

Biology is reshaping humanity. Want to guide the journey?

Dual MSc in Synthetic Biology
University of Thessaly × McGill University

The Dual MSc in Synthetic Biology by the **University of Thessaly** & **McGill University** is a high-impact, research-driven program designed for top-performing life science and engineering graduates who want elite training at the intersection of biology, engineering, and data - with exposure to both the European and North American innovation ecosystems.



UNIVERSITY OF
THESSALY



McGill
UNIVERSITY

At the heart of Thessaly

- Where local challenges reflect global ones
- Where biological innovation is tested against real communities and environments
- Where solutions are designed to travel

Application • Responsibility • Meaning



Program Identity

The Dual MSc in Synthetic Biology is a **high-impact, research-driven** program designed for top-performing life science and engineering graduates.

You will train at the intersection of:

- Biology
- Engineering
- Data

With structured exposure to both the **European and North American innovation ecosystems.**

The Ideal Student

This program is for students who:

- Are driven by curiosity and purpose - not just grades
- Are comfortable in fast-moving, interdisciplinary fields
- Want to work at the edge of science and society
- See biology as a responsibility
- Want their work to matter in the real world



What You Graduate With

- Strong Synthetic Biology technical depth
- International academic credibility
- Research experience in two countries
- Clear pathways to PhD, R&D, biotech and healthtech careers

Our Strategic Differentiation

1. Geographic arbitrage (prestige + affordability)
2. Two innovation & research ecosystems (Montreal biotech cluster + EU)
3. Flexible path architecture
4. Elite + accessible hybrid model
5. Cultural and scientific positioning («SynBio with responsibility»)
6. Pipeline for joint PhDs & long-term institutional connectivity



Why Synthetic Biology

Synthetic Biology is a rapidly growing interdisciplinary field focused on designing and engineering biological systems for beneficial purposes.

It is grounded in:

- Standardization
- Abstraction
- Modularity
- The Design-Build-Test-Learn (DBTL) engineering cycle
- Quantification and modeling
- Responsible Innovation

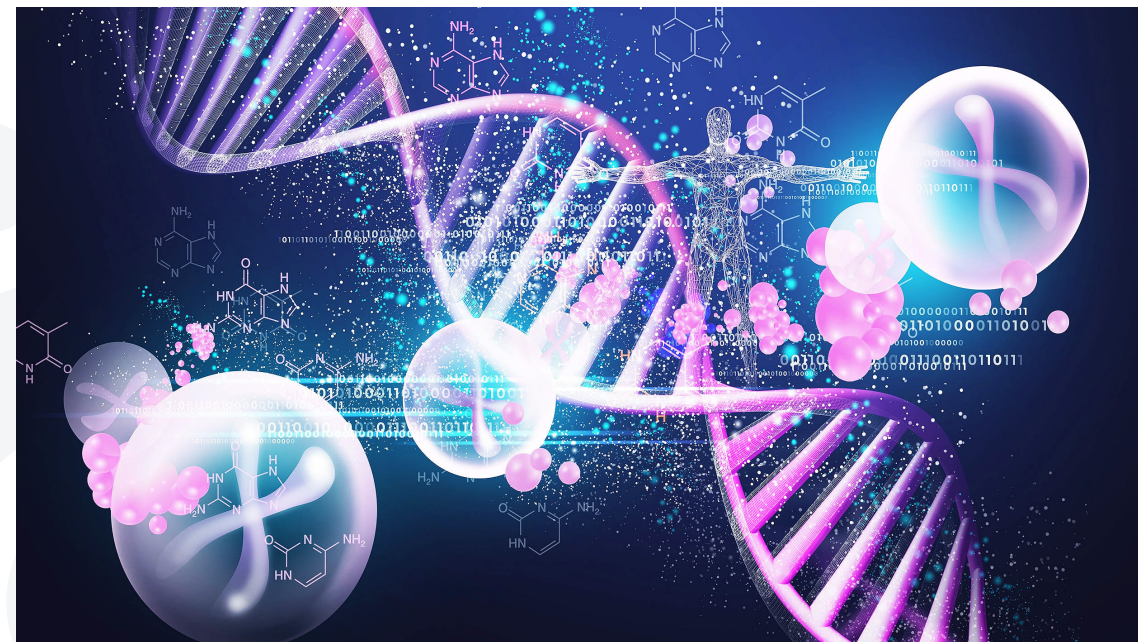
Applications include:

- Programmable medicine
- Sustainable biomanufacturing
- Next-generation food systems
- Engineering living materials
- Environmental and climate solutions

The field is projected to generate a socioeconomic impact of **\$3.6 trillion annually by 2030-2040** and is a strategic priority in the EU alongside AI and Quantum Science.

This is a field where engineering meets life sciences - and where innovation has global consequence.

The proposed program is necessary due to the highly interdisciplinary nature of the field, which targets topics ranging from engineering, computation, health, life sciences, biotechnology, plant sciences, to ethics.





Why This Program

A True Dual Degree

You follow a single, integrated and coordinated study program and graduate with:

- MSc in Synthetic Biology (University of Thessaly - 120 ECTS)
- MSc in Biological and Biomedical Engineering: Synthetic Biology (Thesis) (McGill University - 45 credits)

The program includes a co-supervised research thesis conducted over two academic semesters

Two Innovation Ecosystems

- European research and regulatory landscape
- North American biotech and biomedical ecosystem

Research Excellence

The program leverages McGill's research strength and the University of Thessaly's strategic positioning in applied biosciences.

Small Cohort. High Mentorship.

15-20 students, enabling close supervision, active collaboration, and sustained engagement in research.

Strategic Differentiation

- Geographic arbitrage (prestige + affordability)
- Structured academic mobility
- Flexible path architecture
- Pipeline for joint PhDs and long-term institutional connectivity

The University of Thessaly's Vision

Within its strategic drive for internationalization and academic excellence, the University of Thessaly has secured approval for three joint master's programs with globally leading institutions as part of the «Internationalization of Higher Education Services» initiative under Greece's Recovery and Resilience Fund «Greece 2.0»; among these partnerships is a pioneering collaboration with McGill University in Canada for a joint Masters in Synthetic Biology.

This collaboration reflects the University's commitment to expanding its global academic footprint, fostering cutting-edge interdisciplinary education, and aligning its offerings with international research and innovation standards - positioning a regional Greek university as an equal partner on the world stage while enhancing opportunities for students, faculty exchange, and research impact in one of the fastest-growing scientific fields.





Program Structure

Duration

2 academic years
4 semesters

Coursework + MSc Dissertation

Year 1 – Foundations & Engineering

- Foundations of Synthetic Biology
- Genome & DNA Engineering
- Experimental Design Lab
- Responsible Innovation & Biosafety
- Computational / Quantitative SynBio

Semester 2 expands into:

- Protein & RNA Engineering
- Metabolic & Bioprocess Engineering
- Modeling & Machine Learning
- A large pool of electives for students to design their own concentration (e.g., green/blue/white/yellow biotech, computational protein design, metagenomics, RNA therapeutics, SynComs, scale-up, etc.)

Year 2 – Research Thesis (60 ECTS)

A substantial research project within the integrated academic pathway. Successful completion of the coordinated study pathway is required for the award of both degrees.





Laboratory & Research Environment

A modern biotechnology laboratory is more than equipment – it is the technological core of scientific education and innovation.

Students have access to:

- Modern molecular biology and biotechnology facilities
- Automated, high throughput scalable experimental platforms
- Bioprocessing systems for microbial engineering
- Integrated omics and computational analysis environments

Training includes:

- Precision molecular and genetic engineering techniques
- Microbial system design and optimization
- Rigorous experimental design and data interpretation
- Bioinformatics and data-driven biological research

The laboratory environment mirrors leading international research centers and biotechnology industries – ensuring graduates are academically prepared and technologically fluent.





Admissions & Practical Information

Admission Requirements

Eligible backgrounds include:

- Biological sciences
- Engineering
- Physical and Computational Sciences
- Medicine and Health related disciplines

English proficiency required. Minimum B2 (for non-native speakers).

Evaluation Criteria

- Academic standing
- Relevant coursework
- Undergraduate thesis
- Publications / conference participation
- Research activity
- Recommendation letters
- Interview performance

Interview conducted in English. The interview evaluates the applicant's ability to critically apply biological knowledge to research-oriented problems.

Tuition:	EU citizens	Non-EU citizens
	€3,500 per year	€7,000 per year

Estimated Cost of Living:
Approximately €850 per month

Application Deadline:
Expressions of interest will open in June 2026

Applications are submitted online.





Contact & Next Steps



UNIVERSITY OF
THESSALY



McGill
UNIVERSITY

Biochemistry & Biotechnology Department
University of Thessaly
Biopolis Campus, Larissa, Greece

Email: g-bio@bio.uth.gr
Telephone: +30 2410 565271-72-73
IT Support: ithelp@uth.gr

Program Coordinators:

- Professor Konstantinos Mathiopoulos (U Thessaly)
- Professor Georgios Mitsis (McGill U)



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