Industrial Biotechnologies

Education period (typical):

I Semester – From the end of September up to the end of December II Semester – From the end of February up to the beginning of June

Exams – January to March. June, July, September and October

Details of each course/module are reported at the webpage of the professor.

For more information: University of Naples: <u>www.unina.it</u> Polytechnique and Basic Sciences School: <u>www.spsb.unina.it</u> Degree Courses in Molecular and Industrial Biotechnology: <u>www.biotecnologieindustriali.unina.it/en/</u> email: <u>infobiotecnologieindustriali@unina.it</u>

Biotecnologie Industriali Federico II

Department of Chemical Science

MASTER'S DEGREE "MOLECULAR AND INDUSTRIAL BIOTECHNOLOGY"

2019-20





The MSc programme aims to educate graduated students for high profile positions in research centres, enterprises and industries operating in industrial biotechnology field.

Potential fields of activity of MSc graduated students are biotechnological enterprises, chemical, pharmaceutical/cosmetic and nutraceutical industries, as well as the environmental technology sector.

The programme includes two curricula: **"Birre** - Biotechnology for Renewable Resources" **"ProBio** - Biotechnology productions"

The lessons of the **Birre curriculum** are in **English** and Italian languages: 6 courses - for a total of 60 CFU spread over a period of one year. The topics of Birre curriculum are focused on molecular and industrial issues of biotechnology to prepare students to the construction of new products and services based on the exploitation of renewable resources. Students are provided with the interdisciplinary concepts of industrial biotechnology to convert renewable resources in consumables (e.g. energy vectors, bioplastics, pigments, nutraceuticals). Both classes of biotechnology products, i.e. high value products (e.g. antioxidants) and high massive products (e.g. energy vectors, bioplastics) are addressed.

The lessons of the **ProBio curriculum** are provided in **Italian** language: 9 courses, for a total of 90 CFU spread over a period of half a year. The topics of ProBio curriculum are focused on molecular and industrial aspects of biotechnology to educate students to a general integrated approach to consolidated and emerging technologies. (details at *www.biotecnologieindustriali.unina.it/it/*)



MSc in Molecular and Industrial Biotechnology

Curriculum "Birre - Biotechnology for Renewable Resources"

	Course	Module (if present)	ECTS
	I Year – I semester		
	Industrial microbiology and fermentation chemistry (IT)		6
	Microalgal exploitation	Genetic engineering	6
		Microalgal resource	6
	Industrial biotechnologies and	Industrial biotechnologies	6
	environment protection (IT)	Environmental safety biotechnologies	6
	I Year – II semester		
	Transport phenomena for biotechnological applications		9
		Polyester based bioplastics	6
Bio	Biopolymers and bioplastics	Polysaccharide- and protein-	6
		based bioplastics	
	Biorefinery processes		6
	II Year – I semester		
	Hygiene background for biotechnologies (IT)		6
	Design of conversion processes	Bioreactors	6
		Process simulation	6
	Biosensors and Biochips (IT)		6
	Environmental economy		6
	II Year – II semester		
	Free selection proposed by the student		12
	Practical training		18
	Final project and exam		3

(IT) – course language: Italian