| INDBIOT-09: | **COMPUTER DATA ANALYSIS AND VISUALISATION** |
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| **GENERAL INFORMATION** | |
| Course Coordinator(s) | Frane Čačić Kenjerić, PhD, assist. prof. |
| Associate(s) | - |
| Study Programme | Interdisciplinary Graduate Study Programme in English: Biotechnology |
| Course Status | Obligatory |
| Year of Study, Semester | 2nd Year / 4th Semester |
| Credits (ECTS) | 4 |
| Teaching Method (number of classes) | Lectures 20; Seminars 30; Exercises 0 |
| Expected Number of Students in the Course | 25-30 |

**COURSE DESCRIPTION**

**Course Aims**

Aim of this course is introduction to methods and procedures involved in dana acquisition, pre-processing, storage, analysis and visualisation by means of digital computer.

**Prerequisites for Enrolment and the Entry Competencies Required for the Course**

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**Learning Outcomes at the Programme Level Contributed by the Course**

INDBIOT-6; BIOTECH-6

**Learning Outcomes at the Course Level**

After the lectures, seminars and exercises, self-study and passed exam students will be able to:

1. Distinguish and understand different types of statistical data processing applications
2. Select tools and create an environment for computer processing, analysis and data visualization (based on free open source software)
3. Understand ways to retrieve and be able to retrieve data from different sources and prepare it for analysis
4. Distinguish between applying different graphical representations of results
5. Present the results of the analyses in a tabular and graphical format in a format suitable for publication and exchange

**Course Content**

Introduction. Data structures (list, arrays, dictionaries, data frames, …), manipulation with data, Graphing 2D&3D, Interactive data representation, Formatting for publication, Different platforms for data publication, Sampling for Estimation of Finite Population Quantities, Sampling plans for product inspection, Statistical process control, Design and analysis of Experiments, Reliability and Survival analysis.

Teaching Methods

Lectures; Seminars

Students' Obligations

Attendance at all forms of classes is mandatory and the students are obligated to attend all knowledge tests. The students may be absent from 30% (full-time students) and 50% (part-time students) of each of the forms of classes, provided that the absence is justified. An exercise or a seminar which has not been completed must be made up through a midterm exam.

**Monitoring the Activity of the Students *(Connecting Learning Outcomes, Teaching Methods, and Grading)***

| Class-related | ECTS | Learning | Student activity | Evaluation | Grade points |
|---|---|---|---|---|---|

| activity | | outcome | | method | Min. | Max. |
|---|---|---|---|---|---|---|
| Attending classes (lectures, exercises) | 0.5 | 1-5 | Attendance at classes | Attendance records | 5 | 10 |
| Seminars | 1.5 | 1-5 | Seminar work | Oral presentation, written paper | 15 | 40 |
| Final exam | 2 | 1-5 | Studying for the final exam | Written exam | 30 | 50 |
| **Total** | **4** | | | | **50** | **100** |

Evaluation of the final exam

| Percentage of correct answers (%) | Grade |
|---|---|
| >95.00 | 50 |
| 90.00-94.99 | 47 |
| 85.00-89.99 | 45 |
| 80.00-84.99 | 40 |
| 75.00-79.99 | 38 |
| 70.00-74.99 | 35 |
| 65.00-69.99 | 33 |
| 60.00-64.99 | 30 |

*Forming the final grade:*
The points granted for the final exam are added to the grade points awarded during class attendance. The grading process is conducted by absolute distribution, i.e. based on total achievements, and compared to the numerical system in the following manner:
A – Excellent (5): 90.00-100.00 grade points; B – Very Good (4): 80.00-89.99 grade points; C – Good (3): 65.00-79.99 grade points; D – sufficient (2): 50.00-64.99 grade points

**Mandatory Literature (available in the library and via other media)**

| Title | Number of copies in the library | Availability via other media |
|---|---|---|
| Kenett RS: Modern Industrial Statistics with applications in R, MINITAB and JMP, 2nd Ed., Wiley 2014. | - | |

**Additional Literature**

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**Quality Assurance Procedures Designed to Ensure the Acquisition of Outcomes and Competencies**

Anonymous, quantitative, standardised student survey on the course and the teacher's work implemented by the Quality improvement office of the Faculty of Food Technology Osijek and/or the Faculty of Medicine Osijek.

**Note**

E-learning is not included in the class quota, but it is used in teaching and it contains links to various sites and video and audio materials available on websites.