



Pomeranian Medical University in Szczecin

SYLLABUS of the MODULE (SUBJECT) General Information

Module title:	Basic computer science with biostatistics
Module type	<i>Obligatory</i>
Faculty PMU	<i>Faculty of Medicine and Dentistry</i>
Major	<i>Medicine</i>
Level of study	<i>long-cycle (S2J)</i>
Mode of study	<i>full-time studies</i>
Year of studies, semester	<i>year I, semester II</i>
ECTS credits (incl. semester breakdown)	<i>1,5</i>
Type/s of training	<i>lectures (5h), laboratory classes (20h)</i>
Form of assessment*	<input checked="" type="checkbox"/> graded assessment: <input checked="" type="checkbox"/> descriptive <input checked="" type="checkbox"/> test <input checked="" type="checkbox"/> practical <input type="checkbox"/> oral
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>

* replace ☐ into ☒ where applicable

Detailed information

Module objectives		<i>The aim of the module is teaching of the analysis of measurement data, teaching of the stochastic phenomena description and evaluation and conclusions based on the data collected</i>
Prerequisite /essential requirements	Knowledge	<i>Basic knowledge of the probability theory</i>
	Skills	<i>Basic ability to use any web browser and the ability to use bibliographic sources</i>
	Competences	<i>Ability to work 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 and understands the basic IT and biostatistics tools used in medicine, including medical databases, spreadsheets and the basics of computer graphics	B. W26.	K, S, PS
W02	knows and understands the basic methods of statistical analysis used in population and diagnostic studies	B. W27.	K, S, PS
W03	knows and understands the basics of evidence-based medicine	D. W23.	K, S, PS
U01	can use databases, including the Internet, and search for the necessary information using the available tools	B. U10.	K, S, PS
U02	is able to choose the appropriate statistical test, perform basic statistical analyzes, use appropriate methods of presenting the results, interpret the results of meta-analysis and perform the analysis of the probability of survival	B. U11.	K, S, PS
U03	is able to plan and perform simple scientific research as well as interpret their results and draw conclusions	B. U13.	K, S, PS
U04	is able to critically analyze medical literature, including in English, and draw conclusions	D. U17.	K, S, PS
K01	is ready to perceive and recognize his own limitations and self-assess deficits and educational needs	1.3.5.	K, S, PS
K02	is ready to use objective sources of information	1.3.7.	K, S, PS
K03	is ready to draw conclusions from his own measurements or observations	1.3.8.	K, S, PS

Table presenting LEARNING OUTCOMES in relation to the form of classes							
No. of learning outcome	Learning outcomes	Type of training					
		Lecture	Seminar	Practical classes	Clinical classes	Simulations	E-learning
W01	B. W26.	x		x			x
W02	B. W27.			x			
W03	D. W23.			x			
U01	B. U10.			x			
U02	B. U11.			x			
U03	B. U13.			x			
U04	D. U17.			x			
K01	1.3.5.			x			
K02	1.3.7.			x			
K03	1.3.8.			x			

Table presenting TEACHING PROGRAMME			
No. of a teaching programme	Teaching programme	No. of hours	References to learning outcomes
Summer semester			
Lectures			
TK01	Properties of light. Human psychovisual model. Perception of visual information.	3	W01
TK02	Digital images. DIP.	2	W01
Practical classes			
TK03	Population, random sample, distribution series. Location characteristics. Measures of dispersion and moments of statistical distribution	3	W01, W02, W03, U01, U02, U03, U04, K01, K02, K03
TK04	Correlation and regression. Linear correlation coefficient. Linear Regression. Spearman's correlation coefficient	2	W01, W02, W03, U01, U02, U03, U04, K01, K02, K03
TK05	Statistical hypotheses. Estimation and verification of statistical hypotheses. p-value. Parametric tests: z test, Student's t test, test F	4	W01, W02, W03, U01, U02, U03, U04, K01, K02, K03
TK06	ANOVA, post-hoc tests	2	W01, W02, W03, U01, U02, U03, U04, K01, K02, K03
TK07	Nonparametric tests: normality test, chi-square test for one and two samples, character test, maximum test. Wilcoxon test (Mann-Whitney U test), median test. chi-square test for multiple samples, nonparametric ANOVA (Kruskal-Wallis test)	7	W01, W02, W03, U01, U02, U03, U04, K01, K02, K03
TK08	ImageJ – Image formats, scaling, filtration, morphological operations	2	W01

Booklist

Obligatory literature:
1. J. H. Zar Biostatistical analysis Prentice Hall International Inc. 1999
2. J.S.Bulman, J.F.Osborn.Statistics In Dentistry. Copyright British Dental Journal, First printing 1989, Reprinted 1997. Printed in Great Britain by Biddles Ltd, Guildford and King's Lynn
3. materials on the unit's website: https://edu.pum.edu.pl/edu/materialy.html
Supplementary literature:
1. Handbook of Medical Informatics by J. van Bommel (Editor), M.A.Musen (Editor), Springer:2002
2. Wayne W. Daniel. Biostatistics. A.Foundation for Analysis In the Health Sciences. Sixth editio. New York, Chichester, Brisbane, Toronto, Singapore. Copyright 1995, by John Wiley&Sons. Inc.2

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	25
Time spent on preparation to seminars/ practical classess	3
Time spent on reading recommended literature	4
Time spent on writing report/making project	0
Time spent on preparing to colloquium/ entry test	6
Time spent on preparing to exam	0
Other	0
Student's workload in total	38
ECTS credits for the subject (in total)	1,5
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...