COURSE DESCRIPTION (SYLLABUS)

1.	Course: **Computer programs used in research work**
2.	Language of instruction: **English**
3.	Faculty: **Faculty of Biotechnology**
4.	Course/module code: **29-BT-S2-E1-EngCom**
5.	Course/module type (*mandatory* or *elective*): **mandatory**
6.	Programme: **Medical Biotechnology**
7.	Study cycle: **2nd cycle**
8.	Year: **1st**
9.	Semester (*autumn* or *spring*): **Autumn**
10.	Form of tuition and number of hours: **Computer Laboratory, 20 h**
11.	Name, Surname, academic title: **Sławomir Jabłoński, PhD**
12.	Initial requirements (knowledge, skills, social competences) regarding the course/module and its completion: • **have the ability to plan research genetic engineering and molecular biology:** • **possess advanced knowledge of biological sciences, namely bioinformatics and molecular biology;** • **understand the need for lifelong learning.**
13.	Objectives: **The aim of the course is to teach students the use of computer programs useful in natural science research.**
14.	Content: • **introduction to the usage of literature data bases (PUBMED, Science Direct, Web fo Knowledge);** • **use of literature managing programs (Mendeley);** • **processing of graphic experimental data (gels and microscope photos and scans),** • **extraction of numerical data from photos (length measurements, colour intensity**

<table>
<tr><td></td><td colspan="2">profiles, gel band intensities);
• design of cloning experiments with help of computer software (downloading of sequences from databases, identification of restrictions sites in the sequence, design of PCR primers);
• computer supported design of oligonucleotides for real time PCR for quantitative analysis of eukaryotic genes expression (H. sapiens).</td></tr>
<tr><td>15.</td><td>Learning outcomes:
• have the ability to plan research in molecular biology;
• efficiently make use of scientific literature in the field of biomedicine and biotechnology; read professional literature in English;
• show ability in critically analysing and selecting information, especially from electronic resources, including literature and sequential databases;
• write research papers and brief scientific reports in English based on his or her own research.</td><td>Outcome symbols:
K_W07, K_U02, K_U03, K_U09, K_K07</td></tr>
<tr><td>16.</td><td colspan="2">Recommended literature:
• „Help” materials from presented software.</td></tr>
<tr><td>17.</td><td colspan="2">Methods of verification of the assumed learning outcomes:
• verification of exercises from list concerning particular topics.</td></tr>
<tr><td>18.</td><td colspan="2">Conditions of earning credits:
• continuous control of presence and progress;
• realization of certain part of exercises from particular topics.</td></tr>
<tr><td rowspan="5">19.</td><td colspan="2">Student’s workload:</td></tr>
<tr><td>Activity</td><td>Number of hours for the activity</td></tr>
<tr><td>Hours of instruction (as stipulated in study programme):
• computer classes;
• consultations.</td><td>20 h</td></tr>
<tr><td>Student’s own work:
• individual realization of exercises from particular topics,
• individual exploration of more advanced functions offered by the presented software,</td><td>20 h</td></tr>
<tr><td>Total number of hours:</td><td>40 h</td></tr>
<tr><td></td><td>Number of ECTS:</td><td>2 ECTS</td></tr>
</table>