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ФИО: Ястребов Олег Александ Pederal State Autonomous Educational Facility of Higher Education должность: Ректор Patrice Lumumba's Peoples' Friendship University of Russia Дата подписания: 05.06.2024 15:35:43

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Medical institute

EDUCATION PROGRAM OF THE DISCIPLINE

«Gnathology and Temporo-Mandibular Joint's Functional Diagnostics»

Recommended by MSSN\MO for the course of specialty

31.05.03 Dentistry

The discipline is carried out within the framework of the basic professional educational program of higher education (EP HE):

«Dentistry»

1. AIM OF THE DISCIPLINE

The aim of the discipline «Gnathology and functional diagnostics of temporomandibular joint» is to train a dentist enable to diagnose and plan the orthopedic stage of complex treatment of patients with the diseases of the temporomandibular joint, considering the individual characteristics of the disease and the patient's age.

2. REQUIREMENTS OF THE RESULT OF MASTERING DISCIPLINE

The process of studying the discipline «Gnathology and functional diagnostics of temporomandibular joint» is aimed at the formation of the following competencies (parts of competencies):

Table 2.1 List of competencies which are formed while studying the discipline (result of mastering the discipline)

Code	Competence	Signs of acquiring the competence (in framework of the given discipline)
UC-1	Being able to implement critical analysis of problem situations based on systems approach, develop an action strategy.	UC-1.1. Analysing the problem situation as a system identifying its components and links between them.
GPC-5		GPC-5.1. Gathering anamnesis by analyzing the patient's complaints, making a physical examination at a dental appointment.
	Being able to examine a patient to determine a diagnosis while solving professional tasks	GPC-5.2. Formulating a preliminary diagnosis and deciding on laboratory and instrumental examinations of a dental patient.
		GPC-5.3. Compiling medical documentation for a dental patient in accordance with regulatory requirements.
		GPC-5.8. Conducting differential diagnosis with other diseases/conditions, including the urgent ones.
		GPC-5.9. Making a diagnosis according to the current international classification of diseases and health problems.

GPC-6	Being able to prescribe non- drug and drug treatment, monitor its efficacy and safety when solving professional tasks	GPC-6.1. Developing a plan for dental disease treatment considering the diagnosis, age, and clinical picture in accordance with the current procedures for the provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care considering the medical care standards. GPC-6.2. Selecting medical products (including dental materials) for drawing up a comprehensive plan for dental disease treatment. Following up the treatment of a patient.
		PC-1.1. Making an initial examination and/or reexamination of a patient to make a preliminary diagnosis. PC-1.2. Receiving information from patients (their relatives/legal representatives); conducting a questionnaire survey of patients regarding their general health status; identifying concomitant diseases to make a preliminary diagnosis.
PC-1	Being able to make an examination of a patient to determine a diagnosis.	PC-1.3. Detecting if patients have dentoalveolar, facial anomalies, deformities and prerequisites for their development, defects in the crowns of teeth and dentition based on the patient examination; laboratory, instrumental, and additional examinations in order to make a preliminary/final diagnosis.
		PC-1.4. Detecting if patients have risk factors for oncopathology (including various background processes, precancerous conditions) based on laboratory, instrumental and additional examinations to make a preliminary/final diagnosis.
		PC-1.5. Making a preliminary/final diagnosis based on the patient examination; laboratory and instrumental examinations.

PC-2	Being able to prescribe, monitor the efficacy and safety of non-drug and drug treatment	PC-2.6. Providing prosthetic treatment for persons with defects in teeth, dentition within the temporization procedure, rehabilitation of single defects in the dentition, dental prostheses of up to three units (excluding dental implants prosthetics), partial and complete removable laminar denture using modern treatment methods approved for use in medical practice.
PC-6	Being able to analyze and present in public medical information based on evidence-based medicine, participate in scientific research, introduce new methods and techniques aimed at protecting public health	PC-6.1. Searching for medical information based on evidence-based medicine, interpreting data from scientific publications and/or preparing a presentation to make medical information, the results of scientific research public.

3. THE PLACE OF THE DISCIPLINE IN THE STRUCTURE EP HE

The discipline ««Gnathology and functional diagnostics of temporomandibular joint» refers to the basic part of block 1 of the curriculum.

Within the EP HE students also study other disciplines and undergo trainings which contribute to achievement of planned results after studying of the discipline «Prosthetic treatment in full teeth absence».

Table N_2 3.1. List of components of EP HE aimed at the formation of the competences of the discipline

Code	Title of competence	Preceding disciplines	Subsequent disciplines (groups of disciplines)
CC-1.	Able to carry out a critical analysis of problem situations based on a systematic approach, to develop an action strategy.	 Prosthodontics (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (Complex Prosthetics) 	Maxillofacial prosthetics
GPC-5.	Able to conduct a patient examination in order to establish a diagnosis in solving professional problems	 Cariesology and the disease of hard dental tissues. Prosthodontics (simple prosthetics) Prosthodontics of edentulous patient 	Maxillofacial prosthetics

		• Prosthodontics (Complex Prosthetics)	
GPC-6.	Able to prescribe, monitor the effectiveness and safety of non-drug and drug treatment in solving professional problems	 Cariesology and the disease of hard dental tissues. Prosthodontics (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (Complex Prosthetics) 	Maxillofacial prosthetics
PC-1.	Able to conduct examination of the patient to establish a diagnosis.	 Prosthodontics (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (Complex Prosthetics) 	Maxillofacial prosthetics
PC-2.	Capable of prescribing, monitoring the efficacy and safety of non-drug and drug treatments	 Prosthodontics (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (Complex Prosthetics) 	Maxillofacial prosthetics
PC-6.	Able to analyze and publicly present medical information based on evidence-based medicine, to participate in scientific research, to introduce new methods and techniques aimed at protecting public health	 Prosthodontics (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (Complex Prosthetics) 	Maxillofacial prosthetics

4. THE SCOPE OF THE DISCILINE AND TYPRES OF EDUCATIONAL WORK

The overall complexity of the d	liscipline	e «Gnathology	and functional	diagnostics of
temporomandibular joint»	3	credits.		

Table № 4.1 Types of educational work by periods of mastering the EP HE for full-time education

Type of study		Total hours	Semesters	
			10	
Classroom tutorials (total)		45	45	
Including:				
Lectures				
Practical classes (PC)				
Seminars (S)				
Laboratory research (LR)		45	45	
Independent work (total)		24	24	
Control (exam)		3	3	
Total labor intensity	hours	72	72	
	credits	2	2	

5. CONTENT OF THE DISCIPLINE

Table 5.1. Content of the discipline sections

Title of discipline

Title of discipline section	Section content (themes)	Type of work
Section 1. Fundamentals of clinical gnathology (biomechanics of the dentition system). Morpho functional analysis in gnathology.	Topic 1.1. Fundamentals of clinical gnathology. Morphological and functional elements of the temporomandibular joint. Biomechanics of the masticatory apparatus. The occluders and articulators, face-bows. Methods of installing models in the articulator and adjusting it to the individual function of the patient. Topic 1.2. Occlusography. Occlusal markers: spray, paper, foil. Computer-based methods. Topic 1.3. Digital mathods. Axiography and functiography, diagnostic value. Computer mathods of diagnostics of dentition.	LR
Section 2. Diagnostics of pathology of the temporomandibular joint and masticatory muscles	Topic 2.1. Etiology, clinic, pathogenesis of TMJ diseases. Classification of TMJ diseases requiring prosthetic treatment. Functional state of the chewing and speech apparatus in TMJ diseases, hardware methods for examining patients with TMJ diseases. Differential diagnosis. Topic 2.2. Clinical methods for diagnosing musculo-articular dysfunction Topic 2.3. The functional state of the masticatory-speech apparatus in TMJ diseases, hardware methods for examining patients with TMJ diseases. Differential Diagnosis	LR

Section 3. Prosthetic treatment of patients with	Topic 3.1. Basic principles of complex treatment of patients with diseases of the temporomandibular joint and masticatory muscles. Medical and diagnostic devices. The types of occlusal splints.	I D
pathology of the temporomandibular joint and masticatory muscles	Topic 3.2 Tactics of management of patients with pathology of occlusion, TMJ, masticatory muscles. Stages of complex treatment.	LR

6. MATERIALS AND TECHNICAL SUPPORT OF THE DISCIPLINE

Table 6.1. Material and technical support of the dicipline

Classroom type	Equipment of the classroom	Specialized educational / laboratory equipment, software and materials for mastering the discipline (if necessary)
Lecture	An auditorium for lecture-type classes, equipped with a set of specialized furniture; board (screen) and technical means of multimedia presentations.	
Laboratory №1	An auditorium for laboratory work, individual consultations, current control and intermediate certification, equipped with a set of specialized furniture: a double student desk -13, a chair for a teacher, a metal cabinet for storing equipment, a built-in cabinet for materials and tools -6 pcs, a sink, a mobile a trash can with a lid of at least 200 liters, a glass cabinet for visual aids, a four-section metal safe for storing tips and burs. Technical means used to present educational information: LCD panel, personal computermonoblock, video camera on a tripod, sets of educational and visual aids (types of dentures), radiographs of MRI and CBCT images on paper and on CD, providing thematic illustrations.	educational/laboratory equipment and materials: Face bows- 7 Axiograph - 1 Functionograph - 1 T-scan- 1 Occlusion - 1 Hardware complex Biopak - 1 Apparatus for light curing of spoons 1 Stands with types of splints and dentures. Tools and materials: Disposable examination kits 1 per student Examination card form for TMJ pathology - 1 per student Diagnostic models with various defects of teeth and dentition - 14 sets. Samples of occlusal splints and denture splints - 14 sets

Classroom type	Equipment of the classroom	Specialized educational / laboratory equipment, software and materials for mastering the discipline (if necessary)
	An auditorium for laboratory work, individual consultations, current control and	Silicone base impression material 900 g per group Plates for individual spoons light-cured -2 per group Occlusal markers - 1 set per group
Laboratory №2	intermediate certification, equipped with a set of specialized furniture and equipment: 15 sets of specialized furniture - tables for simulators and dental simulators "Saratoga S.p.a" (body made of steel, painted with powder enamel, countertop made of artificial stone, table lamp, Philips monitor, retractable blocks of the doctor [2 M4 turbine hoses] and assistant [multifunctional pistol, saliva ejector, vacuum cleaner], multifunctional pedal, Venturi aspiration system with a centralized electric pump, FRASAKO dental phantoms (Germany) on a minitorso with an articulator, models of the upper and lower jaws of the ChVN 28 type (Zarnitsa, Russia) with a face mask and pneumatic or mechanical adjustment position of the phantom along 2 axes in the form of a long table for 12 vis-a-vis places and 2 four-seat modules in the form of a "chamomile" Wooden chair with a back on wheels for a dental technician - 20 pcs. Special sink made of stainless steel with two sinks and a gypsum trap. Gypsum tables for 14 jobs. Mobile with a cover a tank for garbage on 250 liters. Dental chair with a lamp and Frasako phantom chair with an articulator, models of the upper and lower jaws of the ChVN 28 type (Zarnitsa, Russia) with a face mask and mechanical adjustment of the position of the phantom along 2 axes.	educational/laboratory equipment and materials: Portable vibrating table - 4. Trimmer -1. Vacuum plaster mixer - 1. Scales for plaster - 1 Steam-jet apparatus for cleaning dentures - 1. Vacuumformer-1. Occluders -14 pcs. Adjustable articulators - 7 pieces. Face bows- 7 Tools and materials: Spatulas for gypsum -14 Silicone flasks for mixing gypsum-14, Knife for plaster - 14 Dental spatula - 14 pcs. Impression trays number 3 for the upper and lower jaws, metal perforated by 14. Vacuum former plates - 1 for a student Alginate mass 200 g per student Plaster 2nd class 250 g per student Supergypsum - 50 g per student Articulating paper 100 microns thick - 2 sheets per student

Classroom type	Equipment of the classroom	Specialized educational / laboratory equipment, software and materials for mastering the discipline
		(if necessary)
	Wall screen and multimedia projector Epson.	• C-silicone for occlusion registers – set 900 grams
	Dell LCD panel with a diagonal of at least 120 cm.	basicScissors for cutting molded mouthguards - 14
Seminar	An auditorium for conducting seminar-type classes, group and individual consultations, current control and intermediate certification, equipped with a set of specialized furniture and technical means for multimedia presentations.	List of specialized equipment, stands, visual posters, etc.
Computer classroom	A computer class for conducting classes, group and individual consultations, current control and intermediate certification, equipped with personal computers (in the amount of15pcs.), a board (screen) and technical means of multimedia presentations.	Software: • Microsoft Office: PowerPoint, Word
For independent work of students	An auditorium for independent work of students (can be used for seminars and consultations), equipped with a set of specialized furniture and computers with access to the EIOS.	

7. METHODOLOGICAL AND INFORMATIONAL SUPPORT FOR THE DISCIPLINE

Main literature:

- 1. Orthopedic dentistry: textbook / S.D. Arutyunov, E.A. Bragin, S.I. Burlutskaya [and others]; edited by E.S. Kalivradzhiyan, I.Yu. Lebedenko, E.A. Bragina, I.P. Ryzhova. 3rd ed., revised. and additional M.: GEOTAR-Media, 2020. 800 p.: ill. ISBN 978-5-9704-5272-1: 2200.00. 2. Technology of dental and jaw prosthetics [Text]: a guide for practical exercises / V. N. Trezubov, E. A. Bulycheva, S. D. Arutyunov. Moscow: Practical Medicine, 2020. 167 p.: ill., tsv. ill.; 25 cm. Bibliography: p. 167 (10 titles). 500 copies. ISBN 978-5-98811-582-3 (in translation) A guide to practical exercises on prosthetics of the dentition (complex prosthetics) [Text]: Textbook / I.Yu. Lebedenko [and others]; Ed. I.Yu.Lebedenko. M.: Practical medicine, 2014. 408 p. ISBN 978-5-98811-291-4: 465.00.
- 3. Guide to practical exercises in prosthetic dentistry for students of the 5th year / edited by Lebedenko I. Yu., Ericheva V. V., Markova B. P. / (Authors: Arutyunov S. D. and others) Educational allowance. M .: Practical medicine 2012. (Part III. 512 p.). IBSN: 978-5-98811-046-0

- 4. Lebedenko Igor Yulievich. Functional and instrumental research methods in orthopedic dentistry [Text]: Textbook for universities / I.Yu. Lebedenko, T.I. Ibragimov, A.N. Ryakhovsky.
- M.: Medical Information Agency, 2003. 128 p.: ill. ISBN 5-89481-135-X: 260.00.
- 5. Occlusion. Articulation. Biomechanics in the practice of orthopedic dentistry [Electronic resource]: Teaching aid / Comp. V.S. Bulgakov, S.N. Razumova. M.: Publishing House of RUDN University, 2009. 35 p. ISBN 978-5-209-03385-1: 0.00.

Additional literature:

- 1. Examination of the patient in the clinic of orthopedic dentistry. Tests [Text]: Teaching aid / RUDN University; Comp. V.S. Bulgakov, Sh.Kh. Sahakyan. M.: Publishing House of RUDN University, 2007. 20 p.
- 2. Bulgakov V.S. Craniomandibular pain in the clinic of orthopedic dentistry: clinic, diagnosis, treatment [text] / V.S. Bulgakov, Kh.S. Shokokat, S.N. Razumova // Bulletin of the Peoples' Friendship University of Russia: Medicine. 2011. No. 3. S. 131-135.

Resources of the information and telecommunications network "Internet":

- 1. RUDN ELS and third-party ELS, to which university students have access based on concluded agreements:
- RUDN Electronic Library System RUDN EBS http://lib.rudn.ru/MegaPro/Web
- ELS "University Library Online" http://www.biblioclub.ru
- EBS Yurayt http://www.biblio-online.ru
- ELS "Student Consultant" www.studentlibrary.ru
- EBS "Lan" http://e.lanbook.com/
- EBS "Trinity Bridge"
- 2. Databases and search engines:
- electronic fund of legal and normative-technical documentation http://docs.cntd.ru/
- Yandex search engine https://www.yandex.ru/
- Google search engine https://www.google.ru/
- abstract database SCOPUS http://www.elsevierscience.ru/products/scopus/

Educational and methodological materials for independent work of students in the development of the discipline of the discipline "Gnathology and functional diagnostics of the temporomandibular joint":

- Electronic versions of textbooks
 Presentations on the topics of the classes
 Video materials
 posted in accordance with the current procedure on the discipline page in TUIS!
- A course of lectures on the discipline "______".
 Laboratory workshop on the discipline "______" (in the presence of laboratory work).

3. Guidelines for the implementation and execution of a term paper / project in the discipline"____ " (if there is a CG / CP).4.

* - all educational and methodological materials for independent work of students are placed in accordance with the current procedure on the page of the discipline in TUIS!

8. EVALUATION MATERIALS AND SCORE-RATING SYSTEM FOR ASSESSING THE LEVEL OF FORMATION OF COMPETENCES IN THE DISCIPLINE

Evaluation materials and a score-rating system* for assessing the level of competency formation (parts of competencies) based on the results of mastering the discipline of the discipline "Gnathology and functional diagnostics of the temporomandibular joint" are presented in the Appendix to this Work Program of the discipline.

* - OM and BRS are formed based on the requirements of the relevant local normative act of the Peoples' Friendship University of Russia. Sections of disciplines and types of classes

DEVELOPERS:

Professor of the Department of prosthetic dentistry

Bykova M. V.

Professor of the Department of prosthetic dentistry

Parunov V.A.

Head of the Department of prosthetic dentistry, professor

Lebedenko I. Yu.

The head of EP HE, Deputy director MI on the specialty "Dentistry" professor

Razumova S. N.

to the discipline "Gnathology and diagnostics of temporomandibular joint"

Fund of assessment tools for carrying out the intermediate certification for the discipline (module)

Table № 1.

Assessment tools	Quantity
Control questions	31
Tasks in the test form	53
Case study	10

Standard control tasks or other materials necessary for the assessment of knowledge and skills that characterize the stages of the formation of competencies

Tasks in the test form (example) (PC 2, 5, 6, 8, 9)

- 1. The articular head of the temporomandibular joint has:
 - 1) a spherical shape
 - 2) an elliptical shape *
 - 3) a trapezoidal shape
 - 4) an oval shape
- 2. The TMJ disc is composed of:
 - 1) fibrous connective tissue *
 - 2) hyaline cartilage
 - 3) epithelial tissue
 - 4) bone base and fibrous tissue
- 3. Normally the articular head of the TMJ, making excursions, transmits chewing pressure through the articular disc to the:
 - 1) posterior wall of the articular fossa
 - 2) articular disc
 - 3) articular tubercle *
 - 4) pinnacle of the articular tubercle

12. 1. 2. Case studies (example) (GPC 1, 5, PC 1,2, 6)

Case study No1

Main part

Patient B. 58 years old turned to the dentist with complaints of poor aesthetics of the frontal group of teeth, increased sensitivity of teeth from thermal stimuli, difficulty chewing food, pain and clicking in the left TMJ when opening and closing the mouth.

Perennia and associated diseases: osteochondrosis.

Anamnesis of the disease: teeth removed because of caries and its complications. Over the past 5 years, much erased the remaining teeth. Slonje and pain in the left TMJ were noted for 2 years.

Data of objective research, external examination:

nasolabial and chin folds are expressed, the corners of the mouth are lowered. Reducing the height of the lower face by 7 mm.

Identified crunch and clicks in the left TMJ when opening and closing the mouth.

Objectively: there is an Erasure-shortening of teeth 1.1, 2.1, 2.2, 2.3 by 2/3 of the height of crowns, teeth 1.4, 1.3, 2.4, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.5, 4.7 1/3-1/2 the height of the crown.

Tooth 3.7 - a large part of the crown is restored with a filling material, the tooth changed color (brownish shade), IRAPS > 0.7.

Condition of the oral mucosa, gums, alveolar processes and palate:

the gums are hyperemic, edematous, and bleeding is noted during probing.

In the area of the canines and premolars of the upper and lower jaws, a recession of the gums is noted.



Questions:

- 1. Make a preliminary diagnosis.
- 2. Determine the need for additional examination methods.
- 3. Make a plan of surgical treatment without implantation.
- 4. Make a plan of orthopedic treatment without implantation.
- 5. What will be the rehabilitation and prophylactic stage in this patient?

Case study № 2

Main part

Patient A. 56 years old appealed to the clinic with complaints of poor aesthetics, difficult chewing food

Anamnesis of the disease: according to the patient, prosthetics was carried out for 15 years backward. The last visit to the dentist-3 years ago-all crowns were removed.

External examination: decrease in the height of the lower part of the face by 4 mm, expressed nasolabial folds, senile expression, opening the mouth in full volume, without deviation from the midline.

The examination of the oral cavity:

Dental formula:

0	П	П	0	0	0	П	П	П	R, Pt	П	0	П	0	0	0
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
О	0	0	п	п	п	п	П	П	0	П	0	П	0	П	0

The mucous membrane is pale pink, moderately moist, without visible pathological change.

Tooth 1.2 restored by light-curing composite material;

tooth 1.1 is prepared for a crown tangentially, the filling coming out;

tooth 2.1-prepared for the crown tangentially, restored with cement and anchor pin;

tooth 2.2-Radix;

teeth 3.1, 4.1, 4.3 – seals in the cervical region, do not meet clinical requirements – overhanging edges, color change.

Teeth 1.6, 1.7, 2.3, 2.5 were prepared tangentially, previously treated with resorcinol - formalin method.

Vertical deformation of the alveolar parts of the upper jaw and lower jaw In the teeth 1.6, 1.7 and 4.4.

Have teeth: 1.1, 1.2, 1.6, 1.7, 2.1, 2.3, 2.5 – crown parts are changed in color, seals do not meet clinical requirements.

The tooth 1.6-secondary caries.

It has a domed shape with a pronounced torus. Horizontal erase facets are noted.

Tartar in the teeth 3.1, 4.1, 4.2, 4.3.

Orthopantomogram:



Questions:

- 1. Make a diagnosis.
- 2. Plan of surgical treatment without implantation.
- 3. Plan of orthopedic treatment with crowns, bridges dentures and clasp prosthesis with clamp fixation system.
- 4. What will be the rehabilitation and preventive stage in this the patient?

Test questions / tasks (example) (PC-2.5, 6, 8, 9)

- 1. Medium anatomical and adjustable articulators. Features of clinical application.
- 2. Facial bow. Purpose, rules of use.
- 3. Axiography. Diagnostic relevance.

Subjects of abstracts (approximate) for independent work of students

- 1. Modern hardware methods of diagnostics of occlusion of dentition at the stage of planning of complex treatment of patients with the parodontal pathology.
- 2. Modern hardware methods of diagnostics of occlusion of dentition at the stage of planning of complex treatment of patients with the increased tooth abrasion.
- 3. Modern hardware methods of diagnostics of occlusion of dentition at the stage of planning of complex treatment of patients with the TMJ pathology.
- 4. Modern functional methods of diagnosis of masticatory muscles state at the stages of the orthopedic treatment.

- 5. Modern methods of determining the jaw centric relation.
- 6. Functional changes in the dentition with the partial absence of teeth.
- 7. Clinical application of middle anatomical and adjustable articulators.
- 8. Principles of modeling of chewing tubercles of artificial teeth in the design of dentures with partial and complete absence of teeth.
- 9. Modern methods of diagnostics of the functional state of the parodontium at the stage of planning complex treatment of patients with occlusive disharmony, defects of teeth and dentition.
- 10. Principles and methods of splinting teeth in the complex treatment of patients with parodontal disease and defects of the dentition.

The procedure, criteria and evaluation scale of intermediate certification

Students study the discipline «Maxillofacial prosthetics» in X semester.

To assess the quality of mastering the curriculum, a point-rating system and ECTS assessment are used.

Points are accumulated by students in the process of training sessions, monitoring progress and interim assessment during semester.

Academic discipline is considered mastered if a student has scored more than 50% of the possible number of points. The maximum mark for a discipline studied during the semester is 100 points, regardless of its volume.

A student does not receive these credits if during the course of study, working with a teacher and independently, gaining less than 51 points (out of 100 possible) for each semester.

Intermediate certification for the discipline in the X semester is carried out in the form of offset.

Test consists of: testing, evaluation of practical skills of the student and interview.

The procedure for intermediate certification:

- 1. Conducting student testing
- 2. Evaluation of practical skills
- 3. Interview

The test is held at the end of the study of discipline in the semester.

The points scored by the student during the semester or at the end of the study of the discipline are translated into assessment according to the rules established in Table No. 9.

Таблица № 9

Score system of knowledge assessment								
Points of Score –Rating System	Traditional grades in RF	Points to transfer grades	Grades	ECTS grades				
86 – 100	5	95 – 100	5+	A				
	5	86 – 94	5	В				
69 – 85	4	69 – 85	4	С				
51 – 68	3	61 - 68	3+	D				
	3	51 – 60	3	Е				

0 – 50	2	31 – 50	2+	FX
	2	0 - 30	2	F
51 – 100	Passed	51 – 100	Passed	Passed

Description of ECTS grades

A — Excellent (5+)

The theoretical content of the course has been mastered completely without gaps. The necessary practical skills with the mastered material have been formed. All the training tasks provided by the training program have been fulfilled, the quality of their implementation is assessed by the number of points close to the maximum. Student has a command of supplementary material that is not included in the training course.

B — Very good (5)

The theoretical content of the course has been mastered completely without gaps. The necessary practical skills of working with the mastered material have been basically formed. All the training tasks provided by the training program have been fulfilled, the quality of performance of most of them is assessed by the number of points close to the maximum. Command of some additional information not included in the training course.

C — **Good** (4)

The theoretical content of the course has been mastered completely, without gaps. Some practical skills of working with mastered material have not been sufficiently formed. All training tasks provided by the training program have been fulfilled, the quality of performance of none of them has been assessed by the minimum number of points. Some types of tasks have been completed with mistakes. Confident knowledge, limited curriculum material.

D — Satisfactory (3+)

The theoretical content of the course has been partially mastered, but the gaps are not significant. The necessary practical skills of working with the mastered material have been basically formed. Most of the training tasks included in the training program have been completed. Some of the completed tasks may contain mistakes.

E — Mediocre (3)

The theoretical content of the course has been partially mastered. Some practical skills are not formed. Most training tasks provided by the training program have not been fulfilled, or the quality of performance of some of them was estimated by the number of points close to the minimum. Теоретическое содержание курса освоено частично.

FX — Conditionally unsatisfactory (2+)

The theoretical content of the course has been partially mastered. The necessary practical skills are not formed. Most educational tasks provided by the training program have not been fulfilled, or the quality of their implementation is assessed by the number of points close to the minimum. With additional independent work on the course material it is possible to improve the quality of the performance of educational tasks.

F — Certainly unsatisfactory (2)

The theoretical content of the course has not been mastered. The necessary practical skills have not been formed. All completed assignments contain blunders. Additional independent work on the course material will not lead to any significant improvement in the quality of the training tasks.