## Faculty of Science and Mathematics / BIOLOGY / BIOSTATISTICS

| **Course:** | BIOSTATISTICS | | | |
|---|---|---|---|---|
| **Course ID** | **Course status** | **Semester** | **ECTS credits** | **Lessons** (Lessons+Exercises+Laboratory) |
| 12194 | Mandatory | 3 | 2 | 2+0+0 |
| **Programs** | BIOLOGY | | | |
| **Prerequisites** | Mathematics | | | |
| **Aims** | The course aims to train students to apply basic statistical tools in biology. | | | |
| **Learning outcomes** | Understanding and applying statistical tools used in biology. | | | |
| **Lecturer / Teaching assistant** | Darko Mitrovic | | | |
| **Methodology** | Lectures. Learning and independent homework. Consultations. | | | |
| **Plan and program of work** | | | | |
| Preparing week | Preparation and registration of the semester | | | |
| I week lectures | Concept and definition of statistics. Basic statistical terms. | | | |
| I week exercises | Concept and definition of statistics. Basic statistical terms. | | | |
| II week lectures | Numerical and attributive characteristics – arithmetic mean, mode and median. Implementation on the computer. | | | |
| II week exercises | Numerical and attributive characteristics – arithmetic mean, mode and median. Implementation on the computer. | | | |
| III week lectures | Variance and standard deviation. Grouping of data. Implementation on the computer. | | | |
| III week exercises | Variance and standard deviation. Grouping of data. Implementation on the computer. | | | |
| IV week lectures | Data presentation. Tabulation. Graphic display. Homework. | | | |
| IV week exercises | Data presentation. Tabulation. Graphic display. Homework. | | | |
| V week lectures | Percentiles. Suspicious data. Skewness and Kurtosis. | | | |
| V week exercises | Percentiles. Suspicious data. Skewness and Kurtosis. | | | |
| VI week lectures | I colloquium | | | |
| VI week exercises | Check I group of tasks for homework | | | |
| VII week lectures | Hypothesis testing. Basic principles. Gaussian distribution. | | | |
| VII week exercises | Hypothesis testing. Basic principles. Gaussian distribution. | | | |
| VIII week lectures | t-test. Equality of means of two populations | | | |
| VIII week exercises | t-test. Equality of means of two populations | | | |
| IX week lectures | F-test for equality of variances and application to t-test. | | | |
| IX week exercises | F-test for equality of variances and application to t-test. | | | |
| X week lectures | Pearsons chi^2-test. | | | |
| X week exercises | Pearsons chi^2-test. | | | |
| XI week lectures | Homogeneity test. | | | |
| XI week exercises | Homogeneity test. | | | |
| XII week lectures | ANOVA | | | |
| XII week exercises | ANOVA | | | |
| XIII week lectures | Linear regression. | | | |
| XIII week exercises | Linear regression. | | | |
| XIV week lectures | II colloquium | | | |
| XIV week exercises | Checking the II group of tasks for homework | | | |
| XV week lectures | Remedial colloquium | | | |
| | | | | |

| | |
|---|---|
| XV week exercises | Remedial colloquium |
| **Student workload** | Weekly: 2 credits x 40/30 = 2 hours and 40 minutes In the semester: 2 x 30 = 60 hours |

| **Per week** | **Per semester** |
|---|---|
| **2 credits x 40/30=2 hours and 40 minuts**<br>2 sat(a) theoretical classes<br>0 sat(a) practical classes<br>0 excercises<br>**0 hour(s) i 40 minuts**<br>of independent work, including consultations | Classes and final exam:<br>**2 hour(s) i 40 minuts x 16 =42 hour(s) i 40 minuts**<br>Necessary preparation before the beginning of the semester (administration, registration, certification):<br>**2 hour(s) i 40 minuts x 2 =5 hour(s) i 20 minuts**<br>Total workload for the subject:<br>**2 x 30=60 hour(s)**<br>Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item)<br>**12 hour(s) i 0 minuts**<br>Workload structure: **42 hour(s) i 40 minuts (cources), 5 hour(s) i 20 minuts (preparation), 12 hour(s) i 0 minuts (additional work)** |
| **Student obligations** | Students are required to attend classes, take control tests and do both colloquiums. |
| **Consultations** | Monday, 14:00-16:00 |
| **Literature** | Daniel W. Waine; Biostatistics: A Foundation for Analysis in the Health Sciences; John Wiley and Sons, USA, 2005 |
| **Examination methods** | Homework (0-5 points) . Colloquiums: (0-40 points). Final exam (0 - 10 points). Total 100 points |
| **Special remarks** | No |
| **Comment** | No |

| **Grade:** | F | E | D | C | B | A |
|---|---|---|---|---|---|---|
| **Number of points** | less than 50 points | greater than or equal to 50 points and less than 60 points | greater than or equal to 60 points and less than 70 points | greater than or equal to 70 points and less than 80 points | greater than or equal to 80 points and less than 90 points | greater than or equal to 90 points |