



Pomeranian Medical University in Szczecin

SYLLABUS of the MODULE (SUBJECT)

valid from the academic year 2021/2022

General Information

Module title: <i>Modern digital technologies in dentistry</i>	
Module type	<i>Facultative</i>
Faculty	<i>Faculty of Medicine and Dentistry</i>
Field of study	<i>Medicine and Dentistry</i>
Major	<i>major: Medicine major: Dentistry</i>
Level of study	<i>long-cycle (S2J)</i>
Mode of study	<i>intramural</i>
Year of studies, semester	<i>Year II, semester 1</i>
ECTS credits (incl. semester breakdown)	<i>2</i>
Type/s of training	<i>lectures (25h)</i>
Form of assessment	<i>non-graded assessment</i>
Head of the Department/ Clinic, Unit	<i>prof. dr hab. n. med. Krzysztof Safranow</i>
Tutor responsible for the module	<i>dr n. tech. inż. Janusz Paweł Kowalski-Stankiewicz</i>
Department's/ Clinic's/ Unit's website	<i>https://edu.pum.edu.pl/edu/</i>
Language	<i>English</i>

Detailed information

Module objectives		<i>modern technology in the diagnostics and therapy in dentistry, knowledge of contemporary sources of diagnostic data, methods of data digitization, digital diagnostic imaging, 3D imaging methods, CAD/CAM technology</i>
Prerequisite /essential requirements	Knowledge	<i>basis of modern physics, basis of anatomy, basis of physiology</i>
	Skills	<i>completed a course of Computer Science and Medical Statistic, the use of web browsers, the use of the internet knowledge bases, the use of bibliographic sources</i>
	Competences	<i>habit of learning, working in a team</i>

Description of the learning outcomes for the subject /module			
No. of learning outcome	Student, who has passed the (subject) knows /is able to /can:	SYMBOL (referring the standards)	Method of verification of learning outcomes *
W01	knows imaging techniques of tissues and organs and operating principles of appropriate diagnostic equipment	B.W9.	open test/ discussion/an essay covering the topic of a class
W02	knows principles of operation of ultrasonic equipment	B.W10.	open test/ discussion/an essay covering the topic of a class
W03	knows principles of photometry and optical fibers and application of light sources in dentistry	B.W11.	open test/ discussion/an essay covering the topic of a class
W04	knows principles of operation of lasers in dentistry	B.W12.	open test/ discussion/an essay covering the topic of a class
W05	knows principles of operation of dental equipment	B.W13.	open test/ discussion/an essay covering the topic of a class
W06	knows and understands the diagnosis and treatment methods of periodontitis and diseases of the oral mucosa	F.W9.	open test/ discussion/an essay covering the topic of a class
W07	knows and understands the principles of radiological diagnostics	F.W18.	open test/ discussion/an essay covering the topic of a class
U01	is able to arrange and run his/her own dental office	G.U10.	open test/ discussion/an essay covering the topic of a class
K01	is ready to perceive and recognize own limitations, self-assessment of deficits and educational needs	K.5.	open test/ discussion/an essay covering the topic of a class

Table presenting learning outcomes of the subject/module in relation to the form of classes

No.	SYMBOL (referring the standards) ZEK	Type/s of training							
		Lecture	Seminar	Practical classes	Clinical classes	Other...
W01	B.W9.	x							
W02	B.W10.	x							
W03	B.W11.	x							
W04	B.W12.	x							
W05	B.W13.	x							
W06	F.W9.	x							
W07	F.W18.	x							
W08	G.U10.	x							
W09	K.5.	x							

Module (subject) contents no.	Description of teaching programme	No. of hours	References to learning outcomes
1	Radiography. Planar radiography. Classic radiography, Computed radiography, Digital Direct Radiography. Properties of digital radiography. Imaging systems. Examples of hardware.	2	B.W9., B.W13., F.W18., G.U10., K.5.
2	Digital Direct Radiography. Radiation detectors: types, properties.	2	B.W9., B.W13., F.W18., G.U10., K.5.
3	3D digital images. Algorithms of reconstruction	2	B.W9., B.W13., F.W18., K.5.
4	CAT Scan technology. Reconstruction of three-dimensional roentgen images. Properties of CBCT. Examples of hardware.	2	B.W9., B.W13., F.W18., G.U10., K.5.
5	Thermography. Examples of application.	2	B.W9., B.W13., F.W9., G.U10., K.5.
6	Intra-Oral Cameras. Camera construction. Technical solutions. Fiberoptic systems. USB cameras. Wireless cameras. Technical characteristics. Examples of hardware.	2	B.W9., B.W11., B.W13., F.W9., G.U10., K.5.
7	3D Optical Scanners. Reverse engineering. Principle of operation of 3D optical scanners. 3D scanners in dentistry. The advantages of using scanners. Examples of hardware.	2	B.W9., B.W11., B.W12., B.W13., G.U10., K.5.
8	Dental lasers. Types of laser. Principle of operation, properties. Applications. Examples of hardware.	2	B.W9., B.W11., B.W12., B.W13., F.W9., G.U10., K.5.
9	Application of light in dentistry. Examination of the oral mucosa. Principle of operation. Technical solutions.	2	B.W9., B.W11., B.W13., F.W9., G.U10., K.5.
10	Ultrasonic equipment in dentistry.	2	B.W9., B.W10., B.W13., G.U10., K.5.
11	CAD/CAM technology. Application in dentistry: purpose, obtained results. Construction of CAD / CAM systems. Application software. Examples of construction.	2	B.W9., B.W13., G.U10., K.5.
12	Dental imaging systems. Examples of software.	2	B.W9., B.W13., G.U10., K.5.
13	Digital image processing. Digital filtering. Morphological processing in practice	1	B.W9., B.W13., G.U10., K.5.

Booklist
Obligatory literature:
1. Materials available on the Internet - links placed on educational pages and of lecture materials
Supplementary literature:
1. Introduction to Medical Informatics, Online Lecture Notes, Robert A.Jenders, George Hripcsak, Robert Sideli, Department of Medical Informatics, Columbia University- http://www.dbmi.columbia.edu/~hripcsak/textbook
2. MedLine
3. EBSCO
4. ProQuest

Student's workload (balance sheet of ECTS credits)			
Form of student's activity (in-class participation; activeness, produce a report, etc.)	Student's workload [h]		
	Tutor	Student	Average
Contact hours with the tutor	25		
Time spent on preparation to seminars/ practical classess			
Time spent on reading recommended literature	3		
Time spent on writing report/making project			
Time spent on preparing to colloquium/ entry test			
Time spent on preparing to exam			
Other			
Student's workload in total	28		
ECTS credits for the subject (in total)	2		
Remarks			
A student is obliged to respect the Department's Internal Didactic Regulations			

* Selected examples of methods of assessment:

EP – written examination

EU – oral examination

ET – test examination

EPR – practical examination

K – colloquium

R – report

S – practical skills assessment

RZC – practical classes report, incl. discussion on results

O – student's active participation and attitude assessment

SL – lab report

SP – case study

PS - assessment of student's ability to work independently

W – entry test

PM – multimedial presentation

other...