Integrated Pre-clinical Education 2nd year

1. IMPRINT

Academic Year	2024/2025
Department	Faculty of Medicine and Stomatology
Field of study	Medicine and Dentistry
Main scientific discipline	Medical science
Study Profile	General academic
Level of studies	Uniform MSc
Form of studies	Extramural study (paid)
Type of module / course	Obligatory
Form of verification of learning outcomes	Exam
Educational Unit / Educational Units	Department of Dental Propaedeutics and Prophylaxis, 59 Nowogrodzka str., 02-006, Warsaw, phone: 22 625 66 02, e-mail: zpips@wum.edu.pl
Head of Educational Unit / Heads of Educational Units	Leopold Wagner PhD, DDS
Course coordinator	Leopold Wagner PhD DDS, lwagner@wum.edu.pl
Person responsible for syllabus	Module Preclinical operative dentistry: Małgorzata Ponto-Wolska PhD DDS, malgorzata.ponto-wolska@wum.edu.pl Module Dental materials science: Krzysztof Wilk PhD DDS, krzysztof.wilk@wum.edu.pl Module Preclinical endodontics: Łukasz Zadrożny PhD DDS, lukasz.zadrozny@wum.edu.pl
Teachers	Małgorzata Ponto-Wolska PhD DDS malgorzata.ponto-wolska@wum.edu.pl , Krzysztof Wilk PhD DDS kwilk@wum.edu.pl, Łukasz Zadrożny PhD DDS lukasz.zadrozny@wum.edu.pl, Renata Lenkiewicz DDS rlenkiewicz@wum.edu.pl,

2. BASIC INFORMATION

Year and semester of studies	II year, III and IV semester	**Number of ECTS credits**	7,50

FORMS OF CLASSES	**Number of hours**	**ECTS credits calculation**
Contacting hours with academic teacher		
Lecture (L)	-	-
Seminar (S)	30	1
Discussions (D)	93	3,1
e-learning (e-L)	27	0,9
Practical classes (PC)	-	-
Work placement (WP)	-	-
Unassisted student's work		
Preparation for classes and completions	75	2,5

3. COURSE OBJECTIVES

C1	Module Dental materials science 1. Acquiring knowledge about dental office equipment and instruments used in various fields of dentistry. 2. Acquiring knowledge about the properties of the surface layers of tooth tissues and biomaterials. 3. Acquisition of knowledge regarding the degradation of biomaterials in oral conditions. 4. Acquiring the skills to use dental equipment and apparatus as well as the use of instruments. 5. Acquiring skills to work with auxiliary and basic materials.
C2	Module Preclinical operative dentistry 1. Obtaining knowledge of methods of using dental materials in conservative dentistry in the reconstruction of mineralized tissues. 2. Obtaining knowledge of the properties of mineralized tissues and preparation methods of adhesive systems. 3. Obtaining abilities to choose dental rebuilding materials based on their properties. 4. Obtaining abilities to use dental materials and adhesive systems for filling preparation in phantom models.
C3	Module Preclinical endodontics 1. Obtaining knowledge regarding performing endodontic procedures. 2. Obtaining knowledge of performing endodontic treatment at the phantom model. 3. Obtaining knowledge of tooth reconstruction after endodontic treatment at the phantom model.

4. STANDARDS OF LEARNING – DETAILED DESCRIPTION OF EFFECTS OF LEARNING

Code and number of effect of learning in accordance with standards of learning	**Effects in the field of preclinical science.**
Knowledge – Graduate* knows and understands:	
C.W23.	dental office equipment and instruments used in dental procedures
C.W24.	definition and classification of basic and auxiliary dental materials
C.W25.	composition, structure, bonding, properties, application, and use of dental materials
C.W26.	surface properties of hard dental tissues and dental biomaterials
C.W27.	phenomenon of adhesion and the mechanisms of producing adhesive bond and procedures of adhesive preparation of the surface of enamel, dentine, and dental biomaterials
C.W28.	basic clinical procedures for the reconstruction of hard dental tissues and endodontic treatment, as well as methods and technical and laboratory procedures for dental prostheses
C.W29.	mechanisms of degradation (corrosion) of dental biomaterials in the oral cavity and their effects on the biological properties of materials
Skills– Graduate* is able to:	
C.U9.	carry out endodontic treatment and reconstruct missing mineralised tissues in the phantom tooth
C.U10.	use adhesive techniques
C.U.11.	select restorative, prosthetic and bonding biomaterials based on material properties and clinical conditions
C.U12.	ability to reconstruct the tooth anatomy regarding proper occlusion.

5. ADDITIONAL EFFECTS OF LEARNING *(non-compulsory)*

Number of effect of learning	**Effects of learning in time**
Knowledge – Graduate knows and understands:	
K1	-
Skills– Graduate is able to:	
S1	-
Social Competencies – Graduate is ready for:	
SC1	-

6. CLASSES

Form of class	Class contents	Effects of Learning
	Dental materials science module	
L1 – lecture 1	Basic and auxiliary materials. Division, requirements, and mechanical-physical, chemical, and functional properties of dental materials.	C.W24., C.W25.
L2 – Lecture 2	Mapping of the prosthetic base. Requirements, division, and use of, composition, properties, procedure, beneficial and disadvantageous features of hydrocolloid, zinc-eugenol oxide and elastomers, impression decontamination methods. Intraoral scanning.	C.W25.
L3 – Lecture 3	Plasters. Types, classes, use and properties of plaster, catalysts, and inhibitors of setting reaction, mixing and casting the models.	C.W25.
L4 – lecture 4	Waxes and refractory masses. Composition, division, properties and use of dental wax and refractory masses.	C.W25.
L5 – lecture 5	Acrylic resin materials. Composition, properties and use of acrylic resins, pressure-molded materials - handling and application.	C.W25., CW.28.
L6 – lecture 6	Methods of shaping metals in dentistry. Division, composition, properties, and application of metal alloys.	C.W25.
L7 – lecture 7	emporary filling materials. Cavity liners and bases: classification, composition, properties and manipulation of dental cements and Polymers.	C.W25.
L8 – lecture 8-9	Permanent filling materials. Classification, composition, setting, properties and manipulation of glass-ionomer cements, composite resin and hybrid materials	C.W25.
L9 – lecture 10-11	Surface properties of mineralized tissues and dental biomaterials. The top layer, surface, and coatings - definitions, properties and role of coatings, top layer and surface. Surface engineering - the influence of microstructure, phase composition and state of residual stresses on the usable properties of surface layers. The technology of shaping the surface layer of biomaterials. Principles of machining elements made of polymers.	C.W25., C.W26., C.W27.
L10 – lecture 12	Surface phenomena and adhesion to dental tissues. Adhesive systems: classification, properties and manipulation.	C.W25., C.W26., C.W27.
L11 – lecture 13	Root canal filling materials. Requirements, classification, types, advantages and disadvantages, clinical use of sealants, root canal and retrograde filling materials. Gutta-percha used cold and warm.	C.W25., C.W28.
L12 – lecture 14	Dental ceramic. Types, composition, properties, and use of dental ceramics, laboratory procedures.	C.W25., C.W28.
L13 – lecture 15	Abrasive and polishing materials. Polyester strips, formed shapes and dies, single-wall and ring matrices, elastic wedges and elastics, application, and procedures.	C.W25., C.W28.
S1 – seminar 1-3	Wax to acrylic and metal conversion procedure. Polymerization, polycondensation, and casting technologies.	C.W28.
S2 – seminar 4	Thermoformed materials. Types, application, and laboratory procedures.	C.W25.
S3 – seminar 5	Bleaching: agents, mechanism, tooth bleaching options.	C.W25., C.W28.
S4– seminar 6-7	he use of polymers containing artificial fibers in various fields of dentistry. Types, procedures, indications, and contraindications for use. Written test.	C.W25., C.W28.

S5– seminar 8-10	CAD/CAM technology. Devices, scanning the prosthetic field, designing, manufacturing the foundation (milling, sintering), individual modeling, use of the finished semi-finished product.	C.W28.
S6 – seminar 11-15	Surface degradation of materials in the oral cavity. Surface preparation of basic materials, electropolishing and biological inertness. Written test	C.W26., C.W27., C.W29.
PC1 – Practical classes 1-9	The use of auxiliary materials. Making plaster models from rubber molds mixing plaster and impression masses, taking an impression with alginate mass, casting the model with class III plaster, development of a plaster model, implementation of a tooth whitening splints made of thermoform materials.	C.W25., C.W28., C.U11.
PC2 – Practical classes 10-12	The use of thermoformed materials. Teeth whitening tray made of thermoformed material.	C.W25., C.W28., C.U11.
PC3 – Practical classes 13-24	Wax to acrylic resin replacement procedure. Modeling the upper canine in a 1: 1 ratio of model wax, embedding models in class II plaster, waxing, preparation of acrylic material, hot polymerization of acrylic.	C.W25., C.W28., C.U11.
PC4 – Practical classes 25-27	Casting procedure. Metal crown foundation modeling from casting wax, embedding in refractory mass, mechanical preparation of metal casting models. Written test	C.W25., C.W28., C.U11.
PC5 – Practical classes 28-30	Materials used in conservative dentistry and endodontics. Preparation and mixing of materials for temporary, permanent and root canal filling in various forms: powder/liquid, powder/distilled water, paste/paste, capsules, syringes.	C.W25., C.W28., C.U11.
	Preclinical operative Dentistry module	
L 14 - Lecture 16-17	Teeth restorations: principles, instruments, materials.	C.W28.
L 15 - Lecture 18-19	Restorations of anterior teeth: anatomy repetition, restorative techniques for I, II and V class cavities, instruments, special effects of incisal edge	C.W28.
L 16 - Lecture 20-21	Restoration of posterior teeth: anatomy repetition, restorative techniques for I, II class cavities, instruments	C.W28.
S7 – Seminar 16-17	Procedures in conservative dentistry. Procedures for using adhesive materials, materials and methods used for filling class V cavities, choosing the color of the filling material.	C.W25., C.W26., C.W27., C.W28.
S8 – Seminar 18	Procedures in conservative dentistry. Materials and methods used for filling class I cavities.	C.W25., C.W28., C.U11.
S9 - Seminar 19	Procedures in conservative dentistry. Materials and methods used for filling class II cavities.	C.W25., C.W28., C.U11.
S10 – Seminar 20	Procedures in conservative dentistry. Materials and methods used for filling class III cavities.	C.W25., C.W28., C.U11.
S11 – Seminar 21	Procedures in conservative dentistry. Materials and methods used for filling class IV cavities written test	C.W25., C.W28., C.U11.
PC4 – Practical Class 31-33	Procedures in conservative dentistry on low-fidelity phantoms. Preparation of class V cavity, using adhesive techniques and application of light-cured composite material, final preparation. Additionally, classes on the Simodont VR device.	C.U9., C.U10., C.U11.
PC5 – Practical Class 34-39	Procedures in conservative dentistry on low-fidelity phantoms. Preparation of class I cavities – 3 times, using adhesive techniques and	C.U9., C.U10., C.U11., C.U12.

	application of light-and chemically cured composite material, final preparation. Additionally, classes on the Simodont VR device.	
PC6 – Practical Class 40-45	Procedures in conservative dentistry on low-fidelity phantoms. Preparation of class II cavities – 3 times, using additional techniques and adhesive systems, application of light-cured composite material, final preparation.	C.U9., C.U10., C.U11., C.U12.
PC7– Practical Class 46-51	Procedures in conservative dentistry on low-fidelity phantoms. Preparation of class III cavities – 2 times, using additional techniques, using adhesive techniques and application of light-cured composite material, final preparation.	C.U9., C.U10., C.U11., C.U12.
PC8– Practical Class 52-57	Procedures in conservative dentistry on low-fidelity phantoms. Preparation of class IV cavities – 2 times, using additional techniques, using adhesive techniques and application of light-cured composite material, final preparation. Written test	C.U9., C.U10., C.U11., C.U12.
PC9– Practical Class 58-63	Procedures in conservative dentistry on high-fidelity phantoms. Preparation of class II cavities – 2 times, using additional techniques and adhesive systems, application of light-cured composite material, final preparation.	C.U9., C.U10., C.U11., C.U12
	Preclinical endodontics module	
L14- Lecture 22-24	Endodontium. The structure and functions, etiology of pulp diseases, teeth reconstruction after root canal treatment.	C.W28.
L15 - Lecture 25-26	Endodontic procedures. Mechanical and chemical preparation of root canals.	C.W28.
L16 - Lecture 27	Materials and methods applied for root canal obturation. Single cone method, lateral and vertical condensation, thermoplastic methods.	C.W28.
S12 – Seminar 22-24	Instruments applied for mechanical canal preparation. Stainless steel, NiTi, procedures of hand, mechanical and ultrasonics instruments aplication (files K, H, S, C, pulpremover, Endostar, Pro Taper, SAF System, TiLOS).	C.W23., C.W28.
S11 – Seminar 25-27	Chambers and canals morphology in different teeth groups.	C.W28.
S11 – Seminar 28-30	Methods of working length determination. Written test	C.W28.
PC9– Practical Class 64-69	Endodontic procedures. Technic application of K and H files in straight and curved canals on phantom models.	C.U9.
PC10– Practical Class 70-73	Endodontic procedures. Preparation of curved canals on phantom model with stainless steel instruments - complications (elbow, zip, ledge preparation).	C.U9., C.U10., C.U11., C.U12.
PC11– Practical Class 74-85	Endodontic procedures. Reaching patency and mechanical preparation of canals at phantom model (step-back, traditional, crown-down techniques).	C.U9.
PC12– Practical Class 86-90	Materials and methods applied for root canal obturation. Canals obturation with single cone with ZOE and synthetic sealants, and lateral guttapercha compaction. Written test	C.U9.
PC13– Practical Class 91-93	Teeth reconstruction after root canal treatment. Application of liner and reconstructive materials and required accessories to restore a tooth after root canal treatment.	C.U9., C.U10., C.U11., C.U12.

7. LITERATURE

Obligatory

Module Dental materials science

1. Dental materials: properties and manipulation. Powers JM, Wataha JC. St. Luis. Mosby/Elsevier. 2013
2. Craig's restorative dental materials. Sakaguci RL, Powers JM. Philadelphia. Elsevier Mosby. cop. 2012

Module Preclinical operative Dentistry

1. Sturdevant's Art&Science of Operative Dentistry, 7th edition, Roberson T.M., Heymann H.O., Swift E.J., Mosby, St.Louis 2018,
2. Essentials of Dental Caries, Fourth Edition Edwina Kidd and Ole Fejerskov, Oxford University Press, Oxford 2016

Module Preclinical endodontics

1. Clinical endodontics. A textbook 3rd Edition. Tronstad L. Georg Thieme Verlag. 2009

Supplementary

1. Applied dental materials. McCabe JF, Walls AWG. Oxford. Blackwell Publishing. corp. 2008
2. Essentials of Operative dentistry. Sherwood IA. Jaypee Brothers Medical Publishers. 2010
3. Recent literature via pubmed.com

8. VERIFYING THE EFFECT OF LEARNING

Code of the course effect of learning	Ways of verifying the effect of learning	Completion criterion
	Dental materials science module	
C.W23., C.W24. C.W25., C.W26. C.W26., C.W27. C.W28., C.W29. C.U11.	Written colloquium (5 descriptive questions)	Each question is scored on a scale of 1 to 3 points. Passing requires achieving at least 9 points.
C.U11.	Observation and assessment of practical skills	Positive evaluation of each completed task.
	Preclinical operative Dentistry module	
C.W23., C.W24. C.W25., C.W26. C.W26., C.W27. C.W28., C.W29. C.U9., C.U.10., C.U11., C.U12.	Written colloquium (5 descriptive questions)	Achieving the expected learning outcomes of at least 55%
C.U9., C.U.10., C.U11., C.U12.	Observation and assessment of practical skills	Positive evaluation of each completed task.
	Preclinical endodontics module	
C.W23. and C.W28.	Single choice test (10 questions online on the e-learning platform)	Achieving the expected learning outcomes of at least 55%
C.W23., C.W28. C.U9., C.U.10., C.U11., C.U12.	Written colloquium (5 descriptive questions)	Each question is scored on a scale of 1 to 3 points. Passing requires achieving at least 9 points.
C.U9., C.U.10., C.U11., C.U12.	Observation and assessment of practical skills	Positive evaluation of each completed task.
C.U9., C.U.10., C.U11., C.U12.	2-part practical examination (OSCE): part 1 in the winter semester - 4 stations (2 each from the materials science and pre-clinical conservative dentistry modules) and part 2 in the summer semester - 4 stations (2 each from the preclinical endodontics and ergonomics modules).	Depending on the module, you can get from 3 to 9 points for the tasks. The exam is passed if you get at least 55% of the

		points and a positive assessment of each completed task. The points obtained from both parts of the OSCE are added together. In the event of obtaining more than 55% of the points, in the absence of a positive assessment of all the tasks, the retake is treated as a supplement to the 1st term without increasing the number of points obtained earlier. Obtaining less than 55% of the points results in an insufficient grade in the 1st term. The OSCE retake exam concerns only the completion of the tasks that did not receive a positive assessment.
C.W23., C.W24. C.W25., C.W26. C.W26., C.W27. C.W28., C.W29.	Electronic test exam (single choice test) in the summer session - 60 questions covering topics from 4 modules - ergonomics, materials science, preclinical conservative dentistry and preclinical endodontics. The exam takes place in a computer room at the Didactic Center of the Medical University of Warsaw or an examination room at the Medical Simulation Center. The final grade in the Integrated Preclinical Education subject is the average of the grades from the practical and theoretical parts, provided that a positive grade is obtained in both exams.	Grading scale: 2 (< 65%), 3 (66 – 72%), 3,5 (73 -79%), 4 (80-86%), 4,5 (87-93%) i 5 (94-100%).

9. ADDITIONAL INFORMATION

Persons responsible for teaching: Pre-clinical conservative dentistry: Małgorzata Ponto-Wolska, DDS. PhD, Malgorzata.ponto-wolska@wum.edu.pl, Dental materials science: Krzysztof Wilk, DDS. PhD, kwilk@wum.edu.pl, Preclinical endodontics: Łukasz Zadrożny, DDS, PhD, Lukasz.zadrozny@wum.edu.pl
Completion of the course: weighted average of grades from individual modules with equal importance (50%) of knowledge and skills, provided that a positive grade is obtained for all partial passes and practical tasks.
The condition for passing the course is participation in all lectures, seminars and exercises. In each block, absence from 1 lecture, seminar and exercise is allowed. In case of absence due to health reasons, the student is obliged to provide a medical certificate within three working days.
A student who receives a negative grade for a partial pass is entitled to 2 resist dates.
Passing the exercises requires obtaining a positive assessment of each completed task. In case of absence, you must complete the planned tasks in the next week of classes. The student may also arrive at the academic teacher during his/her duty hours.
The condition for admission to the practical and theoretical examination is to pass all modules.
In a justified situation, a student may be late for classes up to 15 minutes.
You are not allowed to use mobile phones or other electronic devices during classes, and students may only bring items into the training room that the instructor has approved.
Sstudents in the classroom must wear a medical (surgical) apron with a stand-up collar, knee-length 100 cm, tied at the back with strings, disposable gloves, tied-up hair or a cap and changed shoes.
Student Scientific Club at the Department of Propaedeutics and Dental Prophylaxis, supervisor: Łukasz Zadrożny, DDS, PhD, e-mail: lukasz.zadrozny@wum.edu.pl
Department's website: https://propedeutyka-stomatologiczna.wum.edu.pl

Medical University of Warsaw has property rights, including copyright, to the syllabus. The syllabus may be used for educational purposes at the MUW only. Using of the sylabus for other purposes requires consent of the MUW.

ATTENTION

The final 10 minutes of the last class in the block/semester/year should be allocated to students'
Survey of Evaluation of Classes and Academic Teachers