

## FACT SHEET BIP

<b>Name institution</b>	Instituto Superior de Engenharia de Lisboa - Polytechnic University of Lisbon
<b>Title / Name BIP:</b> (Enter the official name of the BIP)	Technology applied to biological systems
<b>Abstract:</b> (Brief summary of the activity – what it is about in 3–5 lines)	<p>This program offers a comprehensive educational experience through a series of lectures and hands-on laboratory workshops, led by a diverse panel of professors and researchers from various universities and research institutions. Students will be organized into multinational teams, representing academic backgrounds in Agro-Industries, Biotechnology, Chemistry, Biochemistry, and Engineering.</p> <p>Participants will deepen their understanding of technological innovations applied to biological systems, gaining practical experience with cutting-edge methodologies and best practices. The program combines traditional lectures and laboratory sessions with interactive virtual and online components to enrich the learning process. Students will engage in collaborative activities such as literature reviews, oral presentations, and group projects, enhancing their personal and technical skills.</p>
<b>Goal:</b> (What is the main objective or purpose?)	To provide a comprehensive understanding of key biotechnological disciplines by exploring essential topics such as genetic engineering, gene expression analysis, industrial biotechnology, drug discovery, and enzyme kinetics.
<b>Topics covered:</b> (List the key themes or subject areas that will be addressed)	<p>The program will address a range of advanced technologies applied to biological systems, with a focus on:</p> <ul style="list-style-type: none"> <li>• The use of recombinant microorganisms in industrial biotechnology.</li> <li>• Basic principles of gene technology for developing new industrial enzymes and optimisation microbial production of chemicals.</li> </ul>

	<ul style="list-style-type: none"> <li>• Applied molecular techniques in research and industry, including CRISPR/Cas systems and reverse genetics.</li> <li>• Design of vector constructs for applications such as food production as well as plant and protein engineering.</li> <li>• Drug design and discovery processes in the biotechnology sector.</li> </ul>
<b>Expected outcome(s):</b> <i>(What should students gain or achieve by the end?)</i>	<p>By the end of the program, students are expected to have developed a solid foundation in key biotechnological concepts and laboratory techniques through active participation in collaborative learning environments and hands-on practical sessions.</p> <p>Students will:</p> <ul style="list-style-type: none"> <li>• Deepen their understanding of gene technology and molecular techniques applied to the optimization of microbial production of industrial chemicals, food production, and plant and protein engineering.</li> <li>• Gain experience in using publicly available bioinformatics tools for designing vector constructs in genetic engineering.</li> <li>• Apply theoretical knowledge through laboratory workshops involving techniques such as plasmid purification, DNA/RNA extraction, quantitative PCR (qPCR), and microbial production of chemicals.</li> <li>• Learn innovative approaches to drug design and discovery.</li> <li>• Strengthen essential teamwork and communication skills through group activities and presentations.</li> </ul>
<b>Start and end date of the BIP</b>	23-27 March 2026
<b>Content of virtual component:</b> <i>(Describe any online or hybrid elements – e.g., webinars, online modules, collaborative tools)</i>	<p>The virtual component of the program includes:</p> <ul style="list-style-type: none"> <li>• Online introductory session: Participants will meet the lecturers and fellow students, and receive important information about the structure and practical aspects of the programme.</li> </ul>

	<ul style="list-style-type: none"> <li>• Guided literature review preparation: Students will receive support and guidance for background knowledge important for the workshops components and evaluation component.</li> <li>• Thematic online workshops: Topics such as CRISPR/Cas systems, primer design, and other molecular techniques incorporating bioinformatics tools and collaborative platforms.</li> </ul>
<b>Start and end date of the virtual component</b>	23 February and during the international week
<b>Maximum number of students:</b> <i>(Total number of participants allowed)</i>	20
<b>Maximum number per university:</b> <i>(Limit per institution, if applicable)</i>	5
<b>BIP ID</b> <i>(If already available)</i>	