***TEST***

**Choose the correct answer**

1. In contemporary adhesive systems, the adhesive force is:

1) 1-3 MPa

2) 4-5 MPa

3) 6-8 MPa

4) 8-10 MPa

5) 18-20 MPa

Answer: 4

2. The standard of phosphoric acid as the main substance for removing the lubricated layer is:

1) 85%

2) 70%

3) 65%

4) 50%

5) 37%

Answer: 5

3. What layer is formed after preparation on the surface of enamel, dentin, cement:

1) dispersed layer

2) hybrid layer

3) smeared layer

4) layer of microorganisms

5) collagen layer

Answer: 3

4. How many generations of adhesive systems are present today:

1) 5

2) 3

3) 1

4) 7

5) 6

Answer: 4

5. Modern fluorine adhesive systems:

1) do not release

2) always release

3) release in trace amounts that do not have a preventive effect

4) release in quantities that have a pronounced preventive effect

5) release in a month

Answer: 3

6. The main component of the primer:

1) filler

2) hydrophilic monomer

3) stabilizer

4) organic acid

5) solvent

Answer: 2

7. The main component of the bond:

1) filler

2) inorganic acid

3) stabilizer

4) solvent

5) hydrophobic monomer

Answer: 5.

***CLINICAL CASES***

**Patient I., 30 years old, has an increased sensitivity of the enamel of the upper frontal anterior teeth. The use of a 7th generation adhesive is shown as a desensitizer.**

**Questions:**

**1. Which group includes the 7th generation adhesive?**

**2. How many vials (bottles) are in this system?**

**3. Is it necessary to rinse the etching liquid with water?**

**4. What does the bottle contain?**

**5. Is light curing necessary for this system?**

**Answers:**

**1. Self-etching system**

**2. One.**

**3. No.**

**4. Etchant, primer, bond.**

**5. Yes.**

**7.Educational & methodical support of the discipline (printed editions, electronic publi-cations, internet other network resources)**

**7.1. The basic textbooks 7.1. List of literature:**

|  |  |  |  |
| --- | --- | --- | --- |
| No | Book | Authors | |
| At the department | In the library |
| 1. | Borovsky, E. V. (2007). Terapevticheskaya stomatologiya: uchebnik [Therapeutic dentistry: textbook]. Moscow: MIA, 798. (In Russ.). |  | 400 |
| 2. | Therapeutic dentistry: textbook OO Yanushevich, Yu.M. Maksimovsky, L.N. Maksimovskaya, L.Yu. Orekhova - M: GEOTAR-Media. 2016.-760s. (In Russ.). |  | 50 |
| 3 | Therapeutic dentistry. Cariology and diseases of dental hard tissues. Endodontics. Yu.M. Maksimovsky, A.V. Mitronin Guide to practical training Textbook - M.: GEOTAR-Media, 2019.-480s. (In Russ.). |  | 50 |

**7.2. Additional editions**

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Book | Authors | |
| At the department | In the library |
| 1. | I.M. Makeeva, E.G. Margaryan, A.U. Turkina, N.Ye. Novozhilova, K.S. Babina, M.G. Arakelyan, A.V. Arzukanyan. Dental caries : Textbook; Sechenov University. — Moscow : Sechenov University Press, 2020 — 54 р. : il. | 20 | 10 |
| 2. | I.M. Makeeva, E.G. Margaryan, A.U. Turkina, N.Ye. Novozhilova, K.S. Babina, M.G. Arakelyan, A.V. Arzukanyan. Non carious lesions of dental hard tis-sues. Textbook; Sechenov University. — Moscow : Sechenov University Press, 2020 — 44 р. : il. | 20 | 10 |
| 3. | Ghom A. G., Textbook of oral medicine. — New Del-hi ;London ; Philadelphia ; Panama : Jaypee Brothers medical Publishers (P) ltd, 2014 |  | 19 |
| 4. | Coulthard P., Master Dentistry. — London : Church-ill Livingstone, 2004 |  | 47 |

**8. Material and technical instrumentation of the discipline.**

**8.1. Logistic support of the discipline.**

1. dental offices with universal dental units;

2. class rooms for reports, presentations and discussions.

**8.2. Equipment for tutorials.**

-multimedia complex (laptop, projector, screen), TV, video camera, slide scope, VCR, PC, video and DVD players, monitors, slide sets, tables / multimedia visual materials in various sections disciplines, videos, boards, etc.

- diagnostic and medical equipment (D.C. devices, pulse currents devices, variable currents of medium and high frequency devices, magnet therapy devices, light therapy equipment, ultrasound apparatus etc.).

- electrodes, gaskets, spirits, sticky dental wax, medicines and dental materials.

- Dental units, chairs, tables and chairs, dental trays with a full set of instruments used in the therapeutic department

- Forms: consultation papers, return papers, prescriptions.

**Educational technologies in an interactive form used in the process of teaching the discipline:**

**9.1. Examples of educational technologies in an interactive form:**

In accordance with the requirements of the Federal State Educational Standard, the active and interactive forms of performing classes are widely used in the educational process (computer presentation of expert materials, computer simulation; visualized test tasks; videos, analysis of specific situations, etc.) The specific weight of classes performed in interactive forms is **at least 10% of** classroom classes.

* 1. **Electronic educational resources used in the process of teaching the discipline:**

|  |  |  |
| --- | --- | --- |
| No. | Name and brief description of electronic educational and information resources (electronic publications and information databases) | Number of copies, access points |
| *1* | *2* | *3* |
| 1 | Educational portal of the First MGMU them. THEM. Sechenovahttp: //dl.sechenov.ru/ |  |
| 2 | Central Scientific Medical Library <http://www.scsml.rssi.ru/> |  |
| 3 | Library of Natural Sciences of the Russian Academy of Sciences<http://www.benran.ru/>; [http://www.benran.ru/Magazin/El/Str\_elk1.htm](http://www.benran.ru/magazin/el/str_elk1.htm) |  |
| 4 | International citation database PubMed  http://www.ncbi.nlm.nih.gov/ |  |
| 5 | Publishing house of academic medical literature Elsevier  http: //www.elsevier. com / |  |
| 6 | Scientific Electronic Library eLibrary  http://elibrary.ru// |  |
| 7 | Information and educational portal for doctors Univadis  http://www.univadis.ru/ |  |
| 8 | Electronic Medical Library Consultant of a doctor  http://www.rosmedlib.ru/ |  |

Working elective discipline program “Adhesive Technologies in Dentistry” was developed by the Department of Therapeutic Dentistry

Developers ::

Associate Professor, PHD \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ N.Ž. Dikopova

Accepted at a reunion of the Department of Restorative Dentistry

From \_\_\_\_\_\_\_\_\_\_\_\_\_20\_\_\_\_\_ Protocol No. \_\_\_\_

Head of the Department, Professor I.M. Makeeva

*Signature Full name*

Approved by the Teaching and Methodical Council of the Faculty of Dentistry

\_\_\_ \_\_\_\_\_\_\_20\_\_\_\_\_\_\_Protocol No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Chairman of the EMC \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ О .I. Admakin

and the first names, last name,