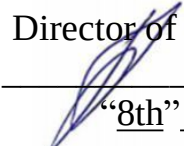


Документ подписан простой электронной подписью
Информация о владельце:
ФИО: Стегний Кирилл Владимирович
Должность: И.о. ректора
Дата подписания: 06.10.2026 15:31:52
Уникальный программный ключ:
d59234ba928aea5c04c54eb9013e367220bcb2a

Federal State Budget Educational Institution
of Higher Education
Pacific State Medical University
of the Ministry of Health of the Russian Federation

APPROVED BY

Director of the Institute of Dentistry
 / Pervov Yu.Yu./
“8th” of June 2026

COLLECTION OF ASSESSMENT TOOLS

B1.V.EC.03.05 Digital dentistry of the basic educational program of Higher Education

Specialty	31.05.03 Dentistry for foreign students (English-language program) (code, name)
Degree	Specialist's degree
Profile	02 "Healthcare" (in the field of providing health care in patients with dental pathology)
Mode of study	Full-time
Period of mastering the BEP	5 years (nominal length of study)
Institute	of Dentistry

Vladivostok, 2026

1. INTRODUCTION

1.1. Collection of Assessment Tools is a document that regulates the format, content, and types of assessment tools for continuous assessment, interim examination and final (state final) examination, and graded criteria for each type of assessment tools.

1.2. Assessment tools allows to evaluate the development of universal, general professional, and professional competencies (UCs, GPCs and PCs respectively) outlined in Federal State Educational Standard of Higher Education and defined in the basic educational program of higher education for the specialty 31.05.03 Dentistry for foreign students (English-language program), profile 02 "Healthcare" (in the field of providing health care in patients with dental pathology).

([BEP HE for the 31.05.03 Dentistry for foreign students \(English-language program\)](#) specialty, section 3 Learning Outcomes Requirements of the Basic Educational Program of Higher Education)

2. DOCUMENT BODY

2.1. Types of Assessment, Formats of Assessment Tools

No.	Types of assessment	Assessment Tools Format
1	Continuous assessment	Interview Questions
		Tests
		Mini-Case Studies
2	Interim assessment	Tests

3. The contents of assessment tools for continuous and interim examination are prepared by the teacher of the course

Interview questions

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	PC-2	ability to administer and apply modern methods and/or digital technologies to treat dental patients as well as monitor the effectiveness and safety of the treatment
F	A/02.7	Prescribing and monitoring the effectiveness and safety of non-pharmacological and pharmacological therapies
I		ANSWER THE QUESTIONS
		1. The history of the emergence and development of 3D printing 2. Selective laser sintering or laser 3D printing method. 3. Fused deposition modeling or inkjet 3D printing. 4. Materials used for the production of dental prostheses using 3D technologies 5. Technical means used to create a 3D model of the oral cavity: the use of magnetic resonance imaging in dentistry. 6. Technical means used to create a 3D model of the oral cavity: cone-beam computed tomography scanners. 7. Technical means used to create a 3D model of the oral cavity: i - CAT volumetric 3D visualization system FLX.

	8. 3D object manufacturing technologies. 3D printing milling and machining technologies. Gas and plasma cutting systems with numerical control. 9. 3D object manufacturing technologies. CNC waterjet cutting machines. Laser-based 3D printing technologies. 10. 3D object manufacturing technologies. Devices for visualizing 3D object printing: 3D monitors, 3D printers 11. 3D technology software. Computer-aided design systems. 12. 3D technology software. Automated manufacturing systems. 13. 3D technology software. Software packages for creating 3D graphics. 14. CAD/CAM systems for dental applications 15. Methodological principles of 3D orthopedic dentistry. Automated workflow for the production of dentures. CEREC computer technology. 16. History of CAD / CAM systems development. Functions. Advantages and disadvantages. 17. Main modules and stages of operation of CAD / CAM systems for dental purposes 18. Digital modeling. Contact and non-contact methods for surface profile measurement. 19. CAD module. Principles of working with the CAD module. Processing and converting digital information. Designing prostheses. 20. CAD / CAM software. Image saving. Data transfer. 21. CAM module. CAM module operating principles. Automated prosthetic manufacturing. 22. Modern trends in the development of CAD / CAM systems in orthopedic dentistry. 23. Classification of CAD / CAM systems by conceptual features.
--	---

Assessment criteria

"Very good" grade is given to a student who possesses knowledge of the subject in full scope outlined in the curriculum, has a sufficiently deep insight into the subject; is able to answer all questions clearly, exhaustively, and with no outside help; structures their answers logically, with emphasis on the most important information; is able to analyze, compare, classify, summarize, refine, and structure the course content, giving particular attention to cause-and-effect relationships.

"Good" is given to a student whose knowledge of the subject is almost in full scope outlined in the curriculum (gaps are only present in the knowledge of some especially complex aspects); is able to answer questions exhaustively with little to no outside help; does not always put emphasis on the most important information, but does not make significant mistakes.

"Satisfactory" is given to a student who possesses the bulk of knowledge on the subject; has difficulties answering questions with no outside help, uses imprecise wording; makes mistakes in substantial number of their answers.

"Unsatisfactory" is given to a student who does not have the mandatory minimum of knowledge on the subject, is not able to give an answer even with additional guiding questions.

Tests for continuous and interim assessment

Code	Competence description / name of labor function / name of work activity / text
------	--

S	31.05.03	Dentistry for foreign students (English-language program)
C	PC-2	ability to administer and apply modern methods and/or digital technologies to treat dental patients as well as monitor the effectiveness and safety of the treatment
F	A/02.7	Prescribing and monitoring the effectiveness and safety of non-pharmacological and pharmacological therapies
I		ANSWER LEVEL 1 TEST QUESTIONS (ONE CORRECT ANSWER)
		1. The 3D scanner used to scan the plaster model is 1) cone beam computed tomography scanner 2) intraoral scanner 3) laboratory scanner 4) industrial scanner. 2. During the printing process on a photopolymer printer, the resin inside the bath is stirred 1) mixer 2) stirring foot 3) brush. 3. The types of print orientation on a photopolymer printer are 1) from right to left 2) from bottom to top 3) diagonally 4) from left to right 5) top down. 4. The default layer height, which is set by the SLS printer manufacturer, is 1) 130-150 microns 2) 100-120 microns 3) 10-15 microns 4) 50-100 microns. 5. Twisting of the model during printing on a photopolymer printer is caused by 1) external factors 2) expansion of resin during curing 3) significant shrinkage. 6. The critical overhang angle in a top-down printer is typically 1) 40 degrees 2) 50 degrees 3) 30 degrees 4) 20 degrees. 7. The laser beam during the printing process on a photopolymer printer is focused using a set 1) black screens 2) transparent glass 3) foil plates 4) mirrors. 8. Supports are required during the printing process on an SLA

		photopolymer printer. 1) Sometimes 2) not required 3) Always. 9. The wasted material consumption in the subtractive method is 1) about 5% of the standard blank 2) about 70% of the standard blank 3) about 25% of the standard blank. 10. Electron beam melting technology was developed in 1) early 21st century 2) In 1997 3) late 20th century 4) In 1995. 11. Top-down photopolymer printer support requirements 1) precise printing of bridges 2) precise printing of overhangs 3) precise hole printing 4) precise printing of stamps.
I		ANSWER LEVEL 2 TEST QUESTIONS (MULTIPLE CORRECT ANSWERS)
		1. 3D scanners are used in dentistry 1) intraoral scanner 2) laboratory scanner 3) laboratory tomograph. 2. 3D printing enables simultaneous production 1) one product 2) several dozen products 3) hundreds of products. 3. The CAD/CAM system uses materials 1) wax 2) titanium 3) zirconium dioxide 4) fiberglass 5) gold. 4. Requirements for materials used in additive technologies 1) long-term resistance of materials to aggressive environments 2) resistance of materials to UV exposure 3) high mechanical properties of materials 4) biocompatibility of materials 5) technological effectiveness and high production speed. 5. The following types of dental laboratories are distinguished: 1) dental laboratories that are a structural subdivision of dental institutions 2) city 3) rural 4) independent.

	6. The advantages of a photopolymer printer are 1) the models have a smooth surface 2) the prestige of a dental clinic 3) the ability to produce models with very high dimensional accuracy and complex geometry 4) availability of materials. 7. The advantages of the CAD/CAM system are 1) low productivity 2) the ability to operate the system by one person 3) high operating accuracy (permissible deviation 15–20 μm) 4) compactness. 8. What orthopedic structures do CAD programs specialize in creating? 1) removable dentures 2) fillings 3) crowns, bridge frameworks 4) stamped crowns 5) clasp dentures. 9. The disadvantages of a photopolymer printer are 1) The mechanical properties and appearance of the models deteriorate over time, especially when exposed to sunlight. 2) high price of the printer 3) fragility of the model 4) support and post-processing are required. 10. The orientation of the model determines 1) volume of support 2) thickness of the model walls 3) location 4) platform size. 11. Basic automated operations of the digital process in dentistry 1) file processing 2) polymerization of a removable denture 3) seal 4) making a plaster model 5) scanning. 12. The main advantages of digital technologies in dentistry 1) ease of storing and working with data 2) the subjective factor is of great importance 3) the opportunity to earn big money 4) prompt selection of parameters and geometry of future prostheses 5) standardization of the restoration modeling process 6) high quality of various designs. 13. The main advantages of 3D scanning are 1) fast information processing 2) the ability to view the structure of teeth from different angles 3) quick receipt of information 4) milling teeth without viewing undercuts.
--	--

		14. According to the classification, 3D printers are 1) personal 2) industrial 3) professional 4) intraoral. 15. Automated manufacturing methods in digital dental production include: 1) additive 2) foundry 3) polishing 4) subtractive 5) nutritional. 16. Photopolymer 3D printers include 1) DLP printer 2) EBM printer 3) SLA printer 4) SLS printer 5) SLM printer. 17. The mandatory characteristics of digital technology software in dentistry include: 1) switching interfaces 2) lack of a drawing 3) user-friendly interface 4) the ability to customize the drawing 5) a powerful collection of tools 6) modes for editing objects using handles 7) availability of a CUI editor 8) Opening/saving files in DWG DXF DWT format 9) automatic completion of input 10) inability to switch interfaces 11) Correct display of CAD objects during multiple typing. 18. The main premises of the CAD/CAM department include 1) polymerization 2) soldering 3) foundry 4) room for production 5) gypsum 6) modeling room. 19. The main advantages of digital technologies in dentistry include: 1) high precision 2) reduction of labor intensity 3) continuous modernization of the production process 4) increase in the cost of the orthopedic structure.
I		ANSWER LEVEL 3 TEST QUESTIONS (MATCHING QUESTIONS)
		1. Match the materials used for the production of dental prostheses and 3D technologies: 1) Basic consumables

		2) Auxiliary consumables a) VisiJet b) ABS plastic c) PPSU d) D100 e) "Developer U89" 2. List the correct sequence of stages for the production of dental prostheses using CAD/CAM technologies: 1) Obtaining a virtual model using a scanner or digitizer (model of the cavity prepared for inlays; model of the stump of prepared teeth, model of adjacent teeth, etc.). 2) Processing of received digital information. 3) Reconstruction of the tooth surface on the monitor. 4) Designing a model of the future prosthesis. 5) Automated production of prosthesis. 3. Match types of tomographs with their descriptions 1) Closed tomograph 2) Open tomograph a) a room, similar to an X-ray room, in which the patient is located b) tunnel-type tomograph 4. Match the technologies for producing 3D objects and their descriptions 1) Milling cutting 2) Waterjet cutting 3) Plasma cutting a) mechanical processing of a metal surface with a milling cutter b) separation of metal using a high-pressure water jet with an abrasive c) melting and blowing out molten metal to form a cutting cavity 5. Compare the functional components of CAD/CAM systems and their descriptions 1) CAD module 2) CAM module 3) Industrial scanning module a) Allows you to obtain digital parameters of objects. The scanning result is a digital, or virtual, model of the oral cavity—the geometry of the prosthetic field and opposing teeth. b) A software package for three-dimensional visualization of collected information and modeling of a virtual dental prosthesis on implants or another type thereof - in accordance with the prosthetic bed. c) CNC machines, milling modules for processing blanks, where a virtual model of the prosthesis is loaded.
--	--	---

Assessment criteria

“Very good” - more than 91% correct answers of questions of every level

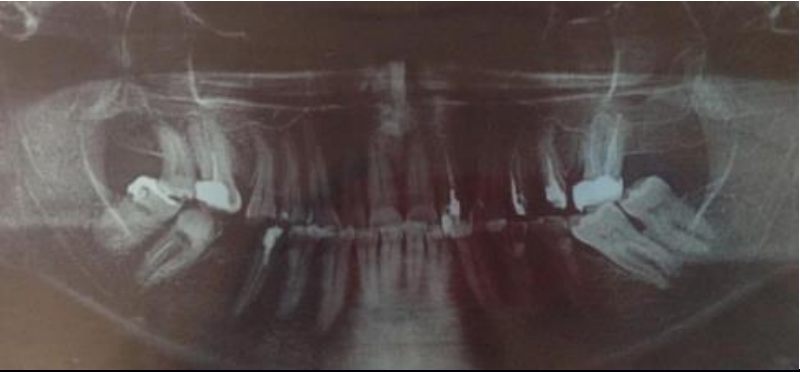
“Good” - 81-90% correct answers of questions of every level

“Satisfactory” - 71-80% correct answers of questions of every level

“Unsatisfactory” - less than 71% correct answers of questions of every level

Standardized case studies and checklists for **B1.V.EC.03.05 Digital dentistry** course
Case Study No. 1

			Case Study №: 1															
		Code	Competence description / name of labor function / name of work activity / text															
S		31.05.03	Dentistry for foreign students (English-language program)															
C		PC-2	ability to administer and apply modern methods and/or digital technologies to treat dental patients as well as monitor the effectiveness and safety of the treatment															
F		A/02.7	Prescribing and monitoring the effectiveness and safety of non-pharmacological and pharmacological therapies															
I			READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS															
			Patient B., 65, came to the clinic. Complaints: difficulty chewing food, periodic pain in the area of tooth 2.2, unsatisfactory aesthetics.															
			Medical history: teeth were extracted throughout life due to caries and its complications. The first denture was performed 20 years ago, and the last dental visit was about 3 years ago.															
			Objective examination data, external examination: decrease in the height of the lower part of the face by 2 mm.															
			Dental formula:															
			П	П	О	П	С/П	П		П	П	П		К	К	О	П/С	О
			8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
			С/П	П	О	П	С							П	П	О		П/С
																		
			Oral examination: orthognathic bite. There is a diastema between teeth 1.1 and 2.1. In the oral cavity, there are combined plastic crowns 2.4 - 2.5, which are in unsatisfactory condition (aesthetics and marginal fit of the crowns in the area of the supporting teeth are impaired). Wedge-shaped defects of teeth 1.3, 1.4. Deep carious cavities of teeth 1.4, 2.7, 3.8, 4.4, 4.8.															

		Gum recession in the area of teeth 3.3, 3.1, 4.1, 4.2. Hyperemia in the bifurcation area of the roots of tooth 4.7, mobility of parts of the crown of tooth 4.7. Pathological generalized abrasion of teeth on the upper jaw to dentin and lower jaw in the frontal section (1/3 of the height) When analyzing the OPG, foci of bone tissue rarefaction were found in the area of the apices of roots 1.7, 2.2, 2.4, 2.5, 4.5 with unclear contours. 
Q	1	Question: Make a diagnosis.
Q	2	Question: Specify the manipulations that are advisable to perform on the patient during the preparatory stage without taking into account implantation.
Q	3	Question: Create a plan for orthopedic treatment using crowns and bridges.
Q	4	Question: What will the rehabilitation and preventive stage for this patient consist of?
Q	5	Question: Indications for the production of a pin-and-core inlay.

Case Study No.1 Checklist

	Code	Competence description / name of labor function / name of work activity / text
S	31.05.03	Dentistry for foreign students (English-language program)
C	PC-2	ability to administer and apply modern methods and/or digital technologies to treat dental patients as well as monitor the effectiveness and safety of the treatment
F	A/02.7	Prescribing and monitoring the effectiveness and safety of non-pharmacological and pharmacological therapies
I		READ THE PROVIDED CASE DESCRIPTION AND GIVE DETAILED ANSWERS TO THE QUESTIONS Patient B., 65, came to the clinic. Complaints: difficulty chewing food, periodic pain in the area of tooth 2.2, unsatisfactory aesthetics.

Medical history: teeth were extracted throughout life due to caries and its complications. The first denture was performed 20 years ago, and the last dental visit was about 3 years ago.

Objective examination data, external examination: decrease in the height of the lower part of the face by 2 mm.

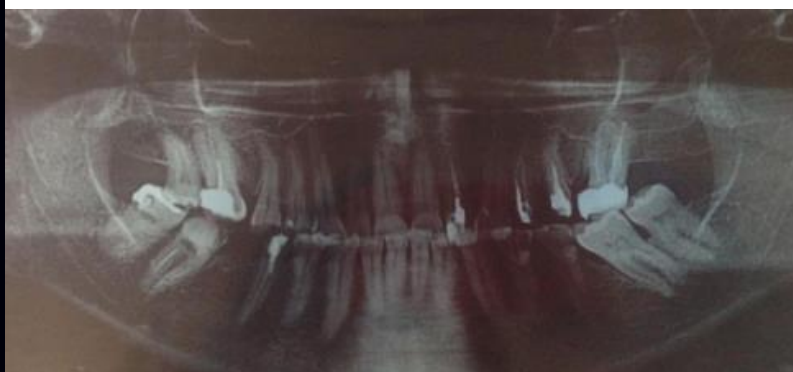
Dental formula:

П	П	О	П	С/П	П		П	П	П		К	К	О	П/С	О
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
С/П	П	О	П	С							П	П	О		П/С



Oral examination: orthognathic bite. There is a diastema between teeth 1.1 and 2.1. In the oral cavity, there are combined plastic crowns 2.4 - 2.5, which are in unsatisfactory condition (aesthetics and marginal fit of the crowns in the area of the supporting teeth are impaired). Wedge-shaped defects of teeth 1.3, 1.4. Deep carious cavities of teeth 1.4, 2.7, 3.8, 4.4, 4.8. Gum recession in the area of teeth 3.3, 3.1, 4.1, 4.2. Hyperemia in the bifurcation area of the roots of tooth 4.7, mobility of parts of the crown of tooth 4.7. Pathological generalized abrasion of teeth on the upper jaw to dentin and lower jaw in the frontal section (1/3 of the height)

When analyzing the OPG, foci of bone tissue rarefaction were found in the area of the apices of roots 1.7, 2.2, 2.4, 2.5, 4.5 with unclear contours.



		Make a diagnosis.
A		Correct answer: 1. Partial secondary absence of teeth on the upper and lower jaw (class III, subclass 1 according to Kennedy). 2 Increased abrasion of teeth of decompensated form of the 1st degree. 3. Diastema between teeth 1.1 and 2.1. 4. Dentin caries of teeth 1.4, 2.7, 3.8, 4.4, 4.8. Cemental caries of tooth 4.7. 5. Chronic apical periodontitis of teeth 1.7, 2.2, 2.4, 2.5, 4.5.
R2	Very good	All descriptors of the correct answer have been listed
R1	Good/Satisfactory	3-4 descriptors of the correct answer have been listed
		1-2 descriptors of the correct answer have been listed
R0	Fail	No descriptors of the correct answer have been listed
Q	2	Question: Specify the manipulations that are advisable to perform on the patient during the preparatory stage without taking into account implantation.
A		Correct answer: 1 Professional oral hygiene. Training in individual oral hygiene and its control. 2. Extraction of tooth 4.7 due to root caries and root separation along the bifurcation. Removal of combined plastic crowns 2.4-2.5. 3. Revision of canals and treatment of chronic periodontitis of teeth 1.7, 2.4, 2.5, 4.5. 4 Therapeutic treatment of teeth 1.4, 1.5, 4.4, 4.8 due to deep carious process. 5 In cases of planning implantation (carrying out surgical intervention to install implants in the area of missing teeth 1.6, 2.6, 4.6 after orthodontic treatment).
R2	Very good	All descriptors of the correct answer have been listed
R1	Good/Satisfactory	3-4 descriptors of the correct answer have been listed
		1-2 descriptors of the correct answer have been listed
R0	Fail	No descriptors of the correct answer have been listed
Q	3	Question: Create a plan for orthopedic treatment using crowns and bridges.
A		Correct answer: 1. Manufacturing of crowns 1.3; 1.2; 1.1; 2.1; 2.2; 2.3; 2. Manufacturing of dental bridges 1.7 – F -1.5, 1.4; 2.4, 2.5 –F - 2.7; 4.4, 4.5 – F – F - 4.8
R2	Very good	All descriptors of the correct answer have been listed
R1	Good/Satisfactory	3-4 descriptors of the correct answer have been listed
		1-2 descriptors of the correct answer have been listed
R0	Fail	No descriptors of the correct answer have been listed
Q	4	Question: What will the rehabilitation and preventive stage for this patient consist of?

A		Correct answer: 1. Follow-up examinations after 1, 4, 6 months 2. Follow-up examinations are then carried out once every 6 months to assess multiple fissure-tubercle contacts and marginal fit of fixed dentures. 3. Control examinations to assess the hygienic condition of the oral cavity.
R2	Very good	All descriptors of the correct answer have been listed
R1	Good/Satisfactory	2 descriptors of the correct answer have been listed 1 descriptor of the correct answer has been listed
R0	Fail	No descriptors of the correct answer have been listed
Q	5	Question: Indications for the production of a pin-and-core inlay.
A		Correct answer: 1. Teeth with significant destruction of the crown part - more than 50%, incisors, canines, premolars and molars. 2. Teeth whose root canals have an oval, leaf-shaped, triangular or other non-round shape in the cross-sectional plane. 3. Teeth with significant destruction of the crown portion, where there is a deviation of the central axis of the crown portion from the root portion of no more than 30°. 4. Front teeth requiring reinforcement and restoration of the crown part, with deep incisal overlap (deep bite). 5 Anomalies in the development and position of the front teeth in adults that cannot be cured by orthodontic measures.
R2	Very good	All descriptors of the correct answer have been listed
R1	Good/Satisfactory	3-4 descriptors of the correct answer have been listed 1-2 descriptors of the correct answer have been listed
R0	Fail	No descriptors of the correct answer have been listed

4. Assessment criteria for learning outcomes

"**Pass**" is given to a student who has shown a sufficiently strong knowledge of the basic concepts of the subject; is able to complete specific practical tasks outlined in the program with no outside help, use recommended reference material, and correctly evaluate the results.

"**Fail**" is given to a student who has significant gaps in knowledge of the basic concepts of the subject, is not able reach the correct solution to a specific practical task outlined in the curriculum even with outside help.