Federal State Autonomous Educational Institution of Higher Education
PEOPLES' FRIENDSHIP UNIVERSITY OF RUSSIA
NAMED AFTER PATRICE LUMUMBA
RUDN University

Institute of Medicine

educational division (faculty/institute/academy) as higher education programme developer

COURSE SYLLABUS

Gnathology and Temporo-Mandibular Joint's Functional Diagnostics

course title

Recommended by the Didactic Council for the Education Field of:

31.05.03 Dentistry

field of studies / speciality code and title

The course instruction is implemented within the professional education programme of higher education:

Dentistry

higher education programme profile/specialisation title

2024-2025

1. COURSE GOAL(s)

The goal of the course «Gnathology and Temporo-Mandibular Joint's Functional Diagnostics» is to equip student with the knowledge of of orthopedic stage of complex treatment of patients with the diseases of the temporomandibular joint, taking into account the individual characteristics of the disease and the patient's age.

2. REQUIREMENTS FOR LEARNING OUTCOMES

Mastering the course (module) «Gnathology and Temporo-Mandibular Joint's Functional Diagnostics» is aimed at the development of the following competences /competences in part: (GC)-1, (GPC)-5, 6, (PC)- 1,2,6.

Table 2.1. List of competences that students acquire through the course study

Competence code	**Competence descriptor**	**Competence formation indicators** (within this course)
GC-1	Being able to implement critical analysis of problem situations based on systems approach, developan action strategy.	GC-1.1. Analyzing the problem situation as a system identifying its components and links between them.
GPC 5	Being able to examine patientsto determine a diagnosis when solving professional tasks	GPC-5.1. Gathering anamnesis by analyzing the patient's complaints, makinga physical examination at a dental appointment.
		GPC-5.2. Formulating a preliminary diagnosis and drawing up a plan for laboratory and instrumental examinationsof 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 based on the current international statistical classification of diseases and health problems.
GPC-6	GPC 6 Being able to prescribe non-drug and drug treatment, monitor itsefficacy and safety when solving professional tasks	GPC-6.1. Developing a plan for dental disease treatment taking into account the diagnosis, age and clinical picture inaccordance with the current procedures forthe provision of medical care, clinical guidelines (treatment protocols) on the provision of medical care taking into account the medical care standards.
		GPC-6.2. Selecting medical products(including dental materials) for drawingup a comprehensive plan for dental disease treatment. Following up the treatment of a

Competence code	Competence descriptor	Competence formation indicators (within this course)
		patient.
PC-1	**PC-1.** Being able to make an examination of a patient in order to determine a diagnosis.	PC-1.1. Making an initial examination and/or reexamination of a patient in order 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 in order to make a preliminary diagnosis.
		PC-1.3. Detecting if patients have dentoalveolar, facial anomalies, deformities and prerequisites for theirdevelopment, defects in the crowns of teeth and dentition on the basis of 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 (includingvarious background processes,precancerous conditions) based on laboratory, instrumental and additionalexaminations in order to make a preliminary/final diagnosis.
		PC-1.5. Making a preliminary/final diagnosis based on the patientexamination; laboratory and instrumental examinations.
PC-2	**PC-2.** Being able to prescribe, monitorthe efficacy and safety of non-drug and drug treatment	PC-2.6. Providing orthopedic treatmentfor 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 completeremovable laminar denture using modern treatment methods approved for use in medical practice.
PC-6	**PC-6.** Being able to analyze andpresent 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 informationbased 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. COURSE IN HIGHER EDUCATION PROGRAMME STRUCTURE

The course refers to the core/variable/elective* component of (B1) block of the higher educational programme curriculum.

* - Underline whatever applicable.

Within the higher education programme students also master other (modules) and / or internships that contribute to the achievement of the expected learning outcomes as results of the course study.

Table 3.1. The list of the higher education programme components/disciplines that contribute to the achievement of the expected learning outcomes as the course study results

Competence code	Competence descriptor	Previous courses/modules*	Subsequent courses/modules*
CC1	Being able to implementcritical analysis of problem situations based on systems approach, developan action strategy.	Dentistry" (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (Complex Prosthetics)	Maxillofacial prosthetics
GPC 5	Being able to examine patientsto determine a diagnosis when solving professional tasks	Cariology and the disease of hard dentaltissues. "Dentistry" (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (Complex Prosthetics)	Maxillofacial prosthetics
GPC 6	Being able to prescribe non-drug and drug treatment, monitor itsefficacy and safety when solving professional tasks	Cariology and the disease of hard dentaltissues. "Dentistry" (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (ComplexProsthetics)	Maxillofacial prosthetics

PC 1	Being able to make an examination of a patient in order to determine a diagnosis	Cariology and the disease of hard dentaltissues. "Dentistry" (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (ComplexProsthetics)	Maxillofacial prosthetics
PC 2	Being able to prescribe, monitorthe efficacy and safety of non-drug and drug treatment	Cariology and the disease of hard dentaltissues. "Dentistry" (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (ComplexProsthetics)	Maxillofacial prosthetics
PC 6	Being able to analyze andpresent in public medical information based on evidence-based medicine, participate in scientific research, introduce new methods and techniquesaimed at protecting public health	Cariology and the disease of hard dentaltissues. "Dentistry" (simple prosthetics) Prosthodontics of edentulous patient Prosthodontics (ComplexProsthetics)	Maxillofacial prosthetics

* To be filled in according to the competence matrix of the higher education programme.

4. COURSE WORKLOAD AND ACADEMIC ACTIVITIES

The total workload of the course "**Gnathology and Temporo-Mandibular Joint's Functional Diagnostics**" is 2 credits (72 academic hours).

Table 4.1. Types of academic activities during the periods of higher education programme mastering

Type of academic activities		Total academic hours	Semesters/training modules
			10
Contact academic hours		*51*	*51*
including:			
Lectures (LC)			
Lab work (LW)		51	51
Seminars (workshops/tutorials) (S)			
Self-studies		*18*	*18*
Evaluation and assessment (exam/passing/failing grade)		*3*	*3*
Course workload	academic hours_	**72**	**72**
	credits	**2**	**2**

* To be filled in regarding the higher education programme correspondence training mode.

5. COURSE CONTENTS

Table 5.1. Course contents and academic activities types

Course module title	Course module contents (topics)	Academic activities types
Module 1 Fundamentals of clinical gnathology (biomechanics of the dentition system). Functional analysis ofthe dentition system.	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.	LW
	Methods of determination and registration of central occlusion and jaw centric relation. Methods of registration of "Gothic angle". Axio - and functionography. Computer-based methods.	LW
	Costen's Syndrome. Methods of determining and registering the height of the lower face. Basics of occlusive diagnostics. "Factors of occlusion". Clinical, laboratory and instrumental methods of diagnostics of occlusive interrelation of dentition.	LW
Module 2 Functional state and diagnostics of dental system at defects ofteeth and dentition, parodontal diseases.	Functional state of the dentition at the partial absence of teeth. Methods of determining a chewing function.	LW
	Functional state of the dentition at parodontal diseases. Methods of determining the functional state of the parodontium (Gnathodynamometry. Periotestometry. Parodontal rheography).	LW
Module 3 Diagnostics of pathology of the	Functional state of the dentition in diseases of the TMJ. Classification of TMJ diseases requiring orthopedic treatment. Clinical methods of diagnostics of muscle and joint dysfunction.	LW

Course module title	Course module contents (topics)	Academic activities types
temporomandibularjoint and masticatorymuscles		
	Functional state of the dentition in diseases of TMJ. Hardware methods of examination of patients with TMJ diseases.Differential diagnostics.	LW
	Endocrine system	LW
	Digestive system	LW
	Respiratory system	LW
	Skin and its derivatives	LW
Module 4 Orthopedic treatment of patients with pathology of the temporomandibular joint and masticatory muscles	Basic principles of complex treatment of patients with diseases ofthe temporomandibular joint and masticatory muscles. Medical and diagnostic devices. The types of occlusal splints. Stages of complex treatment. Tactics of management of patients with pathology of occlusion, TMJ, masticatory muscles.	LW

* - to be filled in only for **full** -time training: *LC - lectures; LW - lab work; S - seminars.*

6. CLASSROOM EQUIPMENT AND TECHNOLOGY SUPPORT REQUIREMENTS

Table 6.1. Classroom equipment and technology support requirements

Type of academic activities	Classroom equipment	Specialised educational / laboratory equipment, software, and materials for course study (if necessary)
Lecture	A lecture hall for lecture-type classes, equipped with a set of specialised furniture; board (screen) and technical means of multimedia presentations.	Multimedia projector, laptop, screen, board; Dental instruments: occluders, articulators, facial bow, Larin apparatus.
Lab-work	A classroom for laboratory work, individual consultations, current and mid-term assessment; equipped with a set of specialised furniture and machinery.	Multimedia projector, laptop, screen, board; Dental instruments: occluders, articulators, facial bow, Larin apparatus.
Self-studies	A classroom for independent work of students (can be used for seminars and consultations), equipped with a set of specialised furniture and computers with access to the electronic information and educational environment.	Multimedia projector, laptop, screen, board; Dental instruments: occluders, articulators, facial bow, Larin apparatus.

7. RESOURCES RECOMMENDED FOR COURSE STUDY

Main readings:

1. Orthopedic dentistry [Electronic resource]: Textbook / Ed. I.Yu. Lebedenko, E.S. Kalivrajiyan. - M.: GEOTAR-Media, 2016. - 640 p. - ISBN 978-5-9704-3722-3.
2. Prosthetic technique [text]: Textbook for universities / Ed. M.M.Rasulova, T.I.Ibragimova, I.Yu.Lebedenko, . - M.: MIA, 2005. - 448 p.: ill. - ISBN 5-89481-311-5: 320.00.
3. Lebedenko Igor Yulievich. Functional and hardware 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-H: 260.00.
4. Orthopedic dentistry [Text]: Textbook / V.N. Kopeikin [and others]; The pod is red. V.N. Kopeikin, M.Z. Mirgazizova. - 2nd ed., add. - M.: Medicine, 2001. - 624 p.: ill. - (Educational literature for students of dental faculties of medical universities). - ISBN 5-225-04598-7: 276.00.
5. Gavrilov Evgeny Ivanovich. Orthopedic dentistry [Text]: Textbook / E.I. Gavrilov, A.S. Shcherbakov. - 3rd ed. revised I add. - M.: Medicine, 1984. - 576 p.: ill. - 1.70.
6. Orthopedic dentistry [Electronic resource]: Textbook / Ed. I.Yu. Lebedenko, E.S. Kalivrajiyan. - M.: GEOTAR-Media, 2016. - 640 p. - ISBN 978-5-9704-3722-3.

Additional readings:

1. Bulgakov Vsevolod Sergeevich. The role of medical examination to the clinic of orthopedic dentistry in prosthetics using implants / V.S. Bulgakov, T.V. Lukoyanova, I.I. Shakerov // Bulletin of the Peoples' Friendship University of Russia: Medicine. - 2010. - No. 1. - S. 125 - 129.
2. 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.
3. Prokhonchukov Alexander Alekseevich. Functional diagnostics in dental practice [Text] / A.A. Prokhonchukov, N.K. Loginova, N.A. Zhizina. - M.: Medicine, 1980. - 272 p.: ill. - (Library of a practitioner. Important issues of dentistry). - 0.80.

4. Guide to orthopedic dentistry [Text] / Under the general. red. A.I. Evdokimova. - M.: Medicine, 1974. - 568 p.: ill. - 3.54.
5. Kurlyandsky Veniamin Yurievich. Dictionary-reference book of orthopedic dentistry / V.Yu. Kurlyandsky, D.E. Kalontarov. - Tashkent: Medicine, 1970. - 327 p.: ill. - 1.75.
6. 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.

Internet sources

- 1. Electronic libraries with access for RUDN students:
  -Electronic library of RUDN – EL RUDN http://lib.rudn.ru/MegaPro/Web
  - EL «University Library online» http://www.biblioclub.ru
  - EL Urait http://www.biblio-online.ru
  - EL «Student Advisor» www.studentlibrary.ru
  - EL «Lan» http://e.lanbook.com/

- 2. Databases and search engines:
  - electronic fund of legal and regulatory and technical documentation http://docs.cntd.ru/
  - search system Yandex https://www.yandex.ru/

- search system Google https://www.google.ru/
- abstract database SCOPUS http://www.elsevierscience.ru/products/scopus/

*Training toolkit for self- studies to master the course *:*

1. The set of lectures on the course "Gnathology and Temporo-Mandibular Joint's Functional Diagnostics

* The training toolkit for self- studies to master the course is placed on the course page in the university telecommunication training and information system under the set procedure.

8. ASSESSMENT TOOLKIT AND GRADING SYSTEM* FOR EVALUATION OF STUDENTS' COMPETENCES LEVEL UPON COURSE COMPLETION

The assessment toolkit and the grading system* to evaluate the competences formation level (GC)-1, (GPC)-5, 6, (PC)- 1,2,6) upon the course study completion are specified in the Appendix to the course syllabus.

* The assessment toolkit and the grading system are formed on the basis of the requirements of the relevant local normative act of RUDN University (regulations / order).

DEVELOPERS:

Professor of the Department of prosthetic dentistry		Bykova M. V.
position, department	signature	name and surname
Professor of the Department of prosthetic dentistry		Parunov V.A.
position, department	signature	name and surname
Professor, Head of the department of Prosthetic dentistry		Lebedenko I. Yu.
position, department	signature	name and surname

HEAD OF EDUCATIONAL DEPARTMENT:

Professor, Head of the department of Prosthetic dentistry		Lebedenko I. Yu.
name of department	signature	name and surname

HEAD

OF HIGHER EDUCATION PROGRAMME:
Deputy Director of medical

institute for academic affairs		Razumova S.N.
position, department	signature	name and surname

Appendix №1
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

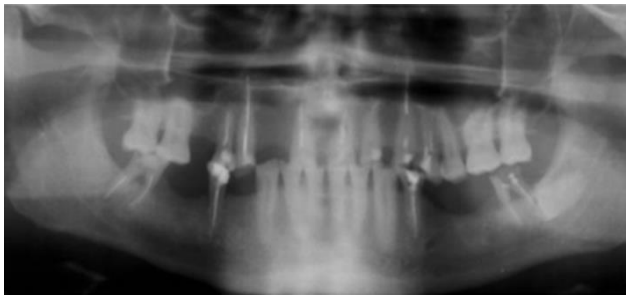
Tasks in the test form (example) *(PC 2, 5, 6, 8, 9)*

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 №1
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:

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

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
		86 – 94	5	B
69 – 85	4	69 – 85	4	C
51 – 68	3	61 – 68	3+	D
		51 – 60	3	E

0 – 50	2	31 – 50	2+	FX
		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.