PTF
PREHRAMBENO-TEHNOLOŠKI FAKULTET OSIJEK

SVEUČILIŠTE JOSIPA JURJA STROSSMAYERA U OSIJEKU

Sveučilište Josipa Jurja Strossmayera u Osijeku
MEDICINSKI FAKULTET OSIJEK

IMBioTech

Interdisciplinary Graduate Study Programme in English: Biotechnology

Europska unija
"Zajedno do fondova EU"

EUROPSKI STRUKTURNI I INVESTICIJSKI FONDOVI

ESF UČINKOVITI LJUDSKI POTENCIJALI

Project was supported by the European Union through the European Social Fund.

Starting from academic year 2022/2023

Two academic years

Four semesters

120 ECTS credits

2 modules:

Industrial Biotechnology is the basic factor for the development of bio-economics and sustainable technologies, i.e. “green technologies”, which are characterised by the sustainable use of renewable raw material for industrial purposes, with the preservation of biological diversity and environmental protection.

Medical Biotechnology is based on applying the achievements of life sciences to the development of innovative technologies aimed at improving human health. The programme of this module includes topics like recombinant DNA technology, genetic and protein engineering, tissue engineering, medication and vaccine development, rapid diagnostics, personalised medicine, and gene therapy.

1st semestar — obligatory courses

	ECTS
Introduction to biotechnology	1
Molecular biology with genetic engineering	5
Genetics and genomics	7
Structural biochemistry	5
Protein engineering	6
Bioinformatics and biostatistics	6

1st YEAR

2nd semestar — obligatory courses

	ECTS
Molecular enzymology	6
Biochemistry and physiology of industrial microorganisms	6.5
Applied microbiology	6.5
Molecular modelling	3
Internship	2
Elective course I	3
Elective course II	3

1st YEAR

elective courses

	ECTS
Methodology of scientific-research work	3
Bioethics, biosafety and intellectual property rights in biotechnology	3
Protein purification	3
Experimental molecular biology	3
Biotechnology entrepreneurship	3
Enzyme immobilization techniques	3

1st YEAR

MODULE: INDUSTRIAL BIOTECHNOLOGY

3rd semestar — **obligatory courses**

	ECTS
Bioprocess engineering	6
Fermentation technologies	6
Biocatalysts and biotransformation	4.5
General plant biotechnology	4.5
Biofuels and biorefineries	5
Waste management in bioprocess industry	4

2nd YEAR

4th semestar — **obligatory courses**

	ECTS
Instrumental methods in biotechnology	4
Bioprocess plant design	4
Computer data analysis and visualisation	4
Master's thesis	10
Elective course I	4
Elective course II	4

2nd YEAR

elective courses

	ECTS
Solid-state fermentation	4
Microreactors	4
Wastewater treatment	4
Extraction and isolation of bioactive compounds	4
Energy efficiency in biotechnological processing facilities	4
By-products in the biotechnological and food industry	4
Technology of probiotic starter culture	4
Good hygiene practice in bioprocess industry	4
Plant stress biology and biotechnology	4
Techno-economic assessment and risk analysis of biotechnological processes	4

2nd YEAR

MODULE:
MEDICAL BIOTECHNOLOGY

3rd semestar

obligatory courses

	ECTS
Biotechnology in health care	2
Pharmacology	5.5
Experimental physiology for biotechnologists	4
Molecular immunology	4.5
Molecular medicine	4
Medical genetics	4.5
Biotechnology of pharmaceutical products	5.5

2nd YEAR

4th semestar

obligatory courses

	ECTS
In vivo and *in vitro* experimental models	4
Drug development	4
Tissue engineering	4
Master's thesis	10
Elective course I	4
Elective course II	4

2nd YEAR

elective courses

	ECTS
Microscopy in biotechnology	4
Tissue types	4
Nutrigenomics	4
Pharmacogenetics and pharmacogenomics	4
Application of tissue engineering in clinical praxis	4
Biologic drugs	4
Application of flow cytometry in research	4

2nd YEAR

SCAN FOR MORE