



## Syllabus of the discipline "Material Study in Dentistry"

<b>1. General information</b>	
<b>Faculty name</b>	<b>Faculty of Dentistry</b>
Educational program (branch, specialty, level of higher education, form education)	22 Healthcare, 221 Dentistry, second (master's degree) ) level of higher education, full-time
Year of study	2022-2023
<b>Name of the discipline, code</b>	<b>"Material Study in Dentistry"</b> OK 44
Department (name, address, telephone, e-mail)	Prosthetic Dentistry Department Lviv, Pekarska str., 69a; tel/fax: (032) 276-06-41 <a href="mailto:Kaf_prostheticdent@meduniv.lviv.ua">Kaf_prostheticdent@meduniv.lviv.ua</a>
Head of the department (contact e-mail)	Associate professor Kykhta Vikto Stepanovych <a href="mailto:Kaf_prostheticdent@meduniv.lviv.ua">Kaf_prostheticdent@meduniv.lviv.ua</a>
Year of study (year in which the study is implemented disciplines)	First year of study
Semester (semester in which the study of the discipline is implemented)	Second semester
Type of discipline / module (obligatory / optional)	Obligatory discipline
Teachers	Assist. Prof. Bratus-Hrynkiv R.R. <a href="mailto:Kaf_prostheticdent@meduniv.lviv.ua">Kaf_prostheticdent@meduniv.lviv.ua</a>
Erasmus Yes/No	No
Person responsible for syllabus English version	Assoc. Prof. Klyuchkovska N.R, Assist. Prof. Bratus-Hrynkiv R.R. <a href="mailto:Kaf_prostheticdent@meduniv.lviv.ua">Kaf_prostheticdent@meduniv.lviv.ua</a>
Amount of ECTS credits	4 credits ECTS
Amount of hours	Lectures – 10 hrs Practical classes – 50 hrs Self conducted work – 60 hrs
Language of instruction	English
Consultation information	According to the calendar schedule of the department
Address, telephone number and regulations of the clinical base, office... (if necessary)	Prosthetic Dentistry Department Lviv, Pekarska str., 69a; tel/fax: (032) 276-06-41 <a href="mailto:Kaf_prostheticdent@meduniv.lviv.ua">Kaf_prostheticdent@meduniv.lviv.ua</a>

## 2. Short annotation to the course

**Materials study in dentistry, as an educational discipline**, is related to the study of the interrelationship of the composition, structure, properties, technology of production and application of materials for dentistry, as well as the patterns of changes in the properties of materials under the influence of physical, mechanical and chemical factors. It is about the factors acting in the specific conditions of the oral cavity during the functioning of the maxillofacial system. This discipline lays the foundations for students to study theoretical knowledge, acquire practical skills and abilities in orthopedic dentistry, which involves the integration of the teaching of the discipline with therapeutic dentistry, surgical dentistry and pediatric dentistry and the formation of the ability to apply knowledge and skills in professional activities, forms a future specialist who is able to solve clinical tasks using the acquired knowledge and skills from the discipline, lays the foundations of a healthy lifestyle and prevention of functional impairment in the process of life, since the results of studying the properties of dental materials have not only theoretical, but also directly practical significance, related to the regulation of properties by changing the composition materials and development of optimal methods and technologies for the use of materials in various fields of dentistry.

**The subject of study** of the academic discipline is the composition, structure, properties, technology of production and application of materials for dentistry, as well as patterns of changes in the properties of materials under the influence of physical, mechanical and chemical factors.

## 3. The purpose and objectives of the course

1. The purpose of the course - describes the relationship between the program of the educational discipline and the content of the whole educational program.
2. Learning goals - information is provided on the main tasks of studying the discipline.
3. Competencies and learning outcomes, the formation of which ensures the study of the discipline (general and special competencies).

### 1. The purpose and tasks of the educational discipline

1.1. The purpose of teaching the educational discipline "materials study in dentistry" is the formation of skills regarding the selection of optimal materials for the restoration of teeth and the maxillofacial system. The study of the composition, structure and properties of materials for dentistry, as well as the patterns of changes in these properties under the influence of physical, mechanical and chemical factors, is aimed at this. The main method and tool of this study in dental materials science is the determination of a set of properties of materials that are of fundamental importance for their use in the conditions of the oral cavity.

- **Determine** the importance of studying dental materials science.
- **Analyze** the origin, composition, properties of basic and auxiliary dental materials.
- **Determine** the scope of application of different groups of dental materials.
- **Formulate** the main purpose of studying the properties of dental materials.
- **Classify** dental materials into groups based on certain characteristics.

1.2. The main tasks of studying the discipline "materials study in dentistry" are to be able to interpret the mechanical, technological, physical, chemical and biological properties of materials for the manufacture of orthopedic structures; to give a theoretical justification for the choice of certain materials depending on the type of prosthesis; explain the meaning of certain materials for the manufacture of orthopedic structures; analyze requirements for materials; to analyze the composition, properties and application of certain groups of dental materials.

### Knowledge

1. To know the current trends in the development of the industry and the indicators characterizing them
2. To know the peculiarities of the professional activity of a dentist
3. Know the methods of implementing knowledge in solving practical tasks
4. To know the state language, including the professional direction.
5. Possess foreign languages at a level sufficient for professional communication
6. To have modern knowledge in the field of communication technologies used in the learning process.
7. Have the necessary knowledge in the field of information technologies used in the learning process.
8. Know the methods of implementing knowledge in identifying, posing and solving problems of professional activity
9. Know the methods of implementing knowledge in choosing a communication strategy with patients and colleagues

10. Know ways of collective interaction
11. Know ways of interpersonal interaction with colleagues and patients
12. Know the moral and ethical principles of a medical specialist and the rules of professional subordination.
13. The ability to assess the level of danger when performing professional tasks
14. Ability to assess the state of the environment
15. Know your social and civil rights and responsibilities
16. Know the content of the discipline, key concepts
17. Know the physical and chemical properties of dental materials.
18. Know the physical and chemical composition and properties of dental materials.

**Skills:**

1. To be able to analyze professional information, make informed decisions, acquire modern knowledge
2. To be able to carry out the learning process, which requires updating and integrating knowledge
3. To be able to use professional knowledge to solve practical issues
4. To be able to use state and foreign languages for professional activities and communication
5. To be able to use information and communication technologies in a professional field that requires updating and integration of knowledge
6. To be able to use information technologies in the professional field to find, process and analyze new information from various sources
7. To be able to use professional knowledge for adaptation and actions in a new situation.
8. To be able to use professional knowledge to identify, pose and solve problems of professional activity
9. To be able to use knowledge to choose a communication strategy with patients and colleagues
10. Be able to work in a team
11. To be able to use knowledge to choose a communication strategy during interpersonal interaction
12. To use the moral and ethical principles of a medical worker and the rules of professional subordination in professional activities.
13. To be able to carry out professional activities in compliance with safety rules
14. To be able to analyze environmental quality indicators
15. Form your civic and social position
16. To be able to analyze the main theories and concepts by discipline
17. To be able to use the acquired knowledge to solve practical problems
18. Know the methods of implementing knowledge in solving practical tasks

**General competences:**

1. Ability to abstract thinking, analysis and synthesis; the ability to learn and be modernly trained
2. Knowledge and understanding of the subject area and understanding of the profession
3. Ability to apply knowledge in practical situations
4. Ability to communicate in the national language both orally and in writing; the ability to communicate in other languages
5. Skills in using information and communication technologies
6. Ability to search, process and analyze information from various sources
7. Ability to adapt and act in a new situation, ability to work autonomously
8. The ability to identify, pose and solve problems
9. The ability to choose a communication strategy
10. Ability to work in a team
11. Interpersonal skills.
12. Ability to act on the basis of ethical considerations.
13. Skills of performing safe activities
14. Efforts to preserve the environment
15. Ability to act socially-responsibly and civic-consciously

**Professional competences:**

1. Ability to understand the subject area of the discipline
2. Understanding the interrelationship of the composition, structure, properties, production technology

and application of materials for stomatology

3. Understanding the patterns of changes in the properties of materials under the influence of physical, mechanical and chemical factors
4. Explain the meaning of the main materials for the manufacture of removable orthopedic structures.
5. To interpret the mechanical, technological, physical, chemical and biological properties of the main materials for the manufacture of removable orthopedic structures.
6. Give a theoretical justification for the choice of basic materials depending on the type of prosthesis.
7. Explain the importance of metal alloys for the manufacture of orthopedic structures;
8. To interpret the mechanical, technological, physical, chemical and biological properties of metal alloys for the manufacture of orthopedic structures;
9. Give a theoretical rationale for the choice of metal alloys depending on the type of prosthesis;
10. Explain the importance of ceramic masses and sitals for the manufacture of orthopedic structures;
11. To interpret the mechanical, technological, physical, chemical and biological properties of ceramic masses and sitals for the manufacture of orthopedic structures;
12. Give reasons for choosing ceramic masses and sitals depending on the type of prosthesis;
13. Describe the composition of modeling materials;
14. Demonstrate the method of using modeling materials;
15. Determine requirements for modeling materials;
16. Determine the composition and properties of auxiliary materials for the manufacture of dental prostheses
17. Demonstrate the method of using auxiliary materials in the manufacture of dental prostheses;
18. Explain the positive and negative properties of auxiliary materials for the manufacture of dental prostheses.

**Autonomy and responsibility:**

1. Be responsible for the timely acquisition of modern knowledge
2. Be responsible for continuous professional development with a high level of autonomy
3. Be responsible for the validity of the decisions made
4. Be responsible for continuous development of professional knowledge and skills.
5. To be responsible for the quality of the use of professional skills in a new situation.
6. Form a communication strategy in the learning process
7. Bear personal responsibility for observing the moral and ethical principles of a medical specialist and the rules of professional subordination.
8. Bear personal responsibility for compliance with safety rules when performing professional tasks
9. Bear personal responsibility for compliance with the rules of environmental protection during the training process
10. To be responsible for one's civic and social activities
11. Continuous self-learning and self-improvement.
12. Be responsible for the timely acquisition of modern knowledge

**4. Prerequisites of the course**

«Material Study in Dentistry» as a discipline

- is based on the students' previous study of medical physics, bioorganic and inorganic chemistry and is integrated with them;
- lays the foundations for students to study orthopedic dentistry itself.

**5. Program learning outcomes**

**List of learning outcomes**

Learning Outcome Code	Learning Outcome Code	Link to Competency Matrix Code Competencies Program Learning Outcome Code Symbol in the Higher Education Standard

<i>Knowledge -18</i>	<i>Knowledge</i>	<i>IPPH14-IPPH20</i>
<i>Skill -18</i>	<i>Skill</i>	<i>IPPH14-IPPH20</i>
<i>General competences 15</i>	<i>General competences</i>	<i>IPPH14-IPPH20</i>
<i>Professional competences -18</i>	<i>Professional competences</i>	<i>IPPH14-IPPH16</i>
<i>Autonomy and responsibility -12</i>	<i>Autonomy and responsibility</i>	<i>IPPH14-IPPH20</i>

### 6. Format and scope of the course

Course format	Full-time course	
Type of classes	Amount of hours	Amount of groups
Lectures	4 hrs	10
Practical	10 hrs	10
Seminars	-	-
Self conducted work	16 hrs	10

### 7. Topics and content of the course

Code of the type of classes	Topic	Content of training	Code of result of training	Teacher
L-1	Metals and metal alloys. Modeling materials. Materials for fixation of prosthetic structures.	Metal alloys used in orthopedic dentistry. Classification of metal alloys. Alloys based on silver and palladium: composition, properties, applications. Samples of gold. Chromium-nickel alloys: composition, properties, application. Cobaltochrome alloys: composition, properties, application. Alloys based on titanium. Low-melting alloys.	ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК- 1,2,3,4,5,7,8,9, АВ-1,11,12	Prof. A.J. Kordiyak
L-2	Dental materials based on polymers. Dental ceramics. Auxiliary materials for the manufacture of prosthetic structures.	Acrylic resins in orthopedic dentistry. Classification of acrylic resins. Acrylic resins of hot and cold polymerization: composition,	ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК- 1,2,3,4,5,10,11,12 , АВ-1,11,12	Prof. A.J. Kordiyak

		properties, application. Composition and properties of dental ceramics. Classification of modern dental ceramics. Auxiliary materials for the manufacture of orthopedic structures.		
P-1	<p>Classification of materials used in prosthetic dentistry. Mechanical (stress and deformation), physical (rheological, thermal, optical), chemical (destruction of polymers, corrosion of metals, destruction of ceramics) properties of materials. Principles of adhesion. Gypsum. Chemical composition of gypsum. Classification of gypsum. Fields of application. Properties of casts (dimensional stability, compressive strength, tensile strength, hardness and wear resistance) and their clinical significance. Advantages and disadvantages of plaster for making models.</p>	<p>To acquire permanent knowledge on the following issues: Mechanical properties of basic materials: hardness, strength, elasticity, acrylic resinity, fatigue. Technological properties of basic materials: malleability, fluidity, viscosity, shrinkage, friction. Physical properties of basic materials: density, melting, thermal conductivity. Chemical and biological properties of basic materials. Chemical composition, properties, classification, areas of application of gypsum.</p>	<p>ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК-1,2,3,4,5,8,9,11,16,18, АБ-1,2,11,12</p>	<p>Ass.prof. Bratus-Hryniv R.R.</p>
P-2	<p>Metals and metal alloys. Basic requirements for alloys. Alloys of noble and precious metals (alloys with high gold content, alloys with medium and low gold content, silver-palladium alloys), their characteristics and clinical application. Base metal alloys</p>	<p>To acquire permanent knowledge on the following issues: Mechanical properties of basic materials: hardness, strength, elasticity, acrylic resinity, fatigue. Technological properties of basic materials: malleability, fluidity, viscosity, shrinkage, friction. Physical properties of basic materials: density, melting, thermal conductivity. Chemical</p>	<p>ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК-1,2,3,4,5,7,8,9, АБ-1,11,12</p>	<p>Ass.prof. Bratus-Hryniv R.R.</p>

	(cobalt-chromium alloys, chromium-nickel alloys, titanium alloys), their characteristics and clinical application. Stainless Steel.	and biological properties of basic materials. Chemical composition, properties, classification, areas of application of gypsum.		
P-3	Dental materials based on polymers. Composition and structure of acrylic acrylic resin. Properties of acrylic resins (biocompatibility, dimensional stability and strength, mechanical and physical properties). Polymer base materials. Polymer materials for artificial teeth.	Gain solid knowledge on the following issues: Acrylic resins in orthopedic dentistry. Classification of acrylic resins. Hot polymerization acrylic resins: composition, properties, application. Cold polymerization acrylic resins: composition, properties, application. Base acrylic resins of hot polymerization: composition, properties, application. Basic acrylic resins of cold polymerization: composition, properties, application. Elastic lining materials. Polymerization, stages of polymerization. Mode of polymerization. Stages of maturation of acrylic resin dough. Types of acrylic resin porosity.	ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК-1,2,3,4,5, АВ-1,2,11,12	Ass.prof. Bratus-Hrynkiv R.R.
P-4	Dental ceramics. Composition and properties of dental porcelain. Classification of modern dental ceramics (P. with a reinforced ceramic frame, P. for fixation with polymer adhesives, metal ceramics). Modeling materials. Characteristic properties (melting range, thermal expansion, mechanical properties, fluidity, residual stress (tension), plasticity.) Classification, composition and	Gain solid knowledge on the following issues: Requirements for modeling materials. Substances that are part of modeling materials. Classification of waxes. Beeswax: its properties and application. Plant waxes: origin, properties and applications. Types of mineral waxes: properties and applications. Base wax: composition and application. Modeling wax for fixed prostheses, its properties and application. Modeling wax for sewing: types and applications. Disadvantages of waxes and wax compositions.	ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК-1,2,3,4,5,7,8,9,13 АВ-1,11,12	Ass.prof. Bratus-Hrynkiv R.R.

	purpose of dental waxes.			
P-5	Materials for fixation. General requirements for fixation materials. Selection of material for fixation. Water-based fixing cements. Zinc polycarboxylate cements. Traditional and polymer-modified glass ionomer fixation cements. Polymer cements. Auxiliary materials. The concept of abrasive and abrasive processing. Properties of abrasives. Factors affecting the efficiency of abrasive processing. Grinding and polishing. Abrasive tools and means for carrying out these manipulations.	Gain solid knowledge on the following issues: Classification of materials for fixation of fixed orthopedic structures. Fixation materials for temporary and permanent fixation. General characteristics of materials for fixing fixed structures. Requirements for materials for fixation. Cements: varieties, their composition, properties. Properties, application technology of zinc phosphate, zinc oxydeugenol, polycarboxylate, glass ionomer cements. Composites and hybrid ionomers for fixation of fixed structures. Composition, properties, application of molding materials. Requirements for molding materials. Composition, properties, use of fluxes and whiteners. Natural and artificial abrasive materials. Composition, properties, application of abrasive materials. Composition, properties, application of separating varnishes	ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК-1,2,3,16,17,18, АБ-1,11,12	Ass.prof. Bratus-Hryniv R.R.
SCW-1	Dental materials study as an applied science of dental materials. The main principle of classification of dental materials.	Physical, mechanical and chemical properties of dental materials. Division of materials used in orthopedic dentistry into basic and auxiliary. Types of basic and auxiliary materials.	ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК-1,2,3,5,16,17,18, АБ-1,11,12	Ass.prof. Bratus-Hryniv R.R.
SCW-2	Biological assessment and biocompatibility of dental materials and methods of its assessment.	Concept of biocompatibility. Biomaterials, their features and requirements for them. Classification of biomaterials by origin. Study of the safety of dental materials in accordance with the	ЗН-1,2,16,17,18, УМ-1,2,5,6 , ФК-1,2,3, АБ-1,11,12	Ass.prof. Bratus-Hryniv R.R.



		requirements of the ISO 10993 group of standards.		
SCW -3	Quality criteria of dental materials. Systems of national and international standards.	Requirements for the quality of dental materials. International and regional organizations (ISO, ASTM, DIN, IEC) that are engaged in developing standards of general materials science. Dental organizations (ADA, etc.), which are engaged in developing standards of dental materials study.	ЗН-1,2,16,17,18, УМ-1,2,5,6, ФК-1,2,3,5,16,17,18, АБ-1,11,12	Ass.prof. Bratus-Hrynkiv R.R.
SCW -4	Cements for tooth restoration. Metal filling materials (amalgam).	Varieties of dental cements. Properties of inorganic and hybrid cements for tooth restoration. Types of amalgams, forms of their release, methods of preparation for filling. Positive and negative properties of amalgam fillings.	ЗН-1,2,16,17,18, УМ-1,2,5,6, ФК-1,2,3,9,16,17,18, АБ-1,11,12	Ass.prof. Bratus-Hrynkiv R.R.
SCW -5	Adhesives and adhesive systems and restorative dentistry. Classification and main properties of composite materials.	Definition of the term "composite material" in general materials science and dentistry. Principles of classification of dental composites. Basic properties of dental composite materials. Varieties of modern adhesive systems for composites for therapeutic and orthopedic applications, protocols for their use. Peculiarities of connection of different adhesive systems with different substrates	ЗН-1,2,16,17,18, УМ-1,2,5,6,ФК-1,2,3,4,5,6, АБ-1,11,12	Ass.prof. Bratus-Hrynkiv R.R.

**Organization of a practical session:**

**-preparatory stage (20 min.)** Justification by the teacher of the meaning of the topic of the lesson for further study of the discipline and professional activity of the doctor in order to form motivation and purposeful educational activity. Acquaintance of students with specific goals and lesson plan. Carrying out standardized control of the initial level of student training. Discussion of the topic and answers to students' questions.

**- the main stage (40 min.)** Performance by students of practical skills in the discipline "propaedeutics of orthopedic dentistry" (the algorithm for examining a patient on a phantom, mixing impression

materials, selecting impression trays, taking impressions, casting models of jaws, fixing models in the articulator, acquiring the basics of preparation of phantoms teeth under fixed orthopedic structures).  
**-final stage (30 min.)** Conducting standardized final control using individual test tasks in the MISA educational environment, analysis of results. Evaluation by the teacher of the student's current activity during the lesson, analysis of student success, announcement of grades and their entry into the paper and electronic version of the journal of attendance and student success. The head of the group enters grades into the record of students' success and class attendance, followed by confirmation by the teacher. Informing students about the topic of the next lesson and methodical measures to prepare for it.

Practical classes and lectures are provided with appropriate methodical and illustrative materials. Classes are conducted using test tasks, situational control tasks, oral answers, demonstration materials, dental phantoms, patient head phantoms. Lectures are conducted with mandatory multimedia accompaniment, which demonstrates modern illustrative material in accordance with the topic of the lecture, and a discussion with the audience.

## 8. Verification of learning outcomes

### The current control

is carried out during the training sessions and aims to check the assimilation of educational material by students. Forms of assessment of current educational activities include control of theoretical and practical training. types of work provided by the program of the discipline. The student must receive a grade from each topic for further conversion of grades into points on a multi-point (200-point) scale. illustrating answers with various examples; gives comprehensively accurate and clear answers without any leading questions; teaches material without errors inaccuracies; freely solves problems and performs practical tasks of varying complexity;

A grade of "good" is given when the student knows the whole program and understands it well, answers the questions correctly, consistently and systematically, but they are not exhaustive, although the student answers additional questions without errors; solves all problems and performs practical tasks, experiencing difficulties only in the most difficult cases; The student is able to solve modified problems with the help of leading questions; solves problems and performs practical skills, experiencing difficulties in simple cases; is not able to systematically answer the answer, but answers the direct questions correctly.

Grade "unsatisfactory" is given in cases where the student's knowledge and skills do not meet the requirements of "satisfactory" assessment.

Learning outcome code	Code of the type of classes	Method of verification of learning outcomes	Enrollment criteria
3H-1,2,16,17,18, YM-1,2,5,6 , K-1,2,3,4,5,8,9,11,16,18 , AB-1,2,11,12	II-1	<i>Individual test task</i>  <i>Mixing dental gypsum and observing its crystallization</i>	0%-49%=unsatisfactorily 50%-70%=satisfactorily 71%-90%=good 91%-100%=excellent Done = "credited" Not completed = "not credited "
3H-1,2,16,17,18, YM-1,2,5,6 , K-1,2,3,4,5,7,8,9, AB-1,11,12	II-2	<i>Individual test task</i>	0%-49%=unsatisfactorily 50%-70%=satisfactorily 71%-90%=good 91%-100%=excellent
3H-1,2,16,17,18, YM-1,2,5,6 , K-1,2,3,4,5, AB-1,2,11,12	II-3	<i>Individual test task</i>  <i>Preparation of resin dough on the example of acrylic resin of cold polymerization</i>	0%-49%=unsatisfactorily 50%-70%=satisfactorily 71%-90%=good 91%-100%=excellent Done = "credited" Not completed = "not credited "

ЗН-1,2,16,17,18, УМ-1,2,5,6, К-1,2,3,4,5,7,8,9, АВ-1,11,12	II-4	<i>Individual test task</i>	0%- 49%=unsatisfactorily 50%-70%=satisfactorily 71%-90%=good 91%-100%=excellent
ЗН-1,2,16,17,18, УМ-1,2,5,6, К-1,2,3,16,17,18, АВ-1,11,12	II-5	<i>Individual test task</i>  <i>Processing and polishing of a acrylic bar and observation of changes in appearance</i>	0%- 49%=unsatisfactorily 50%-70%=satisfactorily 71%-90%=good 91%-100%=excellent Done = "credited" Not completed = "not credited "

### Підсумковий контроль

General system assessment	Participation in work during the semester is 100% on a 200-point scale	
Scales assessment	Traditional 4-point scale, multi-point (200-point) scale, ECTS rating scale	
Conditions of admission to final control	The student attended all practical (laboratory, seminar) classes and received at least 120 points for the current performance	
Type of summary control	Methodology of final control	Criteria enrollment
Test	All topics presented at current control. Scores from a 4-point scale are converted into points on a multi-point (200-point) scale in accordance with the Regulation "Evaluation criteria, rules and procedures results of students' educational activities"	<i>Maximum the number of points is 200.</i> <i>Minimal the number of points is 120</i>

**The number of points is calculated** on the basis of the grades received by the student for the 4th year point (national) scale during the study of the discipline, by calculating the arithmetic mean (CA), rounded to two decimal places. The obtained value is converted into points on a multi-point scale as follows:

$$X = \frac{CA \times 120}{5}$$

### 9. Course policy

Regarding the results of student learning due to academic integrity, it is necessary:

- to act in professional and educational situations from the standpoint of academic integrity and professional ethics;
- to independently perform educational tasks; information in case of borrowing ideas, statements, information;
- be aware of the importance of the norms of academic integrity, evaluate examples of human behavior in accordance with these;
- evaluate examples of human behavior in accordance with the norms of academic integrity;
- to give a moral assessment of one's own actions, to correlate them with moral and professional norms.

### 10. Reference

**Required:**

1. Materialoznavstvo u stomatolohii. Pid zah. red. prof. M.D. Korolia. Navchalnyi posibnyk dlia stomatolohichnykh fakultetiv. - Vinnytsia: NOVA KNYHA. 2008. - 240 s.
2. Korol M.D., Korobeinikov L.S., Odzhubeiska O.D., Ramus M.O., Kindii D.D. ta in. Praktykum z ortopedychnoi stomatolohii. Chastyna III. Poltava: IVA "Astreia".-2006.- 95 s.
3. Vlasenko A.Z., Strelkovskiy K.M. Zubotekhnichne materialoznavstvo /Za red. profesora Flisa P.S. - K.: Zdorov"ia, 2004. - 332 s.

4. Abolmasov N.H., Abolmasov N.N., Вышков V.A., Al-Khakym A. Ortopedycheskaia stomatolohyia, SHMA, 2000.-57P-86 s.
5. Konovalov A.P., Kuriakyna N.V., Mytyn N.E. Fantomnyi kurs ortopedycheskoi stomatolohyy / Pod red. prof. N.V.Trezubova. - M.: Medytsynskaia knyha; N.Novhorod: Yzd-vo NHMA, 1999. - 344 s.
6. Shylova H.B., Pochtarov A.A., Korol M.D. Praktykum z ortopedychnoi stomatolohii.- Poltava, 1995.- 140 s.
7. Rozhko M.M., Nespriadko V.P. Zuboprotezna tekhnika. - K.: Knyha plius, 2006. - 543 s.

**Additional:**

1. 1. Abdurakhmanov A.Y., Kurbanov O.R. Materialy y tekhnolohyy v ortopedycheskoi stomatolohyy. - Uchebnyk. - M.: Medytsyna, 2002. - 208 s.
2. 2. Abolmasov A.H., Abolmasov N.N. Ortopedycheskaia stomatolohyia. - M.: Med. Press-ynform, 2002. - 576 s.

**11. Equipment, logistical and software support of the discipline/course**

**Syllabus authors**

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Assoc. Prof. V.S. Kukhta