STATISTICS IN PHARMACY

PHARMACY
– INEGRATED ACADEMIC STUDIES

FIRST YEAR

2023/2024

Course title:

STATISTICS IN PHARMACY

ECTS: 6

Number of active teaching hours (weekly): 4 (2 lectures teaching classes, 2 practical classes and 1 other active class)

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TEACHERS AND ASSOCIATES:

No.	First name and surname	Email	Academic title
1.	Nebojša Zdravković	nzdravkovic@medf.kg.ac.rs	Full Professor
2.	Vladislava Stojić		Assistant Professor
3.	Sara Mijailović	sara.mijailovic@medf.kg.ac.rs	Teaching Assistant
4.	Anđela Gogić	andjela.gogic@medf.kg.ac.rs	Facilitator

COURSE STRUCTURE:

Module	**Name of the course module**	**Weeks**	**Teaching Lectures (weekly)**	**Practice (weekly)**	**OAC**	**Teacher – in charge**
1.	**Informatics**	7	2	2	1	Prof. Nebojša Zdravković
2.	**Statistics**	8	2	2	1	Prof. Nebojša Zdravković
						Σ 30+15+30=75

Examination Methods:

The student finishes the course in modules. The grade is equivalent to the number of points earned (see tables). Points are earned in two ways:

ACTIVITY DURING THE LESSON: The student can gain up to 30 points, by answering ten written questions from that week's lesson in a special part of the exercise and receiving 0-2 points in accordance with the demonstrated knowledge.

FINAL TESTS BY MODULES: The student can gain up to 70 points according to the attached table.

Determination of final grade		The maximal number of points		
		Activity during the lesson	Final test	Σ
1	Informatics	14	30	44
2	Statistics	16	40	56
Σ		30	70	100

Determination of final grade:

To pass the exam, the student must earn a minimum of 51 total points and pass all modules. To pass the module student must:

1. earn more than 50% points in that module
2. earn more than 50% points for the activity during the lesson in each module
3. pass the module test by having more than 50% correct answers

Grading system

Final grade	Total number of points Points grade	Description
10	91 – 100	**Excellent**
9	81 – 90	**Exceptionally good**
8	71 – 80	**Very good**
7	61 – 70	**Good**
6	51 – 60	**Passing**
5	< 51	**Falling**

LITERATURE:

Module	The title of the textbook	Authors	Publisher	Library of faculty
1 and 2	Windows 10 in Depth	Brian Knittel, Paul McFedries	Indianapolis: Que Pub, 2018.	Yes
	Microsoft Office 2019 Step by Step	Joan Lambert, Curtis Frye	Microsoft Press, 2018.	No
	SPSS Survival Manual, 7th Edition	Julie Pallant	London: Routledge, 2020.	Yes

Program of lectures and practical classes:

THE FIRST MODULE: INFORMATICS

TEACHING UNIT 1 (WEEK 1):

WINDOWS	
Teaching lectures (2 classes)	Practical classes (2 classes)
Basics of the Windows operating system.	Installing and setting up the Windows operating system.
OAC (1 class)	
Characteristics of the Windows operating system.	

TEACHING UNIT 2 (WEEK 2):

WINDOWS	
Teaching lectures (2 classes)	Practical classes (2 classes)
Basics of the Windows operating system.	Working in the Windows operating system
OAC (1 class)	
Working with files and folders.	

TEACHING UNIT 3 (WEEK 3):

MICROSOFT WORD	
Teaching lectures (2 classes)	Practical classes (2 classes)
Word processors.	Formatting text, inserting images and tables in Microsoft Word.
OAC (1 class)	
Characteristics of Microsoft Word.	

TEACHING UNIT 4 (WEEK 4):

MICROSOFT EXCEL	
Teaching lectures (2 classes)	Practical classes (2 classes)
Spreadsheet program.	Creating and formatting tables, using basic functions in Microsoft Excel.
OAC (1 class)	
Characteristics of Microsoft Excel.	

TEACHING UNIT 5 (WEEK 5):

MICROSOFT POWERPOINT	
Teaching lectures (2 classes)	Practical classes (2 classes)
Program for creating presentations.	Creating and formatting slides, and inserting images and tables in Microsoft PowerPoint.
OAC (1 class)	
Characteristics of Microsoft PowerPoint.	

TEACHING UNIT 6 (WEEK 6):

INTERNET	
Teaching lectures (2 classes)	Practical classes (2 classes)
Web. Email and security. Viruses.	Internet browsing, Internet protection, e-mail account opening, Internet communication.
OAC (1 class)	
Basics protection on the Internet.	

TEACHING UNIT 7 (WEEK 7):

MEDICAL DATABASES	
Teaching lectures (2 classes)	Practical classes (2 classes)
Overview of databases. PubMed. Medical journals on the Internet.	Browsing medical databases and medical journals on the Internet. Downloading publications from the Internet.
OAC (1 class)	
Medical databases and medical journals.	

THE SECOND MODULE: STATISTICS

TEACHING UNIT 8 (WEEK 8):

FREQUENCY DISTRIBUTIONS	
Teaching lectures (2 classes)	Practical classes (2 classes)
Types of data. Frequency distributions. Histograms and other frequency charts. Forms of frequency distribution. Medians and quantiles. Mean. Variance, range and interquartile range. Standard deviation	The SPSS program. Basic settings. Creating a data file and entering data. Types of variables. Frequency. Median. Mean. Variance. Standard deviation.
OAC (1 class)	
Descriptive statistics.	

TEACHING UNIT 9 (WEEK 9):

PROBABILITY	
Teaching lectures (2 classes)	Practical classes (2 classes)
Ratio and proportion. Significant figures. Presentation of tables. Charts. Properties of probability. Probability distribution and random variables. Binomial distribution. Mean and variance.	Working in SPSS. Tables. Importing tables into Word documents. Histogram. Bar chart. Line diagram. Scatter diagram. Importing diagrams into Word documents.
OAC (1 class)	
Tables and diagrams.	

TEACHING UNIT 10 (WEEK 10):

NORMAL DISTRIBUTION

Teaching lectures (2 classes)	Practical classes (2 classes)
Normal distribution. Variables that follow a Normal distribution. Normal chart.	Solving problems related to Normal distribution. Normal distribution diagram.
OAC (1 class)	
Normal distribution.	

TEACHING UNIT 11 (WEEK 11):

PREDICTION

Teaching lectures (2 classes)	Practical classes (2 classes)
Sample distributions. Standard error of the sample mean. Confidence intervals. Standard error and confidence interval for a proportion. Comparing two proportions.	Solving problems related to comparing two proportions in the SPSS program.
OAC (1 class)	
A comparison of two proportions.	

TEACHING UNIT 12 (WEEK 12):

HYPOTHESIS TESTING

Teaching lectures (2 classes)	Practical classes (2 classes)
Hypothesis testing. Sign test. Principles of significance tests. Significance levels and error types. One-sided and two-sided tests of significance.	Solving problems related to hypothesis testing in the SPSS program.
OAC (1 class)	
Hypothesis testing.	

TEACHING UNIT 13 (WEEK 13):

COMPARISON OF THE MEANS OF A SMALL SAMPLE

Teaching lectures (2 classes)	Practical classes (2 classes)
t distribution. t one-sample method. Use of transformations. Deviations from the assumptions of the t method.	Solving problems related to student's t distribution in the SPSS program.
OAC (1 class)	
Student's t distribution.	

TEACHING UNIT 14 (WEEK 14):

HYPOTHESIS TESTING

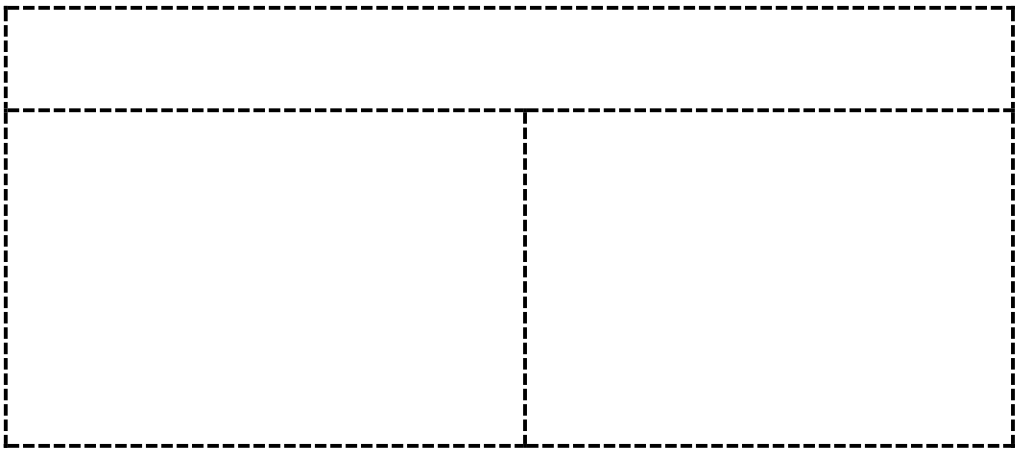
Teaching lectures (2 classes)	Practical classes (2 classes)
Scatter diagrams. Regression. The method of least squares. Correlation. Test significance and confidence interval for r. Using the correlation coefficient	Solving problems related to regression and correlation in the SPSS program.
OAC (1 class)	
Regression and correlation.	

TEACHING UNIT 15 (WEEK 15):

NON-PARAMETRIC METHODS	
Teaching lectures (2 classes)	Practical classes (2 classes)
Non-parametric methods. Mann-Whitney U test. Wilcoxon test. Spearman's rank correlation coefficient. Chi-square test.	Solving problems related to non-parametric methods in the SPSS program. Mann-Whitney U test. Wilcoxon test. Chi-square test.
OAC (1 class)	
Non-parametric methods.	

Schedule of teaching lectures

Schedule of practical classes



LECTURES AND PRACTICAL CLASSES

week	type	Teaching and practice lectures	Teacher
1	**L**	**WINDOWS**	Prof. Nebojša Zdravković
	P	**WINDOWS**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**WINDOWS**	Prof. Nebojša Zdravković
2	**L**	**WINDOWS**	Prof. Nebojša Zdravković
	P	**WINDOWS**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**WINDOWS**	Prof. Nebojša Zdravković
3	**L**	**MICROSOFT WORD**	Prof. Nebojša Zdravković
	P	**MICROSOFT WORD**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**MICROSOFT WORD**	Prof. Nebojša Zdravković
4	**L**	**MICROSOFT EXCEL**	Prof. Nebojša Zdravković
	P	**MICROSOFT EXCEL**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**MICROSOFT EXCEL**	Prof. Nebojša Zdravković
5	**L**	**MICROSOFT POWER POINT**	Prof. Nebojša Zdravković
	P	**MICROSOFT POWER POINT**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić

LECTURES AND PRACTICAL CLASSES

week	type	Teaching and practice lectures	Teacher
	OAC	**MICROSOFT POWER POINT**	Prof. Nebojša Zdravković
6	**L**	**INTERNET**	Prof. Nebojša Zdravković
	P	**INTERNET**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**INTERNET**	Prof. Nebojša Zdravković
7	**L**	**MEDICAL DATABASES**	Prof. Nebojša Zdravković
	P	**MEDICAL DATABASES**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**MEDICAL DATABASES**	Prof. Nebojša Zdravković
8	**L**	**FREQUENCY DISTRIBUTIONS**	Prof. Nebojša Zdravković
	P	**FREQUENCY DISTRIBUTIONS**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**FREQUENCY DISTRIBUTIONS**	Prof. Nebojša Zdravković
9	**L**	**PROBABILITY**	Prof. Nebojša Zdravković
	P	**PROBABILITY**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**PROBABILITY**	Prof. Nebojša Zdravković
10	**L**	**NORMAL DISTRIBUTION**	Prof. Nebojša Zdravković

LECTURES AND PRACTICAL CLASSES

week	type	Teaching and practice lectures	Teacher
	P	**NORMAL DISTRIBUTION**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**NORMAL DISTRIBUTION**	Prof. Nebojša Zdravković
11	**L**	**PREDICTION**	Prof. dr Nebojša Zdravković
	P	**PREDICTION**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**PREDICTION**	Prof. Nebojša Zdravković
12	**L**	**HYPOTHESIS TESTING**	Prof. Nebojša Zdravković
	P	**HYPOTHESIS TESTING**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**HYPOTHESIS TESTING**	Prof. Nebojša Zdravković
13	**L**	**COMPARISON OF THE MEANS OF A SMALL SAMPLE**	Prof. Nebojša Zdravković
	P	**COMPARISON OF THE MEANS OF A SMALL SAMPLE**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**COMPARISON OF THE MEANS OF A SMALL SAMPLE**	Prof. Nebojša Zdravković
14	**L**	**HYPOTHESIS TESTING**	Prof. Nebojša Zdravković
	P	**HYPOTHESIS TESTING**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**HYPOTHESIS TESTING**	Prof. Nebojša Zdravković

LECTURES AND PRACTICAL CLASSES

week	type	Teaching and practice lectures	Teacher
15	**L**	**NON-PARAMETRIC METHODS**	Prof. Nebojša Zdravković
	P	**NON-PARAMETRIC METHODS**	doc. dr Vladislava Stojić Sara Mijailović Anđela Gogić
	OAC	**NON-PARAMETRIC METHODS**	Prof. Nebojša Zdravković