4.2. Course Catalogue with the Learning Outcomes

1st Year – Obligatory Courses

BIOTECH-01:	**INTRODUCTION TO BIOTECHNOLOGY**
GENERAL INFORMATION	
Course Coordinator(s)	Natalija Velić, PhD, assoc. prof.
Associate(s)	-
Study Programme	Interdisciplinary Graduate Study Programme in English: Biotechnology
Course Status	Obligatory
Year of Study, Semester	1st Year / 1st Semester
Credits (ECTS)	**1**
Teaching Method (number of classes)	Lectures 10; Seminars 5; Exercises 0
Expected Number of Students in the Course	25-30
COURSE DESCRIPTION	
Course Aims	
The aim of the course is to introduce students to basic concepts of biotechnology, provide insight into the field of biotechnology and the importance of biotechnology.	
Prerequisites for Enrolment and the Entry Competencies Required for the Course	
Completed undergraduate university study programme from the area of natural sciences (chemistry, biology) or biotechnical sciences, or biomedicine and healthcare.	
Learning Outcomes at the Programme Level Contributed by the Course	
BIOTECH-1; INDBIOT-1; INDBIOT-2	
Learning Outcomes at the Course Level	
After successful completion of this course students are expected to be able to: 1. Compare traditional and new biotechnological approaches. 2. Explain the industrial aspects of biotechnology. 3. Explain the biotechnology application areas ("rainbow code of biotechnology "). 4. Critically argue the importance of biotechnology for sustainable development. 5. Critically evaluate ethical, legal and social implications (ELSI) of biotechnology.	
Course Content	
Lectures. Biotechnology - definition and importance. Brief history and perspectives of biotechnology development. Traditional biotechnology *vs.* new biotechnology. Recombinant DNA technology: basic principles, applications and molecular techniques. Industrial aspects of biotechnology: general scheme and characteristics of biotechnological processes - microbial processes, enzymatic processes, processes in plant and animal tissue culture. Areas of application of biotechnology (rainbow code of biotechnology): white, red, green and blue biotechnology. **Seminars.** Industrial Biotechnology (White) - sustainable production of chemicals, fuels, materials. Medical biotechnology (red) - therapy and diagnostics, production of pharmaceuticals and nutraceuticals. Biotechnology in agriculture (green) and environmental protection. Marine Biotechnology (Blue) - use of marine resources in food production, isolation of new bioactive compounds and new materials, conservation of marine ecosystems. ELSI - ethical, legal and social implications of biotechnology.	
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.

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

Class-related activity	ECTS	Learning outcome	Student activity	Evaluation method	Grade points	
					Min.	Max.
Classes, seminars	0.1	1-6	Attendance at classes and seminars	Attendance records	5	10
Seminar work	0.5	4-6	Writing a seminar paper	Oral presentation of a seminar paper	15	40
Final exam	0,4	1-6	Studying for the final exam	Written exam	30	50
Total	**1**				**50**	**100**

Evaluation of the written part 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): 90-100 grade points; B – Very Good (4): 80-89.99 grade points; C – Good (3): 65-79.99 grade points; D – sufficient (2): 50-64.99 grade points

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

Title	Number of copies in the library	Availability via other media
Thieman WJ, Palladino MA: Introduction to Biotechnology, 4th Ed., Pearson, Boston, 2018.	-	-

Additional Literature

1. Godbey WT: An Introduction to Biotechnology, Elsevier, Amsterdam, 2014.
2. Ratledge C, Kristiansen B: Basic biotechnology, 3rd Ed., Cambridge University Press, Cambridge, 2013.
3. Khan FA: Biotechnology Fundamentals, 2nd Ed., CRC Press, Boca Raton, 2016.

4. Renneberg R: Biotechnology for Beginners, Academic Press, Burlington, 2008. 5. Scientific papers available on-line
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.