



Pomeranian Medical University in Szczecin

SYLLABUS of the MODULE (SUBJECT) General Information

Module title:	
Module type	Obligatory
Faculty PMU	Faculty of Medicine and Dentistry
Major	Medicine
Level of study	long-cycle (S2J)
Mode of study	full-time studies
Year of studies, semester	Year IV, semester 7/8
ECTS credits (incl. semester breakdown)	1
Type/s of training	lectures (2h) /seminars (4h)/ practical (14h)
Form of assessment*	<input type="checkbox"/> graded assessment: <input type="checkbox"/> descriptive <input checked="" type="checkbox"/> test <input type="checkbox"/> practical <input type="checkbox"/> oral <input type="checkbox"/> non-graded assessment <input type="checkbox"/> final examination <input type="checkbox"/> descriptive <input type="checkbox"/> test <input type="checkbox"/> practical <input type="checkbox"/> oral
Head of the Department/ Clinic, Unit	Prof. dr hab. med. Bożena Birkenfeld
Tutor responsible for the module	dr hab. n. zdr. Hanna Piwowska-Bilska, prof. PUM e-mail: hanna.piwowska@pum.edu.pl
Department's/ Clinic's/ Unit's website	Zakład Medycyny Nuklearnej PUM w Szczecinie ul. Unii Lubelskiej 1 71-252 Szczecin e-mail: nucmed@pum.edu.pl Website: https://www.pum.edu.pl/studia_iii_stopnia/informacje_z_jednostek/wfbmiml/zakad_medycyny_nuklearnej/
Language	English

Detailed information

* replace into where applicable

Module objectives		Achieving knowledge in the field of the use of radioisotopes in diagnosis and treatment
Prerequisite /essential requirements	Knowledge	- <i>software used to operate the computer;</i> - <i>physical basis of nuclear medicine and radiological protection</i>
	Skills	<i>Basics of cooperation with the patient,</i> <i>Methodology of diagnosis and therapy of diseases</i>
	Competences	<i>Learning sensitivity to the patient's problems</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*
MN_W01	knows natural and artificial sources of ionizing radiation and its effect on matter	B.W 6	ET
MN_W02	knows physical principles behind for selected therapeutic techniques incl. ultrasounds and radiation	B.W 9	ET
MN_W03	knows environmental and epidemiological conditions of most frequent diseases	E.W1	ET
MN_W04	knows and understands causes, symptoms, rules of diagnosis and therapeutic procedures in terms of the most frequent pediatric diseases: a) rickets, tetany, convulsions b) congenital heart diseases, inflammation of myocarditis, pericarditis and endocarditis, cardiomyopathy, cardiac arrhythmia, arterial hypertension, syncope c) acute and chronic diseases of upper and lower airways, congenital defects/malformations/ of respiratory tract, tuberculosis, mucoviscidosis, asthma, allergic rhinitis, urticaria, anaphylactic shock, angioneurotic edema d) ischemia, hemorrhagic diathesis, marrow failure, childhood cancer incl. solid tumours e) acute and chronic abdominal pain, vomiting, diarrhea, constipation, gastrointestinal bleeding, chronic peptic ulcer disease, non-specific enteropathy, hepatopathy, cholestasis and other acquired and congenital diseases of alimentary tract f) urinary tract infections, congenital malformation of urinary tract, nephrotic syndrome, nephrolithiasis, acute and chronic renal failure, acute and chronic renal inflammation, renal tract diseases, dysuria, vesicoureteral reflux g) abnormal growth, diseases of thyroid and parathyroid, adrenopathy, diabetes, obesity and disturbances of maturation and functions of gonads, h) infantile cerebral palsy, meningoencephalitis, epilepsy i) most frequent infantile infectious diseases j) genetic syndrome k) diseases of connecting tissue, rheumatic fever, adolescence arthritis, systemic lupus, dermal-muscular inflammation	E.W3	ET, SP
MN_W05	knows and recognizes causes, symptoms, diagnoses and therapeutic procedures with regard to the most frequent internal diseases in adults and related complications: a) circulatory system diseases incl.: ischemic heart disease, organic heart diseases, endocardium, myocardium and pericardium diseases, heart failure (acute and chronic), angiopathy, primary and secondary hypertension and pulmonary hypertension, b) respiratory tract diseases incl.: airway diseases, chronic obstructive pulmonary diseases, bronchial asthma, bronchiectasis, mucoviscidosis, respiratory tract infection,	E.W7	ET, SP

	<p>interstitial disease of lungs, pleura and mediastinum, obstructive and sleep apnea, acute and chronic respiratory failure, respiratory system neoplasm</p> <p>c) alimentary system diseases, incl.: stomatopathy, esophagus diseases, gastrosis, diseases of duodenum, enteropathy, diseases of hepatopathy, pancearopathy, cholepathy, cholecystopathy</p> <p>d) endocrine system diseases, incl.: disorders of hypothalamus, hypophysis, thyroid, parathyroid, adrenal cortex, adrenal medulla, ovariopathy, orchopathy, neuroendocrine tumour disease, endocrine polyglandular syndrome, different types of diabetes and metabolic syndrome, hypoglycemia, obesity and dyslipidemia</p> <p>e) nephropathy and diseases of urinary tract incl. : acute and chronic renal failure, diseases of renal glomerules and interstitial diseases of kidneys, renal cyst, nephrolithiasis, urinary tract infections, urinary tract neoplasm, in particular bladder cancer and renal cancer</p> <p>f) diseases of hematopoietic system, incl.: panmyelophthisis, anemia, granulocytopenia and granulocytosis, trombocytopenia, acute leukemia, myeloproliferative and myelodysplastic-myeloproliferative diseases, myelodysplasia syndrome, B and T cell lymphoma, hemorrhagic diathesis, thrombophilia, life-threatening states in hematology, dyshematopoiesis in the failure of other organs</p> <p>g) rheumatic diseases, incl.: systemic connective tissue disease, systemic vasculitis arthritis of the spine, metabolic diseases of bones, in particular osteoporosis and arthrosis, uratic gout</p> <p>h) allergic diseases, incl.: anaphylaxis and anaphylactic shock, angioneurotic edema</p> <p>i) water-electrolyte and base-acid disorders: dehydration, overhydration, electrolytic equilibrium disorder, acidosis and alkalosis</p>		
MN_W06	<p>knows and recognizes causes, symptoms, diagnoses and therapeutic procedures with regard to most frequent nervous system diseases, incl.:</p> <p>headaches: migraine, tension headache and V-nerve neuralgia</p> <p>cerebrovascular diseases, in particular cerebral stroke</p> <p>epilepsy</p> <p>nervous system inflammation, in particular meningitis, Lyme disease, herpetic brain fever, neurotransmission diseases</p> <p>dementia, in particular Alzheimer's disease, frontal dementia, angiogenic dementia and other dementia-related syndromes</p> <p>Parkinson's disease</p> <p>demyelination diseases, in particular multiple sclerosis</p> <p>neuro-muscular system diseases, in particular amyotrophic lateral sclerosis and sciatic neuralgia</p> <p>cranio-cerebral trauma</p>	E.W14	ET, SP
MN_W07	knows bases of early detection of neoplasms and rules of oncological screening	E.W24	ET, SP
MN_W08	knows the rules of combined therapy in oncology, algorithms of diagnosis and treatment procedures with regard to most frequent human neoplasms	E.W26	ET, SP
MN_W09	knows rules of treatment of pain, incl. chronic and cancer-related pain	E.W29	ET, SP
MN_W10	<p>knows and understands causes, symptoms, diagnosis and therapeutic procedures with regard to most frequent surgical diseases that require surgical intervention, taking into consideration differences of childhood, in particular:</p> <p>a) acute and chronic diseases of the abdominal cavity</p> <p>b) diseases of the chest</p>	F.W1	ET, SP

	c) diseases of the limbs and head d) bone fractures and injuries to organs		
MN_W11	knows issues of modern imaging methods, in particular: a) radiological symptomatology of main diseases b) instrumental methods and imaging techniques used for performance of therapeutic procedures c) indications, contra-indications and preparation of patients for certain kinds of imaging examination and contra-indications to the application of contrast media	F.W10	ET, SP
MN_W12	knows issues regarding laryngology, phoniatrics and audiology, incl.: a) causes, clinical course, therapeutic procedures, complications and prognosis of otopathy, rhinopathy, nasal sinus diseases, stomatopathy, pharynx and larynx diseases in adults b) diseases of facial nerve and selected neck structures, c) diagnosis and therapeutic procedures with regard to mechanical injuries to the ear, nose, pharynx and larynx d) procedures regarding emergency states of otorhinolaryngology, in particular larynx dyspnea e) diagnosis and therapeutic procedures with regard to disturbance of hearing, voice and speech f) diagnosis and therapeutic procedures with regard to head and neck neoplasms	F.W12	ET, SP
MN_W13	knows and explain causes, symptoms, diagnosis and therapeutic procedures to most frequent diseases of central nervous system, incl.: a) cerebral edema and its consequences, in particular emergency states b) other forms of intracranial stenosis and its consequences c) craniocerebral trauma d) vascular defects of central nervous system e) neoplastic tumors of central nervous system f) spondylopathy and myelopathy	F.W13	ET, SP
MN_W14	knows rules regarding assumptions and diagnosis of brain death	F.W15	ET, SP
MN_U01	uses principles of physics to explain influence of external factors, such as temperature, acceleration, pressure, electromagnetic field and ionizing radiation on the human organism and its components	B.U1	ET
MN_U02	evaluates the harmfulness of ionizing radiation dose and complies with radiation protection rules	B.U2	ET
MN_U03	takes history interview of adult patient	E.U1	ET, SP
MN_U04	takes history interview of child and its family	E.U2	ET, SP
MN_U05	planuje konsultacje specjalistyczne	E.U32	ET, SP
MN_U06	plans specialist consultations	E.U38	ET, SP
MN_U07	adheres to rules of asepsis and antisepsis	F.U3	ET
MN_U08	examines breasts, lymph nodes, thyroid gland and abdominal cavity with regard to acute abdomen, and performs per rectum examination	F.U6	ET, SP
MN_K01	accepts the need for standards of conduct	K.1	ET
MN_K02	ma nawyk kierowania się dobrem pacjenta	K.2	ET
MN_K03	demonstrates the awareness for self-education, understands the need for continuing professional education, can inspire and organize learning processes in others	K.3	ET
MN_K04	co-operates with team members; can co-operate within a group and take different roles	K.4	ET
MN_K05	adheres to proper examiner/examinee relationship while performing functional tests and observations	K.5	ET
MN_K06	accepts personal autonomy	K.9	ET

MN_K07	is aware of patients' rights	K.11	ET
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Table presenting LEARNING OUTCOMES in relation to the form of classes								
No. of learning outcome	Learning outcomes	Type of training						
		Lecture	Seminar	Practical	Clinical classes	Simulations	E-learning	Other...
MN_W01	B.W 6	x	x					
MN_W02	B.W 9	x	x					
MN_W03	E.W1	x	x					
MN_W04	E.W3	x	x					
MN_W05	E.W7	x	x					
MN_W06	E.W14	x						
MN_W07	E.W24	x	x					
MN_W08	E.W26	x	x					
MN_W09	E.W29	x	x					
MN_W10	F.W1	x	x					
MN_W11	F.W10	x	x					
MN_W12	F.W12		x					
MN_W13	F.W13		x					
MN_W14	F.W15		x					
MN_U01	B.U 1			x				
MN_U02	B.U 2			x				
MN_U03	E.U1			x				
MN_U04	E. U2			x				
MN_U05	E.U32			x				
MN_U06	E.U38			x				
MN_U07	F.U3			x				
MN_U08	F.U6			x				
MN_K01	K.1			x				
MN_K02	K.2			x				
MN_K03	K.3			x				
MN_K04	K.4			x				
MN_K05	K.5	x	x					
MN_K06	K.9			x				
MN_K07	K.11			x				

Table presenting TEACHING PROGRAMME

No. of a teaching programme	Teaching programme	No. of hours	References to learning outcomes
Winter / Summer semester			
Lectures			
MN_W01	Introduction to nuclear medicine	2	MN_W01; MN_U01; MN_U02; MN_U09; MN_U05, MN_K05
Seminars			
MN_S01	Physical background of nuclear medicine. Detection and measurements of nuclear radiation. Radionuclide imaging technics.	2	MN_W01; MN_W02; MN_U01; MN_K05; MN_K05
MN_S02	Radionuclide diagnosis and treatment.	2	MN_W03 - W05; MN_W07; MN_W08; MN_W10; MN_W11; MN_U05; MN_U06
Practical classes			
MN_CW01	Diagnosis and therapy of thyroid diseases.	3	MN_W04; MN_W05; MN_W07; MN_W08; MN_W10 - W12; MN_U03 - U08; MN_K01; MN_K02; MN_K03; MN_K04; MN_K06
MN_CW02	Radiopharmacy. Radiation protection.	3	MN_W01; MN_W02; MN_U01; MN_U02; MN_K06; MN_K07
MN_CW03	Detection and measurement of nuclear radiation. Radionuclide imaging technique.	3	MN_W01; MN_W02; MN_U01; MN_U02; MN_K01; MN_K03; MN_K04; MN_K06; MN_K07
MN_CW04	Clinical nuclear medicine. Part I.	3	MN_W04 - W11; MN_W13; MN_W14; MN_U03 - U06; MN_K01 - K04; MN_K06
MN_CW05	Clinical nuclear medicine. Part II.	2	MN_W04; MN_W05; MN_W10; MN_W11; MN_U03 - U06; MN_K01 - K04; MN_K06

Booklist

1. Morton KA, Clark. PB. „Diagnostic Imaging Nuclear Medicine”, Amirsys 2007

2. von Schulthess GK, Schmid D. "Molecular Anatomic Imaging – PET-CT and SPECT-CT Integrated Modality Imaging", Lippincott Williams&Wilkins 2015

3. Ziessman HA. "Nuclear Medicine. The Requisites 5th edition", Elsevier 2020

Student's workload	
Form of student's activity (in-class participation; activeness, produce a report, etc.)	Student's workload [h]
	Tutor
Contact hours with the tutor	20
Time spent on preparation to seminars/ practical classess	
Time spent on reading recommended literature	10
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	30
ECTS credits for the subject (in total)	1
Remarks	

* 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...