Faculty of Medicine in Rijeka

Curriculum
2025/2026

For course

Biostatistics

Study program:	**Medical Studies in English (R)** University integrated undergraduate and graduate study
Department:	**Department of Medical Physics and Biophysics**
Course coordinator:	**prof. dr. sc. Žauhar Gordana, prof. fizike i kemije**
Year of study:	**2**
ECTS:	**1.5**
Incentive ECTS:	**0 (0.00%)**
Foreign language:	**Possibility of teaching in a foreign language**

Course information:

Biostatistics is a compulsory course on the second year of the Integrated Undergraduate and Graduate University Study of Medicine, with 15 hours of lectures and 15 hours of exercises. It is held during IV. Semester. Lectures are held in lecture hall number 9, and practical in the computer classroom at the Faculty of Medicine. The estimated duration of course is 7 weeks.

COURSE STRUCTURE Formal lectures: 15 hours Practicals: 15 hours Total hours: 30

The objective of the course is to teach students about statistical reasoning, when and how to apply and how to interpret the basic statistical tests. In this way students will develop the ability of quantitative approach to data gathering, analysis and interpretation within the fields of biological sciences and humanities, which is the necessary requirement for their professional development, ability to critically follow the scientific and technical literature and participate in its creation.

List of assigned reading:

Triola M.M, Triola M.F, Biostatistics for the Biological and Health Sciences, Pearson, 2018.

List of optional reading:

Dawson B, Trapp R.G, Basic & Clinical Biostatistics, McGraw-Hill, 2004.

Curriculum:

Practicals list (with titles and explanation):

P1-2 Preparing and Writing Data In The Data Processing Program.

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P3 Visualising of Data. Histograms. Pie Charts. Time Series Graph.

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P4 Descriptive Statistics. Calculation of Basic Measures of Centre and Variation of the Numerical Data. Graphic Representation of Empirical Distribution

,

P5 Testing of Data Distribution for Normality with Kolmogorov-Smirnov test

,

P6 z-Scores (determination of the position for each result in the normal distribution with z-scores)

.

P7 Comparing the means of two independent samples with Student t-test

,

P8 Comparing the means of two dependent samples

,

P9 Analisis of Variance (ANOVA)

,

P10 Correlation and regression

,

P11 Comparison of Qualitative Data

,

P12 The Chi-squared Test

,

P13 Non-Parametric Methods

,

P14 Repeating and Testing of Knowledge

,

P15 Repeating and Testing of Knowledge

,

Lectures list (with titles and explanation):

L1 Introduction to Statistics. Statistics in Medicine. Scales of Measurement.

.

L2 Presenting of Data in Tables and Graphs. Summarizing and Displaying Numerical Data in Graphs.

Empirical Distribution and Data Grouping Within Intervals of a Continuous Variable and Classes.

.

L3 Measures of central tendency - arithmetical mean, mode, median, geometrical mean and harmonic mean.

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L4 Measures of Variation - range, mean deviation, variance, and standard deviation. Variability coefficient. Percentiles, deciles and quartiles.

.

L5 Normal Probability Distributions. The position of a result within the group (z-Scores).

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L6 Population and the sample. Inferences about the population based on sample-results. Confidence limits.

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L7 Statistical significance of differences between the means of mutually independent samples.

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L8 Correlation between variables.

,

L9 Regression analysis.

,

L10 Statistical significance of differences between the means of mutually dependent (correlated) samples.

,

L11 Analysis of Variance (ANOVA).

,

L12 Analysis and Comparison of Qualitative Data. Proportions. Inferences about Two Proportions: Independent Samples.

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L13 Chi-Square Test. Mc-Nemar test (Chi-Square Test for Dependent Samples).

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L14 Written Knowledge Assessment

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L15 Final Lecture and Preparation for the Exam

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Student obligations:

Students’ obligations are course attendance and active participation in all practicals.

Exam (exam taking, description of the written/oral/practical part of the exam, point distribution, grading criteria):

Evaluation of students' work:

Students can obtain a total of 100 credits (a maximum of 70 credits during the course and a maximum of 30 credits on the final exam). Students are allowed to take the final exam if they acquire a minimum of 35 credits during the trimester.

Evaluation of Students' Work During the Course (Maximum 70 credits) a) Active participation during practicals (3 credits) b) Midterm exam (32 credits) c) Colloquium (35 credits)

The attendance at lectures and practicals is mandatory. If necessary, a student can be absent from 30% of the classes.

a) Active participation during seminars:

During the practicals student participation and dedication will be monitored. At the end of each practical, students are also given homework assignments. A maximum of 3 points is awarded through active participation. Activities scoring is done in the following way

number of correctly assigned homework assignments	credits
0	0
1	1
2	2
3	3

b) Midterm Exam (32 credits)

Students have to pass the written midterm exam (in form of a test consisting of 3 problem tasks). In order to pass the midterm exam students have to score at least 50% (16 credits)

c) Colloquium from practical (35 credits)

Practicals end up with a colloquium. The colloquium examines the resolution of statistical tasks in the computer program "Statistica". It is possible to collect up to 35 credits.

Final exam:

Students have to pass the written exam (in form of a test consisting of 29 questions, each containing 5 statements). In order to pass the written part of the exam students have to score at least 50% (15/29 correct answers).

Assessment of the written part of the final exam:

Number of correct answers	Credits
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	25
26	26
27	27
28	28
29	30

The ECTS grading system is defined by the following criteria:

A (5) – 90-100 credits B (4) – 75-89,9 credits C (3) – 60-74,9 credits D (2) – 50-59,9 credits

Other notes (related to the course) important for students:

Retaking the course: A student who acquires less than 35 credits during the course has failed the course and is graded with F and must retake the course BIOSATISTICS.

COURSE HOURS 2025/2026

Biostatistics

Lectures (Place and time or group)	**Practicals** (Place and time or group)
20.04.2026	

L1 Introduction to Statistics. Statistics in Medicine. Scales of Measurement.:
• P09 - TEACHING IN ENGLISH (12:15 - 15:00) [149]
  ○ BS
 	
L2 Presenting of Data in Tables and Graphs. Summarizing and Displaying Numerical Data in Graphs. Empirical Distribution and Data Grouping Within Intervals of a Continuous Variable and Classes.:
• P09 - TEACHING IN ENGLISH (12:15 - 15:00) [149]
  ○ BS
 	
L3 Measures of central tendency - arithmetical mean, mode, median, geometrical mean and harmonic mean.:
• P09 - TEACHING IN ENGLISH (12:15 - 15:00) [149]
  ○ BS	

prof. dr. sc. Žauhar Gordana, prof. fizike i kemije [149]	
21.04.2026	
	P1-2 Preparing and Writing Data In The Data Processing Program.: • P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458] ○ BS P B
Majetić Marijana, viša laborantica [1458] · prof. dr. sc. Žauhar Gordana, prof. fizike i kemije [149]	
23.04.2026	

	P1-2 Preparing and Writing Data In The Data Processing Program.:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458]
	  ○ BS P A

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27.04.2026	

L4 Measures of Variation - range, mean deviation, variance, and standard deviation. Variability coefficient. Percentiles, deciles and quartiles.:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [149]
  ○ BS
 	
L5 Normal Probability Distributions. The position of a result within the group (z-Scores).:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [149]
  ○ BS	

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28.04.2026	

	P3 Visualising of Data. Histograms. Pie Charts. Time Series Graph.: • P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458] ◦ BS P B P4 Descriptive Statistics. Calculation of Basic Measures of Centre and Variation of the Numerical Data. Graphic Representation of Empirical Distribution: • P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458] ◦ BS P B
Majetić Marijana, viša laborantica [1458] · prof. dr. sc. Žauhar Gordana, prof. fizike i kemije [149]	
30.04.2026	
	P3 Visualising of Data. Histograms. Pie Charts. Time Series Graph.: • P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458] ◦ BS P C • P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458] ◦ BS P A P4 Descriptive Statistics. Calculation of Basic Measures of Centre and Variation of the Numerical Data. Graphic Representation of Empirical Distribution: • P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458] ◦ BS P C • P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458] ◦ BS P A
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04.05.2026	
L6 Population and the sample. Inferences about the population based on sample-results. Confidence limits.: • P09 - TEACHING IN ENGLISH (11:15 - 13:00) [149] ◦ BS L7 Statistical significance of differences between the means of mutually independent samples.: • P09 - TEACHING IN ENGLISH (11:15 - 13:00) [149] ◦ BS	
prof. dr. sc. Žauhar Gordana, prof. fizike i kemije [149]	
05.05.2026	
	P5 Testing of Data Distribution for Normality with Kolmogorov-Smirnov test: • P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458] ◦ BS P B P6 z-Scores (determination of the position for each result in the normal distribution with z-scores): • P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458] ◦ BS P B

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07.05.2026	

	P5 Testing of Data Distribution for Normality with Kolmogorov-Smirnov test:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458]
	  ○ BS P A
	
	P6 z-Scores (determination of the position for each result in the normal distribution with z-scores):
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458]
	  ○ BS P A

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11.05.2026	

L8 Correlation between variables.:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [2300]
  ○ BS
 	
L9 Regression analysis.:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [2300]
  ○ BS	

prof. dr. sc. Žuvić Marta, prof. matematike i fizike [2300]	
12.05.2026	

	P7 Comparing the means of two independent samples with Student t-test:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458]
	  ○ BS P B
	
	P8 Comparing the means of two dependent samples:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458]
	  ○ BS P B

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14.05.2026	

	P7 Comparing the means of two independent samples with Student t-test:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458]
	  ○ BS P A
	
	P8 Comparing the means of two dependent samples:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458]
	  ○ BS P A

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18.05.2026	

L10 Statistical significance of differences between the means of mutually dependent (correlated) samples.:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [2300]
  ○ BS
 	
L11 Analysis of Variance (ANOVA).:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [2300]
  ○ BS	

prof. dr. sc. Žuvić Marta, prof. matematike i fizike [2300]	
19.05.2026	

	P9 Analisis of Variance (ANOVA):
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P B
	
	P10 Correlation and regression:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P B

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21.05.2026	

	P9 Analisis of Variance (ANOVA):
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458]
	  ○ BS P A
	
	P10 Correlation and regression:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [199] [1458]
	  ○ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [199] [1458]
	  ○ BS P A

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25.05.2026	

L12 Analysis and Comparison of Qualitative Data. Proportions. Inferences about Two Proportions: Independent Samples.:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [2300]
  ◦ BS
 	
L13 Chi-Square Test. Mc-Nemar test (Chi-Square Test for Dependent Samples).:
• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [2300]
  ◦ BS	

prof. dr. sc. Žuvić Marta, prof. matematike i fizike [2300]	
26.05.2026	

	P11 Comparison of Qualitative Data:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458]
	  ◦ BS P B
	
	P12 The Chi-squared Test:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458]
	  ◦ BS P B

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28.05.2026	

	P11 Comparison of Qualitative Data:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458]
	  ◦ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [149] [1458]
	  ◦ BS P A
	
	P12 The Chi-squared Test:
	• P09 - TEACHING IN ENGLISH (09:15 - 11:00) [149] [1458]
	  ◦ BS P C
	• P09 - TEACHING IN ENGLISH (11:15 - 13:00) [149] [1458]
	  ◦ BS P A

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01.06.2026	

L14 Written Knowledge Assessment:
• P15 - TOWN HALL (11:15 - 13:00) [149]
  ◦ BS
 	
L15 Final Lecture and Preparation for the Exam:
• P15 - TOWN HALL (11:15 - 13:00) [149]
  ◦ BS	

prof. dr. sc. Žauhar Gordana, prof. fizike i kemije [149]	
02.06.2026	

	P13 Non-Parametric Methods: • P09 - TEACHING IN ENGLISH (08:15 - 11:00) [149] [1458] ○ BS P B P14 Repeating and Testing of Knowledge: • P09 - TEACHING IN ENGLISH (08:15 - 11:00) [149] [1458] ○ BS P B P15 Repeating and Testing of Knowledge: • P09 - TEACHING IN ENGLISH (08:15 - 11:00) [149] [1458] ○ BS P B
Majetić Marijana, viša laborantica [1458] · prof. dr. sc. Žauhar Gordana, prof. fizike i kemije [149]	
03.06.2026	
	P13 Non-Parametric Methods: • P09 - TEACHING IN ENGLISH (08:15 - 11:00) [199] [1458] ○ BS P C • P09 - TEACHING IN ENGLISH (13:15 - 16:00) [199] [1458] ○ BS P A P14 Repeating and Testing of Knowledge: • P09 - TEACHING IN ENGLISH (08:15 - 11:00) [199] [1458] ○ BS P C • P09 - TEACHING IN ENGLISH (13:15 - 16:00) [199] [1458] ○ BS P A P15 Repeating and Testing of Knowledge: • P09 - TEACHING IN ENGLISH (08:15 - 11:00) [199] [1458] ○ BS P C • P09 - TEACHING IN ENGLISH (13:15 - 16:00) [199] [1458] ○ BS P A
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List of lectures, seminars and practicals:

LECTURES (TOPIC)	Number of hours	Location
L1 Introduction to Statistics. Statistics in Medicine. Scales of Measurement.	1	P09 - TEACHING IN ENGLISH
L2 Presenting of Data in Tables and Graphs. Summarizing and Displaying Numerical Data in Graphs. Empirical Distribution and Data Grouping Within Intervals of a Continuous Variable and Classes.	1	P09 - TEACHING IN ENGLISH
L3 Measures of central tendency - arithmetical mean, mode, median, geometrical mean and harmonic mean.	1	P09 - TEACHING IN ENGLISH
L4 Measures of Variation - range, mean deviation, variance, and standard deviation. Variability coefficient. Percentiles, deciles and quartiles.	1	P09 - TEACHING IN ENGLISH
L5 Normal Probability Distributions. The position of a result within the group (z-Scores).	1	P09 - TEACHING IN ENGLISH
L6 Population and the sample. Inferences about the population based on sample-results. Confidence limits.	1	P09 - TEACHING IN ENGLISH

L7 Statistical significance of differences between the means of mutually independent samples.	1	P09 - TEACHING IN ENGLISH
L8 Correlation between variables.	1	P09 - TEACHING IN ENGLISH
L9 Regression analysis.	1	P09 - TEACHING IN ENGLISH
L10 Statistical significance of differences between the means of mutually dependent (correlated) samples.	1	P09 - TEACHING IN ENGLISH
L11 Analysis of Variance (ANOVA).	1	P09 - TEACHING IN ENGLISH
L12 Analysis and Comparison of Qualitative Data. Proportions. Inferences about Two Proportions: Independent Samples.	1	P09 - TEACHING IN ENGLISH
L13 Chi-Square Test. Mc-Nemar test (Chi-Square Test for Dependent Samples).	1	P09 - TEACHING IN ENGLISH
L14 Written Knowledge Assessment	1	P15 - TOWN HALL
L15 Final Lecture and Preparation for the Exam	1	P15 - TOWN HALL

PRACTICALS (TOPIC)	Number of hours	Location
P1-2 Preparing and Writing Data In The Data Processing Program.	2	P09 - TEACHING IN ENGLISH
P3 Visualising of Data. Histograms. Pie Charts. Time Series Graph.	1	P09 - TEACHING IN ENGLISH
P4 Descriptive Statistics. Calculation of Basic Measures of Centre and Variation of the Numerical Data. Graphic Representation of Empirical Distribution	1	P09 - TEACHING IN ENGLISH
P5 Testing of Data Distribution for Normality with Kolmogorov-Smirnov test	1	P09 - TEACHING IN ENGLISH
P6 z-Scores (determination of the position for each result in the normal distribution with z-scores)	1	P09 - TEACHING IN ENGLISH
P7 Comparing the means of two independent samples with Student t-test	1	P09 - TEACHING IN ENGLISH
P8 Comparing the means of two dependent samples	1	P09 - TEACHING IN ENGLISH
P9 Analisis of Variance (ANOVA)	1	P09 - TEACHING IN ENGLISH
P10 Correlation and regression	1	P09 - TEACHING IN ENGLISH
P11 Comparison of Qualitative Data	1	P09 - TEACHING IN ENGLISH
P12 The Chi-squared Test	1	P09 - TEACHING IN ENGLISH
P13 Non-Parametric Methods	1	P09 - TEACHING IN ENGLISH
P14 Repeating and Testing of Knowledge	1	P09 - TEACHING IN ENGLISH
P15 Repeating and Testing of Knowledge	1	P09 - TEACHING IN ENGLISH

EXAM DATES (final exam):

1.	23.06.2026.
2.	07.07.2026.
3.	09.09.2026.