

Subject:	Dental materials, Technologies and Instruments 1	SK/DMTP-ZL1/22	
Study programme:	<i>Dental Medicine</i>	Study Period:	<i>3. semester</i>
Evaluation:	<i>completed</i>	Subject Type:	<i>compulsory</i>
Content:	<i>1 h lectures and 1 h practical exercises / week</i>		<i>Total 28 hours</i>

Workplace: **Department of Medical and Clinical Biochemistry, UPJŠ in Košice, FM**

Week	Lectures http://portal.lf.upjs.sk	Practical exercises http://portal.lf.upjs.sk
1.	CHARACTERISTICS AND PROPERTIES OF DENTAL MATERIALS <ul style="list-style-type: none"> - Main and auxiliary dental materials - Properties of dental materials depending on the state of processing - Chemical and biological properties of dental materials - Physical and mechanical properties of dental materials 	
2.		<i>Properties of dental materials</i> <ol style="list-style-type: none"> 1. Study of hydroxyapatite properties 2. Preparation of calcium phosphate, $\text{Ca}_3(\text{PO}_4)_2$
3.	METALS AND ALLOYS <ul style="list-style-type: none"> - Properties of metals and alloys. Division and classification of metals - Crystallization. Spatial crystal lattices of metals - Methods of pure metal preparation - Phase diagrams and its use in the prediction of the composition and properties of alloys - Eutectic point, eutectic alloys - Importance of noble and base metals for use in dental alloys 	
4.		<i>Metals and alloys</i> <ol style="list-style-type: none"> 1. Spectrophotometric determination of ferric cations in alloys 2. Corrosive test of dental alloys
5.	DENTAL AMALGAMS <ul style="list-style-type: none"> - The composition of amalgams and the importance of composition in amalgam alloys - Phase diagram of amalgams - Setting and setting reactions of amalgams - Corrosion of amalgams - Properties of dental amalgams 	
6.		<i>Metals and Alloys. Dental amalgams</i> <ol style="list-style-type: none"> 1. Proof of elements in Wood's metal 2. The use of calcium hydroxide in dentistry

7.	<p>CERAMIC MATERIALS</p> <ul style="list-style-type: none"> - Composition of ceramic materials - Properties of ceramic materials - Dental porcelain - Metal-ceramic systems - Dental cements, composition, setting reactions 	
8.		<p><i>Ceramic materials</i></p> <ol style="list-style-type: none"> 1. Setting and qualitative analysis of glass ionomer cement
9.	<p>MODEL MATERIALS</p> <ul style="list-style-type: none"> - Model plaster - production, setting of plaster, mixing ratio - Gypsum volume changes, strength - Classification of dental gypsum - Impression and model plaster. Dental stone - The use of basic hydroxides in dentistry 	
10.		<p><i>Model materials</i></p> <ol style="list-style-type: none"> 1. Preparation of gypsum by precipitation 2. Qualitative proof of the presence of sulfates, chlorides, and calcium cations
11.	<p>POLYMERIZATION, MACROMOLECULAR COMPOUNDS IN DENTISTRY I.</p> <ul style="list-style-type: none"> - Basic reactions of the formation of polymeric substances, methods of polymerization - Structure of polymer compounds - Possibilities of polymer compounds modification - Denture base polymers, composition, properties and use 	
12.		<p><i>Polymerization. Macromolecular compounds in dentistry.</i></p> <ol style="list-style-type: none"> 1. Gypsum as an impression material 2. The effect of water:gypsum powder (W/P) and temperature on gypsum setting 3. The effect of chemical catalyst on gypsum setting
13.	<p>POLYMERIZATION, MACROMOLECULAR SUBSTANCES IN DENTISTRY II.</p> <ul style="list-style-type: none"> - Impression materials in dentistry - composition and classification, setting and setting reactions - Composition and properties of dental waxes - Auxiliary materials used in the production of dental prostheses. - Biomaterials - properties, use in medicine 	
14.		<p><i>Overall evaluation of practical exercises</i></p> <ol style="list-style-type: none"> 1. Individual evaluation of students' work and credit assignment