



Pomorski Uniwersytet Medyczny w Szczecinie
SYLLABUS of the MODULE (SUBJECT)
General information

Module title: <i>Modern digital technology in dental diagnostics</i>	
Module type	<i>Facultative</i>
Faculty PMU	<i>Faculty of Medicine and Dentistry</i>
Major	<i>Medical and Dentistry</i>
Specialty	<i>n.a.</i>
Level of study	Long-cycle x <i>I second-cycle</i> <input type="checkbox"/> <i>II second-cycle</i> <input type="checkbox"/>
Mode of study	<i>full-time/part-time</i>
Year of studies, semester	<i>II/III</i>
ECTS credits (incl. semester breakdown)	<i>1</i>
Type/s of training (Number of hours)	<i>lectures (25 hrs.)</i>
Form of assessment	<p>- <i>graded assessment:</i></p> <p><input type="checkbox"/> <i>descriptive</i></p> <p><input type="checkbox"/> <i>test</i></p> <p><input type="checkbox"/> <i>practical</i></p> <p>x <i>oral</i></p> <p><input type="checkbox"/> <i>non-graded assessment</i></p> <p>- <i>final examination:</i></p> <p><input type="checkbox"/> <i>descriptive</i></p> <p><input type="checkbox"/> <i>test</i></p> <p><input type="checkbox"/> <i>practical</i></p> <p><input type="checkbox"/> <i>oral</i></p>
Head of the Department /Clinic, Unit	<i>dr n. techn. inż. Janusz Paweł Kowalski-Stankiewicz</i>
Tutor responsible for the module	<i>dr n. techn. inż. Janusz Paweł Kowalski-Stankiewicz 91-48-00-937 janus@pum.edu.pl</i>
Department's/Clinic's/Unit's website	<i>https://edu.pum.edu.pl/edu/</i>
Language	<i>Polish/English</i>

Detailed information

Module objectives		<i>modern technology in dental diagnostics and therapy, knowledge of modern sources of diagnostic data, data digitalization, digital image diagnostics, methods of 3D imaging, CAD/CAM technology</i>
Prerequisite /essential requirements	Knowledge	<i>Fundamentals of modern physics, basics of anatomy</i>
	Skills	<i>use of internet browsers, use of internet databases, use of bibliographic sources</i>
	Competences	<i>Self-education habit</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 to) Learning outcomes for the major	Method of verification of learning outcomes*
W01	knows methods of tissue and organ imaging and principles of operation of devices used for this purpose	K_B.W09	O
W02	principles of operation of ultrasonic devices	K_B.W10	O
W03	knows the principles of photometry and optical fibres and the use of light sources in dentistry	K_B.W11	O
W04	knows the principles of operation of lasers in dentistry	K_B.W12	O
W05	knows the principles of operation of equipment of dental equipment	K_B.W13	O
W06	knows the formation of new medical disciplines	K_D.W17	O
U01	uses physical processes in the work of a dentist	K_B.U03	O
U02	critically analyses literature (including in English) and draws conclusions	K_D.U19	O
U03	Can organise and manage own dental office	K_G.U15	O
K01	shows the habit of self-education and of lifelong learning	K_K01	O
K02	perceives the need for a comprehensive understanding of physical phenomena in aspect of the human body	K_K06	O
Table presenting LEARNING OUTCOMES in relation to the form of classes			
		Type of training	

No. of learning outcome	Learning outcomes	Lecture	Seminar	Practical classes	Clinical classes	Simulation	E-learning	Other forms	
1	K_B.W09	x							
2	K_B.W10	x							
3	K_B.W11	x							
4	K_B.W12	x							
5	K_B.W13	x							
6	K_D.W17	x							
7	K_B.U03	x							
8	K_D.U19	x							
9	K_G.U15	x							
10	K_K01	x							
11	K_K06	x							

Table presenting TEACHING PROGRAMME

No. of a teaching programme	Teaching programme	Number of hours	References to learning outcomes
Winter semester			
TK01	Lecture: Radiography. Planar Radiography. Classical Radiography, Computed Radiography, Digital Direct Radiography. Properties of digital radiography. Imaging systems. Examples of solutions	2	K_B.W9, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06
TK02	Lecture: Digital Direct Radiography. Detectors used in radiography: types, properties.	2	K_B.W9, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06
TK03	Lecture: 3D digital images. Reconstruction algorithms	2	K_B.W9, K_B.W13, K_D.W17, K_D.U19, K_G.U15, K_K01, K_K06
TK04	Lecture: CAT technology. Reconstruction of three-dimensional X-ray images. Properties of CBCT. Examples of solutions	2	K_B.W9, K_B.W13, K_D.W17, K_D.U19, K_G.U15, K_K01, K_K06
TK05	Lecture: Thermography. Examples of solutions	2	K_B.W9, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06

TK06	Lecture: Intraoral cameras. Construction of cameras. Technical solutions. Systems USB cameras. Wireless cameras. Technical characteristics. Examples of solutions	2	K_B.W9, K_B.W11, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06
TK07	Lecture: 3D optical scanners. Reverse engineering. Principles of operation of 3D optical scanners. 3D scanners in dentistry. Advantages of using scanners. Examples of solutions	2	K_B.W9, K_B.W11, K_B.W12, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06
TK08	Lecture: Dental lasers. Types of lasers. Principles of operation, properties. Applications. Examples of solutions	2	K_B.W12, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06
TK09	Lecture: Application of light in dentistry. Examination of oral cavity mucosa. Principle of operation. Examples solutions	2	K_B.W9, K_B.W11, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06
TK10	Lecture: Ultrasound systems in dentistry	2	K_B.W9, K_B.W10, K_B.W13, K_D.W17, K_B.U03, K_D.U19, K_G.U15, K_K01, K_K06
TK11	Lecture: CAD/CAM technology. Application in dentistry: aim, achieved effects. Design of CAD / CAM systems. Applied software. Examples solutions	2	K_B.W9, K_B.W13, K_D.W17, K_D.U19, K_G.U15, K_K01, K_K06
TK12	Lecture: Dental imaging systems. Examples of software	2	K_B.W9, K_B.W13, K_D.W17, K_D.U19, K_G.U15, K_K01, K_K06
TK13	Lecture: Digital image processing. Digital filtering. Morphological processing in practice	1	K_B.W9, K_B.W13, K_D.W17, K_D.U19, K_G.U15, K_K01, K_K06

Booklist:

Obligatory literature:

1. Materiały dostępne w Internecie - linki umieszczone na stronach edukacyjnych i w materiałach wykładowych

2. MedLine, EBSCO, ProQuest

Supplementary literature

1. Handbook of Medical Informatics by J. van Bommel (Editor), M.A.Musen (Editor), Springer:2002

Student's workload	
(in-class participation; activeness, produce a report, etc.)	Student's workload [h]
	Tutor
Contact hours with the tutor	25
Time spent on preparation to seminars/ practical classes	
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 module/subject	1
Notes	
The students are obliged to know the Rules and Regulations of the Studio.	

* 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

SL – laboratory report

SP – case study

PS - assessment of student's ability to work independently

W – entry test PM – multimedial presentation

other...