SUBJECT CARD

Faculty of Medicine and Health Sciences
Field of studies: Medicine
Form of studies: Full-time course
Degree: long-cycle Master's programme
Specializations: No specialization
Academic year: 2022/2023

HUMAN AND ENVIRONMENT	
SUBJECT NAME	**Human and Environment**
NUMBER OF ECTS POINTS	2
LANGUAGE OF INSTRUCTION	English
TEACHER(S)	prof. dr hab. Michael Waligórski dr Kamil Kisielewicz dr Marzena Lipińska mgr Anna Dziecichowicz
PERSON RESPONSIBLE	dr Kamil Kisielewicz
NUMBER OF HOURS	
LECTURES	29 h
CLASSES	9 h
SEMINARS	7 h
GENERAL OBJECTIVES	
OBJECTIVE 1	To familiarize students with physico-chemical influence of environmental factors on human body.
OBJECTIVE 2	To familiarize students with environmental threats, prevention, pro-health behaviors and methods of threats monitoring.
LEARNING OUTCOMES	
MK1	Knowledge: Student can list and describe the origin and mechanism of chemical and physical environmental factors hazardous to health.
MK2	Knowledge: Student can characterize hazardous factors and dose-effect relationship.
MK3	Knowledge: Student can explain the difference between ionizing and non-ionizing radiation and the mechanisms of interaction with the organism.
MS1	Skills: Student can estimate of doses during the risk assessment form ionizing radiation.

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MS2	Skills: Student can use knowledge of the laws of physics to explain the impact of external factors such as temperature, acceleration, pressure, electromagnetic fields, ionizing radiation on the human body.
MS3	Skills: Student can evaluate environmental hazards and use basic methods allowing to detect the presence of harmful factors (biological, physical and chemical) in the biosphere.
INTRODUCTORY REQUIREMENTS	
Not applicable.	
COURSE PROGRAM	DETAILED DESCRIPTION OF THE TOPIC BLOCKS
LECTURE 1	Defining environmental health hazards and their specificity. (**2h**)
LECTURE 2	Waves in life and the human environment (mechanical waves - sounds, vibrations; electromagnetic waves light, radio waves, microwaves). (**4h**)
LECTURE 3	Ionizing radiation - interaction with matter, detection and biological effects. (**5h**)
LECTURE 4	Exposure assessment- indicators and physical quantities. (**2h**)
LECTURE 5	Understanding the principles of radiation protection. (**3h**)
LECTURE 6	Medical exposure - physical principles of diagnostic radiology and nuclear medicine. (**4h**)
LECTURE 7	Chemical factors: food, air, water, soil. The benefits and risks of GMOs. (**4h**)
LECTURE 8	Fundamentals of epidemiology of environmental hazards. (**3h**)
LECTURE 9	Types of biomarkers of exposure. (**3h**)
CLASS 1	Statistical analysis of the relationship between the environment and health of population - Internet Databases. (**2h**)
CLASS 2	Ionizing radiation- basic laws, dosimeters and measurements. (**4h**)
CLASS 3	Physical principles of ultrasonography. (**2h**)
SEMINAR 1	How environment affects the human body and how people affect the environment - part 1. (**5h**)
SEMINAR 2	How environment affects the human body and how people affect the environment - part 2. (**2h**)

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DIDACTIC METHODS (APPLIED)	
	Lectures Laboratory classes Presentations Seminars
STUDENTS WORKLOAD	
CONTACT HOURS WITH THE ACADEMIC TEACHER	Regarding the study plan (lectures + classes + seminars): 45 hours
HOURS WITHOUT THE PARTICIPATION OF THE ACADEMIC TEACHER	Preparation for classes: 2 hours Preparation of report: 5 hours Preparation of multimedia presentation: 3 hours
TOTAL NUMBER OF HOURS FOR THE COURSE	55 hours
CONDITIONS FOR COURSE COMPLETION	
	Presence on classes and seminars. Preparing project report. Preparing multimedia presentation. Positive exam evaluation.
METHODS OF ASSESMENT:	
IN TERMS OF KNOWLEDGE	Multiple choice questions test exam.
IN TERMS OF SKILLS	NA.
IN TERMS OF SOCIAL COMPETENCE	NA.
FORMATIVE	Oral evaluation of needed knowledge before the classes.
SUMMATIVE (I & II term)	EXAM: Multiple choice questions test – ca. 50 questions. RETAKE EXAM: Multiple choice questions test – ca. 50 questions.
GRADING SCALE	
3,0 (Satisfactory)	**55%** of the multiple choice questions; positively evaluated research project and seminar.
3,5 (Satisfactory plus)	**60 %** of the multiple choice questions; positively evaluated research project and seminar.
4,0 (Good)	**75%** of the multiple choice questions; positively evaluated research project and seminar.
4,5 (Good plus)	**80%** of the multiple choice questions; positively evaluated research project and seminar.
5,0 (Very Good)	**90%** of the multiple choice questions; positively evaluated research project and seminar.

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BASIC LITERATURE

[1] E.B. Podgorsak, Radiation Oncology Physics: A Handbook for Teachers and Students, Viena, 2005, IAE;
[2] Marquita K. Hill, Understanding Environmental Pollution - third edition, Cambridge, 2010, Cambridge University Press.

SUPPLEMENTARY LITERATURE

[1] D.W. Moeller, Environmental Health, Third Edition, Harvard, USA, 2005, Harvard University Press.