

UNIVERSITY OF ZAGREB SCHOOL OF MEDICINE

## Plan of the course

# **Statistical Analysis of Medical Data**

Academic year **2016/2017**

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prof. dr. sc. Mirjana Kujundžić Tiljak

## **I. COURSE AIMS**

This course enables medical students, future medical doctors, for evaluation of their and other's work by professionally and scientifically based statistical and analytical procedures.

Students will be able to create simple design for real research by themselves in due to improve the quality of their practical work.

Medical students will acquire knowledge, skills and attitudes for critical reading of professional and scientific medical literature. They will learn to identify different statistical-analytical models in medical research. They will be able to understand evidence based medicine. Students will be trained for correct use of indicators in health and vital statistics. Students will be also able to critically analyze applied statistical methods, presentation of results and conclusions in papers published in medical journals.

## **II. COURSE STRUCTURE**

### **Course hours:**

Lectures: 16

Seminar: 16

Practicum: 16

### **Total hours: 48**

Lectures (L): 16 hours

Seminars (S): 16 hours

Practicals (P): 16 hours

**Total: 48 hours**

## **III. PLAN OF THE COURSE AND COURSE SCHEDULE**

### **BLOCKS OF THE COURSE**

Number of blocks: 1

Block number	Start	End
1.	27.2.2017	10.3.2017

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### **BLOCKS OF THE COURSE SCHEME**

Block 1

Date	Time	Group	Course hours type	Theme	Teaching staff
Monday 27.2.2017.	08:30-10:00; ŠNZ A prizemlje	G1+G2	Lectures	Data analysis in medical research – use and misuse of statistics	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P1	G1	Practicum	Description and analysis of real data distributions, reliability of diagnostic tests	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P	G2	Practicum	Description and analysis of real data distributions, reliability of diagnostic tests	doc. dr. sc. Slavica Sović
	12:00-13:30; ŠNZ A prizemlje	G1+G2	Seminar	Theoretical probability distributions	doc. dr. sc. Slavica Sović
Tuesday 28.2.2017.	08:30-10:00; ŠNZ K	G1+G2	Lectures	Risk quantification, standardization of vital statistical indicators	izv. prof. dr. sc. Zdenko Sonicki
	10:15-11:45; ŠNZ P1	G1	Practicum	Risk quantification, standardization of vital statistical indicators - methods for calculation	izv. prof. dr. sc. Zdenko Sonicki
	10:15-11:45; ŠNZ P	G2	Practicum	Risk quantification, standardization of vital statistical indicators - methods for calculation	doc. dr. sc. Slavica Sović
Wednesday 1.3.2017.	08:30-10:00; ŠNZ K	G1+G2	Lectures	Generalization - estimation of population parameters	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P1	G1	Practicum	Randomized sample, standard error and confidence interval	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P	G2	Practicum	Randomized sample, standard error and confidence interval	doc. dr. sc. Slavica Sović
	12:30-14:00; ŠNZ K	G1+G2	Lectures	Hypothesis testing – parametric significance tests	izv. prof. dr. sc. Zdenko Sonicki
	14:15-15:45; ŠNZ P1	G1	Practicum	Parametric significance tests	izv. prof. dr. sc. Zdenko Sonicki
	14:15-15:45; ŠNZ P	G2	Practicum	Parametric significance tests	doc. dr. sc. Slavica Sović
Thursday 2.3.2017.	08:30-10:00; ŠNZ A prizemlje	G1+G2	Lectures	Hypothesis testing – non parametric significance test, power analysis	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P1	G1	Practicum	Non-parametric significance tests, power analysis	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P	G2	Practicum	Non-parametric significance tests, power analysis	doc. dr. sc. Slavica Sović
Friday 3.3.2017.	08:30-10:00; ŠNZ A prizemlje	G1+G2	Lectures	Correlation and regression, variance and covariance	izv. prof. dr. sc. Zdenko Sonicki
	10:15-11:45; ŠNZ P1	G1	Practicum	Correlation coefficients, linear regression model, analysis of covariance	izv. prof. dr. sc. Zdenko Sonicki
	10:15-11:45; ŠNZ P	G2	Practicum	Correlation coefficients, linear regression model, analysis of covariance	doc. dr. sc. Slavica Sović
Monday 6.3.2017.	08:30-10:00; ŠNZ A prizemlje	G1+G2	Lectures	Logistic regression, survival analysis	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P1	G1	Practicum	Logistic regression, Kaplan-Meier survival analysis, Cox regression	prof. dr. sc. Mirjana Kujundžić Tiljak
	10:15-11:45; ŠNZ P	G2	Practicum	Logistic regression, Kaplan-Meier survival analysis, Cox regression	doc. dr. sc. Slavica Sović
	12:30-14:00; ŠNZ A prizemlje	G1+G2	Lectures	Multivariate analysis	izv. prof. dr. sc. Zdenko Sonicki
	14:15-15:45; ŠNZ P1	G1	Practicum	Multivariate analysis - specific examples	izv. prof. dr. sc. Zdenko Sonicki
	14:15-15:45; ŠNZ P	G2	Practicum	Multivariate analysis - specific examples	doc. dr. sc. Slavica Sović
Tuesday 7.3.2017.	08:30-10:00; ŠNZ A prizemlje	G1+G2	Seminar	Evidence based medicine, meta-analysis	prof. dr. sc. Mirjana Kujundžić Tiljak

Date	Time	Group	Course hours type	Theme	Teaching staff
	10:15-11:45; ŠNZ A prizemlje	G1+G2	Seminar	Qualitative data analysis	doc. dr. sc. Slavica Sović
	12:15-13:45; ŠNZ A prizemlje	G1+G2	Seminar	Intensive computational methods	izv. prof. dr. sc. Zdenko Sonicki
Wednesday 8.3.2017.	09:00-12:00; ŠNZ A prizemlje	G1+G2	Seminar	Critical analysis of papers published in medical journals	prof. dr. sc. Mirjana Kujundžić Tiljak
Thursday 9.3.2017.	09:00-12:00; ŠNZ A prizemlje	G1+G2	Seminar	Statistical design of medical research	izv. prof. dr. sc. Zdenko Sonicki
Friday 10.3.2017.	09:00-10:00; ŠNZ A prizemlje	SVI	Exam	EXAM	prof. dr. sc. Mirjana Kujundžić Tiljak, izv. prof. dr. sc. Zdenko Sonicki, doc. dr. sc. Slavica Sović

All lectures, seminars and practicals will take place at Andrija Štampar School of public health, Rockefellerova 12.

The attendance is obligatory to all lectures, seminars and lab works.

**Students are advised to contact teachers whenever they have any problems connected to the course.**

#### **IV. EXAMINATIONS**

Students will be evaluated during seminars and practicals.

#### **B. Types of examination and examination dates**

Students will be evaluated during seminars and practicals.

Final examination at the end of the course will be taken by test and oral examination.

Regular terms	Date
Winter	
Summer	13.07.2017.
Autumn	14.09.2017.

#### **Additional terms**

1. At the end of the course 10.03.2017

#### **V./I. LIST OF LECTURERS AND TEACHING STAFF**

1. prof. dr. sc. Mirjana Kujundžić Tiljak
2. izv. prof. dr. sc. Zdenko Sonicki
3. doc. dr. sc. Slavica Sović

**V./II EXTERNAL ASSOCIATES:**

**V./III UNTENURED LECTURERS:**

**VI. LITERATURE**

**A. Text book**

1. Petrie A, Sabin C. Medical Statistics at a Glance (2nd Ed). Oxford: Blackwell Science Ltd, 2005.
2. Altman DG. Practical statistics for medical research. London. Chapman & Hall, 1991.

**B. Additional readings**

1. <http://www-users.york.ac.uk/~mb55/pubs/pbstnote.htm> Statistics Notes in BMJ
2. <http://www.bmj.com/collections/statsbk/index.shtml> Statistics at Square One, Ninth Edition, TDV Swinscow, Revised By M J Campbell, University of Southampton, Copyright BMJ Publishing Group 1997)
3. <http://www.statsoft.com/textbook/stathome.html> (Electronic Statistics Textbook - StatSoft)
4. Glantz SA. Primer of biostatistics (4th ed). New York: McGraw Hill, 1997.