	FORM	Index: FO 04.01.01-02
		Issue: II
	EXAMINATION SYNOPSIS	Date: 10.01.2012 г.
		Page 1 of 3

EXAMINATION SYNOPSIS

IN


MEDICAL STATISTICS

for 2019/2020 academic year

for student in the Specialty “Medicine”

English Division, Second year, fourth semestre


January 2020 examination session

	FORM	Index: FO 04.01.01-02
		Issue: II
	EXAMINATION SYNOPSIS	Date: 10.01.2012 г.
		Page 2 of 3

1. Introduction to statistics. Population and sample. Types of studies.
2. The research process – planning, sampling, sources and types of bias.
3. Questionnaire design.
4. Sources and types of data. Summarizing and presenting data. Scales of measurement.
5. Descriptive statistics for categorical data – ratios, proportions, percentages, rates.
6. Descriptive statistics for quantitative data. Measures of central tendency – mean, mode, median.
7. Measures of spread – range, interquartile range, standard deviation, variance.
8. Data distributions. Normal distribution – characteristics. Non-normal distributions. The normal curve. Standard scores. Standard normal curve.
9. The concept of “norms” or “normal limits”. Percentiles.
10. Analyzing relationships. Correlation. Linear and non-linear correlation. Correlation coefficients.
11. Correlation and causation. Regression.
12. Introduction to inferential statistics and hypothesis testing. Types of hypotheses. Probability.
13. From sample to population. Confidence interval.
14. Analyzing differences among groups – chi-square.
15. Measuring the differences between group means – Student’s t-tests (one-sided and two-sided t-test).

RECOMMENDED SOURCES

1. Presentations of lectures
2. **Free course of Medical statistics** <https://www.open.edu/openlearn/science-maths-technology/medical-statistics/content-section-0?active-tab=description-tab>

	FORM	Index: FO 04.01.01-02
	EXAMINATION SYNOPSIS	Issue: II
		Date: 10.01.2012 r.
		Page 3 of 3

3. Michael J. Campbell, David Machin, Stephen J. Walters. Medical Statistics: A textbook for the Health Sciences, 4th Edition, Wiley. ISBN: 978-0-470-02519-2 June 2007, pp. 344 <https://www.amazon.com/Medical-Statistics-Textbook-Health-Sciences/dp/0470025190>
4. Oxford handbook of Medical Statistics by Janet L. Peacock and Philip J. Peacock. Oxford University Press, 2011
5. Bailar, J.C., Fr. Mosteller. Medical Uses of Statistics. NEJM Books, 1986, p. 426
6. Beaglehole R., R. Bonita, T. Kjellstrom. Basic Epidemiology. 2nd edition, WHO, Geneva, 2006, p.219
7. Campbell, M. J., D. Machin. Medical Statistics - a Commonsense Approach. 3rd edition. Wiley, 1999, p. 203
8. Hassard, T. H. Understanding Biostatistics. Third edition. Mosby Year Boor, St. Louis, 1991, p.292
9. Elementary Statistics and Probability Tutorials and Problems – available online at <https://www.analyzemath.com/statistics.html>
10. Online MCQ available at: <http://itfeature.com/statistical-sources/statistics-mcqs/mcqs-basic-statistics>
11. Online Statistics available at: <http://itfeature.com/statistical-sources/statistics-mcqs>

EXAM FORMAT

Multiple choice test of 30 questions. Most of them require just to circle the right answer. The others may include cases that need to make some calculations to prove the choice of the right answer (e.g. calculation of confidence interval, *t* test or chi-square). In some questions the students should use tables of critical values of *t* test or chi-square to find *P* values and to make conclusions about the significance of difference. Each right answer is evaluated by 0.25 point. The minimum level of right answer should be 60% (18 right answers).

The semestrial mark is calculated as average from individual assignment assessment, both tests results and participation bonuses.

Final examination mark is calculated as follows:

$(0,30 \times A) + (0,70 \times B)$, where

A - average mark of the semester

B - mark on the examination test

A and B should be different from Poor (2.00), i.e. at least Average (3.00) to proceed to calculation of final mark.

For 100% attendance of lectures the student could get a bonus of 0.5 and for 80-90% -bonus is 0.25 added to the final examination mark.