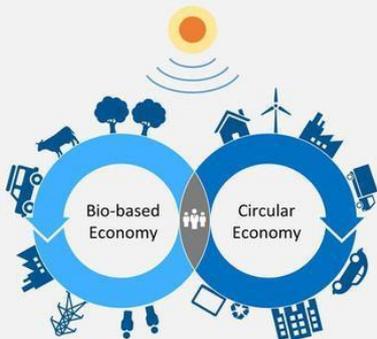
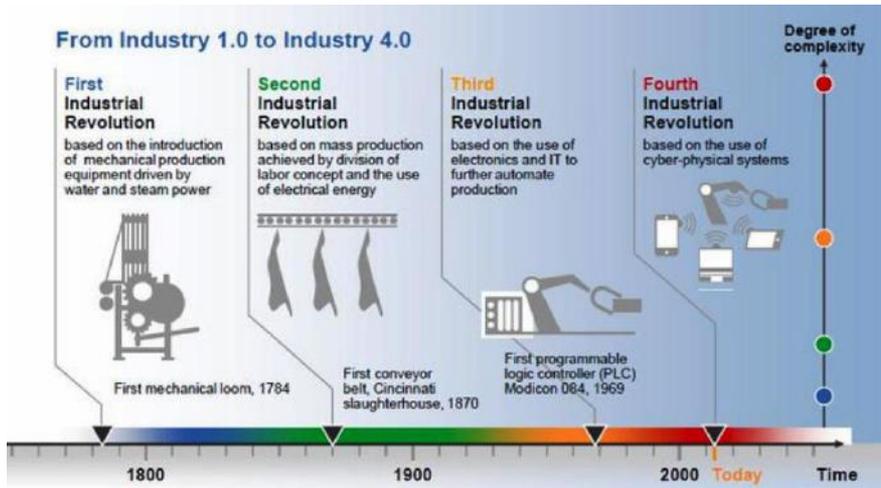


When Academy and Industries met together for growing of Bioeconomy in Italy

European competence framework for a
new generation of European citizens





In the same period (< 300 years) the world's living population has increased from **0.7 to 7.5 billions** people, for over 54% concentrated in cities, with a continuous increase in the degree of desertification of the planet....

Combining Industry 4.0 and Circular Bio-Economy

.... for a Carbon Neutral Country by 2050

we will call it ... **Industry 5.0**

In order to create a **circular economy society**, new technologies, innovative industrial processes and different markets should be developed to seize the opportunity that the Circular Bio-Economy paradigm provides. A strong **interconnection among education providers**, producers, workers, citizens, researchers and innovators should be supported and facilitated

Education, training, and communication are crucial for the future of bioeconomy



Education and training

Education is a main pillar of the EU Bioeconomy Strategy

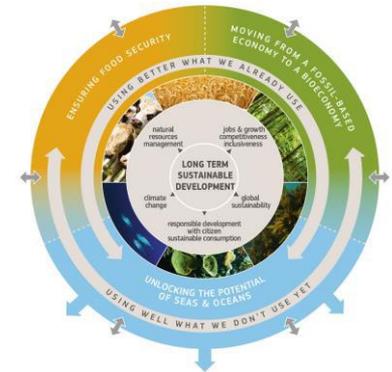
EU Updated Bioeconomy Strategy (2018)

A sustainable Bioeconomy for Europe: strengthening the connection between economy, society and the environment:

..... new and emerging bioeconomy approaches and new value chains will need new education and skills (Action 2.4).

.....Enhance the knowledge on the bioeconomy, including on biodiversity and ecosystems to deploy it within safe ecological limits, and make it accessible through the Knowledge Centre for

Bioeconomy





Education and training

Education, and training are crucial for the future of bioeconomy

Greening the economy: The role of education for sustainable development in technical education and vocational training

United Nations Economic Commission for Europe - **Strategy for Education for Sustainable Development, September 2011**



The transition to a more 'green' and environmentally sustainable economy requires **education and training systems** to support the overall process.

The role of vocational education in enabling the transition as part of the **European Green Deal**, the **United Nations' Sustainable Development Goals (SDGs)** and **country targets of net-zero carbon emissions.**

15 APR 2021



Italian Recovery and Resilience Plan

MISSION 4. EDUCATION AND RESEARCH

M4, C1 - ENHANCEMENT OF THE OFFER OF EDUCATION SERVICES: FROM KINDERGARTENS TO UNIVERSITIES

Mission 4 aims to strengthen the conditions for the development of an economy with a high intensity of knowledge, competitiveness and resilience, **starting from the recognition of the criticalities of the Italian education, training and research system.**

Human capital infrastructures: first point, the contamination of knowledge

«**Contamination of knowledge is fundamental**, and it is especially so in the training courses of the new generations. In other countries there is a diversification of addresses and individual subjects can be chosen, because each individual is different and may have different needs. That is, the student can shape his own education following his character and his abilities. All this is very far from the **typical rigidity of the Italian school**, today to be revisited and overcome.»



Education and training

In order to create a circular economy society, **we need a new kind of expertise**, and a general change in attitudes and operating methods.

Professionals, experts and decision-makers, both now and in the future, will play a decisive role in building a new future.

New technologies, innovative industrial processes and different markets should be developed to seize the opportunity that the Circular Economy paradigm provides.

Duty of Academia is training new professional profiles with technical and economic expertise (re-design of biotechnological processes, preservation and use of renewable natural resources, zero waste solutions) **which will be able to work within the bio-based goods and services industry**

Italian Academia position

Closing the technological gap by promoting **networking between Academy and Industry (participating to Technological Clusters)**

- **26 Italian Universities** are members of the **Italian Technology Agrifood Cluster CL.A.N.**, which has the objective of promoting sustainable economic growth, based on research and innovation in the industry and acting as partner for Italian and European Institutions.

Italian Technology Agrifood Cluster



- **28 Italian Universities** are members of the **Italian Technology Cluster for “Circular Bioeconomy” SPRING** – *Sustainable Processes and Resources for Innovation and National Growth*, which has the objective of triggering the development of biobased industries in Italy, through a holistic approach to innovation, aimed at revitalising Italian chemistry in the name of environmental, social and economic sustainability.

Italian Technology Cluster for Circular Bioeconomy



- **20 Italian Universities** are members of the **Italian Technology Cluster of “Blue Italian Growth” BIG** – which has the objective of boosting innovation and sustainable growth in the marine and maritime sectors.

Italian Technology Cluster Blue Italian Growth





Italian Academia position: Biotechnology Courses in Italy

 **BSc**

 **BSc & MSc**



Ref:



Green and White Biotechnology MSc courses in Italy

● Agro-industrial Biotechnology

○ Industrial Biotechnology



Ref:





The University of Napoli Federico II

The oldest state university of the western world (*generalis lictera* issued by Frederick II Hohenstaufen, King of Sicily and Head of the Roman Empire, June 5th 1224.), **provides specific courses (Bachelor, Master and PhD) to train new professionals profiles to work within the bio-based goods and services industry.**

Bachelor

Biomolecular and Industrial Biotechnology (three years BS course)

Master degree

Molecular and Industrial Biotechnology (two years MS course)
Agro-Environmental and Food Biotechnology (two years MS course)

PhD course

Industrial Biotechnology (three PhD years course)

2nd level Master course

BIOCIRCE – Bioeconomy in the Circular Economy (one year Master course)
in collaboration with: **Universities of: Milano Bicocca, Torino and Bologna;** and with **Intesa San Paolo, Novamont, GFBiochemicals, Lodi Science Park, Cluster SPRING, Cluster CLAN**

Master degree

Industrial Chemistry for Circular Bioeconomy (two years MS course) in collaboration with **Politecnico di Torino**



UNIVERSITÀ DEGLI STUDI DI NAPOLI
FEDERICO II





Bioeconomy in the Circular Economy - BIOCIRCE

2017

The first European Master in Bioeconomy in the Circular Economy

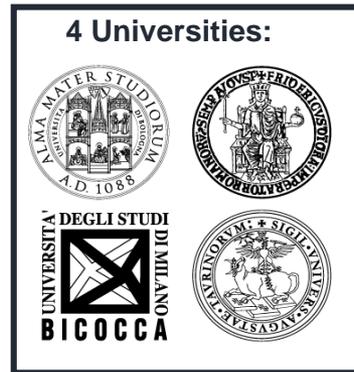


This Master's program offers an extensive training program for **professionals interested in working within the bio-based goods and services industry.**

An interdisciplinary program jointly offered by **4 Universities** University of Milano-Bicocca, University of Naples Federico II, (University of Bologna, and University of Turin), by **4 non-academic partners** (Intesa Sanpaolo, Novamont SpA, GFBiochemicals SpA, and PTP Science Park di Lodi), and **2 Technological Cluster** (SPRING, the Italian Circular Bioeconomy Cluster and CLAN, the Italian Agrifood Cluster) this MS degree program provides skills and expertise necessary to deal with the full range of issues the complex field of Circular Bioeconomy.

Bioeconomy in the Circular Economy – BIOCIRCE

Coordinating Committee: www.masterbiocirce.com



- **Giovanni Sannia**, University of Napoli Federico II, President
- **Danilo Porro**, University of Milano-Bicocca
- **Patrizia Brigidi**, University of Bologna
- **Giovanna Cristina Varese**, University of Torino
- **Andrea Di Lemma**, PTP Science Park
- **Massimiliano Tellini**, Intesa Sanpaolo Spa
- **Giulia Gregori**, Novamont Spa
- **Pasquale Granata**, GFBiochemicals Italy Spa
- **Lucia Gardossi**, CLUSTER SPRING and University of Trieste
- **Michele Pisante**, CLUSTER CLAN and University of Teramo



The program welcomes students from different backgrounds:

- **Graduate scientists** who want to pursue a career outside the lab;
- **Social and/or business graduates** who want to develop their interests in life science innovation;
- **People already working in biotechnology** related fields.

The program includes **four compulsory modules** (5 Credits each) given by the four participating Universities (modules cover relevant scientific topics as well as economic and legal issues) and a **6- months stage** in one company or institution.

Application Requirements:

The selection is based on:

- Evaluation of *Curriculum Vitae et Studiorum*
- Evaluation of any relevant title and certification
- A cover letter outlining applicant's goals and objectives



Aim of the Master:

Studying the entire **value chain for bio-based products** giving to professionals the opportunity to deal with the **environmental, social and economic dimensions of the bio-economy** from a micro and a macro level perspective, including innovation, institutions and policies

The program includes **four compulsory modules** (5 Credits each) given by the four participating Universities. Each module envisages teaching on scientific topics by staff members of the participating Universities, whilst Economic and regulatory aspects, as well as specific case studies, are covered by members of participating companies and associations.

Students are required to attend **4 weeks full-time lessons**, each one taught in a different University, and a **6-months stage in one company or institution**.

Italiadecide prize

The master BIOCIRCE received, on February the 12th 2018, at the Italian Parliament, from the President of the Italian Republic, the "Italiadecide" (Italy-decides) prize for teaching innovation.

The price has been awarded to the initiative of four Italian Universities from North to South (University of Torino, University of Milano Bicocca, University of Bologna and University of Napoli Federico II), with the support of three of the main Italian bioeconomy players (Novamont, GFBiochemicals and Science Park of Lodi) and the Italian leading banking Group Intesa Sanpaolo, which is the only financial global partner of the Ellen McArthur Foundation.



Bioeconomy in the Circular Economy - BIOCIRCE



✓ BIOCIRCE signed, on **October the 4th 2019** a Memorandum of Understanding with the **Irish Bioeconomy Foundation**

BIOECONOMY IRELAND





✓ In **2020** BIOCIRCE established an agreement with The **Raul Gardini Foundation** to fund annual scholarships for the most deserving students of the Master.

The Raul Gardini Foundation (<https://fondazioneraulgardini.org/>), promotes research and development of green chemistry and bioeconomy, educates in environmental sustainability, and promotes the scientific and cultural training of young people.

Raul Gardini (1933-1993), an entrepreneur, pioneer and reference figure for the Bioeconomy worldwide.

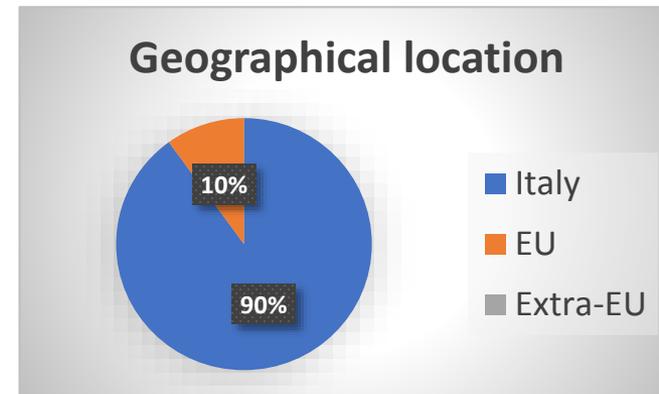
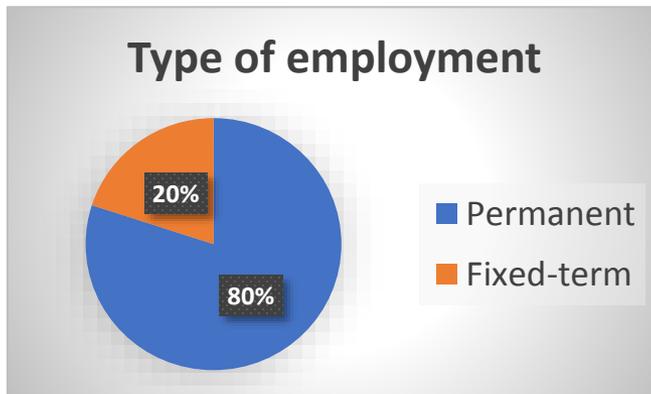
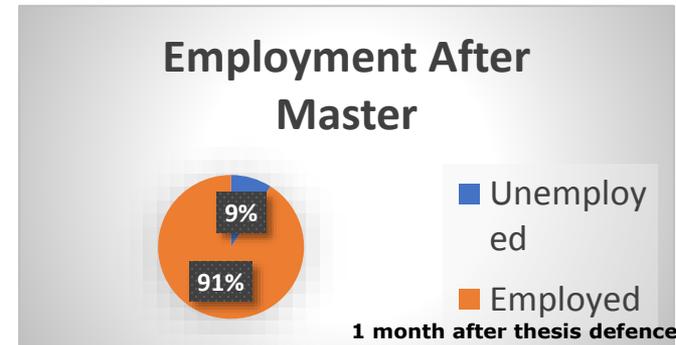
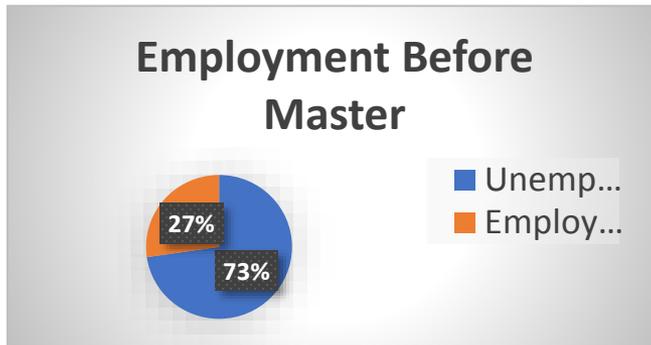


✓ BIOCIRCE signed, on **May 2021** a Memorandum of Understanding with the **Virginia Polytechnic Institute and State University** (Blacksburg, VI, USA)





A survey of students graduated in the first three editions revealed that:



BioCirce, the first European
[Master in Bioeconomy in the Circular economy.](#)

**CALL IS OPEN FOR THE FIFTH EDITION OF THE
MASTER!**

<https://www.unimib.it/didattica/master-universitari/area-scientifica-aa-202122/bioeconomy-circular-economy-biocirce>

Get in touch:



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[it](http://unimib.it)



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LINKEDIN

[masterbiocirce](https://www.linkedin.com/company/masterbiocirce)



Master BIOCIRCE is an innovative training model for its:

- **flexibility in defining training programs**
- **direct interaction UNIVERSITIES-PRIVATE INSTITUTIONS-COMPANIES**
- **Alternation of *ex cattedra* teaching and "on the job" training**

