

Internal Regulation of the Postgraduate Program Synthetic Biology



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**RULES of OPERATION
OF THE POSTGRADUATE STUDIES PROGRAM
"SYNTHETIC BIOLOGY"
of the DEPARTMENT of BIOCHEMISTRY and BIOTECHNOLOGY,
UNIVERSITY OF THESSALY
and
the BIOLOGICAL AND BIOMEDICAL ENGINEERING PROGRAM of the MCGILL
UNIVERSITY**

INTRODUCTION

The English-taught postgraduate studies program entitled “Synthetic Biology” (“Master of Science in Synthetic Biology”) of the Department of Biochemistry and Biotechnology of the University of Thessaly operates in accordance with the provisions of Law 4957/2022, as these have been formed and are in force.

The Internal Regulation of the postgraduate studies program “Synthetic Biology” follows the General Regulation of the Postgraduate Studies of the University of Thessaly and is initially approved by the Assembly of the Department of Biochemistry and Biotechnology of the University of Thessaly, and subsequently by the Senate of the University of Thessaly, following the approval of the Postgraduate Studies Committee of the University of Thessaly. Then, it is published in the Government Gazette, posted on the Department’s website, notified to the Ministry of Education and Religious Affairs, and enters into force.

The Internal Regulation may be amended and periodically revised through continuous improvements and updates, without losing its basic structure and content, by decision of the Assembly of the Department of Biochemistry and Biotechnology of the University of Thessaly, following a relevant proposal by the Director of the Postgraduate Program and approval by the Senate.

Article 1. General Provisions

The Department of Biochemistry and Biotechnology of University of Thessaly will organize and operate a Dual Master of Science (DMSc) in Synthetic Biology from the academic year 2026-2027, in accordance with the provisions of Law 4957/2022 (A' 141).

The DMSc is implemented in collaboration with the McGill University in Canada, with a blended education system, in accordance with the current institutional framework and the quality standards of Hellenic Authority for Higher Education (HAHE).

Article 2. Subject – Purpose

1. The Dual Master of Science (DMSc) in “Synthetic Biology” is a specialized study program, designed to educate a new generation of scientists capable of integrating molecular biology, computational design, systems biology and engineering principles to address complex scientific and societal challenges. Core subjects include genetic circuit design, genomic engineering, biomolecular modeling, biomanufacturing, machine learning in the Biological Sciences, bioethics and responsible research and innovation. Through advanced courses, practical laboratory training and international collaboration, the program equips graduates with the interdisciplinary expertise required for cutting-edge research and high-impact careers in academia, industry and the bioeconomy.
2. Learning outcomes and qualifications. Upon completion of the DMSc, graduates will be able to:
 - Explain at an advanced level the molecular, genetic, biochemical and mechanical principles that govern the design and operation of synthetic biological systems
 - Analyze the structure, dynamics and modular organization of biological networks, metabolic pathways and genetic circuits
 - Understand and critically evaluate modern genome editing and engineering technologies, as well as automated biology platforms
 - Evaluate computational, bioinformatics and machine learning approaches used for the design, modeling and optimization of biological systems
 - Design and implement approaches to the construction of synthetic genetic circuits, metabolic networks and engineered biological systems
 - Apply experimental techniques in molecular biology, genome engineering and automated high-throughput platforms for the development of new biotechnological applications
 - Analyze and interpret data generated by high-throughput technologies, such as next-generation sequencing and multi-omic approaches
 - Use computational biology and machine learning tools to analyze, simulate and optimize synthetic biological systems
 - Design and evaluate applications of synthetic biology in biomedicine, industrial biotechnology, agriculture and the environment
 - Apply the Design-Build-Test-Learn (DBTL) principle to the development and optimization of synthetic biological systems
 - Design and independently conduct research in synthetic biology, applying modern experimental, computational and automated methodologies
 - Critically evaluate the scientific literature and incorporate new research findings into the design of biological systems
 - Receive evidence-based decisions when addressing complex and unpredictable research or technological challenges
 - Follow the principles of responsible innovation, bioethics, biosafety and biosecurity in the research and development of biotechnological applications
 - Collaborate effectively in interdisciplinary teams that combine biology, engineering, computer science and chemistry

- Communicate effectively scientific results and technological applications to both specialized and non-specialized audiences.
3. The achievement of the learning outcomes of the DMSc is grounded on pedagogically established methods of face-to-face, synchronous and asynchronous distance learning, utilizing digital tools and educational platforms of the two Universities.

Article 3. Postgraduate Degrees

The Postgraduate Studies Program in Synthetic Biology awards two distinct (Dual) Master of Science in Synthetic Biology degrees:

- University of Thessaly awards the Master of Science in Synthetic Biology (Thesis), and
- McGill University awards the Master of Science in Biological and Biomedical Engineering: Synthetic Biology (Thesis).

Article 4. Governance and Administration

1. The bodies responsible for the establishment, organization and operation of the DMSc in accordance with the Law No. 4957/2022 are:
 - a) the Senate of the University of Thessaly,
 - b) the Graduate Study Program Committee (GPC),
 - c) the Coordinating Committee (CC), and
 - d) the Director of the DMSc.

2. The responsibilities of the DMSc bodies are as follows:
 - A) The Senate is responsible for matters of academic, administrative and organizational nature of the DMSc. The Senate has the following responsibilities regarding the Postgraduate Programs, as well as any others provided for by the internal regulations of the institution, provided that these have not been specifically assigned by law to other bodies of the institution:
 1. approves or amends the Decision to Establish the Postgraduate Study Program as well as the content of the program,
 2. approves or amends the Rules of Operation of the Postgraduate Study Program
 3. approves the extension of the duration of the Postgraduate Study Program
 4. approves the collaboration with domestic or foreign institutions or research centers - institutes and technological bodies of article 13A of law 4310/2014 (Government Gazette A' 258), for the organization of inter-institutional Postgraduate Study Programs, as well as the protocols for academic or research cooperation

5. decides to abolish the Postgraduate Study Program.

B) The Graduate Study Program Committee of the DMSc consists of nine (9) faculty members of the University of Thessaly and Professors of the McGill University and is formed by decision of the Senate of the University of Thessaly, which undertakes the administrative support of the Postgraduate Study Program, following the recommendation from the Assembly of the Department of Biochemistry and Biotechnology of the University of Thessaly and of the Senate of McGill University (paragraph 5, article 81, Law 4957/2022).

The GPC undertakes the administrative support of the DMSc and it is responsible for the organization, administration and management of the DMSc and in particular:

1. establishes Committees for the evaluation of applications from candidate students and approves their admission in the DMSc,
2. assigns the teaching load to the DMSc instructors,
3. proposes to the Senate the amendment of the Decision to Establish the DMSc, as well as for the extension of its duration
4. appoints examination committees for the defense of postgraduate master's theses and appoints the supervisors for each thesis,
5. ascertains the successful completion of the studies, in order to award the DMSc title
6. approves the DMSc annual academic and financial report, following the recommendation from the Coordinating Committee (CC), and notifies it to the Assembly of the Department of Biochemistry and Biotechnology of the University of Thessaly and to the McGill University
7. appoints the Academic Advisors Professors for each postgraduate student.

By decision of the GPC the responsibilities 1 and 4 may be transferred to the CC. Also, specific responsibilities of the GPC may be transferred to the CC for the more effective operation, following the issuance of a relevant decision on the transfer of responsibilities.

C) By decision of the GPC, a Coordinating Committee (CC) is established, with the participation of the Director of the DMSc and four (4) of the members of the GPS. The participation of the Director to the CC is mandatory. None of the CC members is entitled to remuneration or any compensation for fulfilling the responsibilities assigned to them and the duties arising from these responsibilities.

The CC is responsible for monitoring and coordinating the operation of the program and in particular:

1. prepares the initial annual budget of the DMSc and its amendments, and forwards it for approval to the Research Committee of the Special Research Funds Account of the University of Thessaly,
2. prepares the report of the program and recommends its approval to the GPC of the DMSc,
3. approves the implementation of expenses of the DMSc,
4. approves the granting of scholarships, remunerative or not, in accordance with what is defined in the Decision to Establish the DMSc and the Rules of Postgraduate Studies,
5. recommends to the GPC the distribution of the teaching workload, as well as the assignment of teaching workload to the instructors of the DMSc,
6. recommends to the GPC the invitation of visiting Professors and guest lecturers to cover the teaching needs of the DMSc,

7. prepares a plan for the amendment of the curriculum, which it submits to the GPC,
8. recommends to the GPC, the redistribution of courses between academic semesters, as well as issues related to the qualitative improvement of the curriculum.

The CC meets under the chairmanship of the Director of the DMSc at least once a month or whenever deemed necessary, with a set agenda. The meeting may be held via videoconference. The CC is considered to be in quorum when at least five (5) of its members are present. A member of the DMSc Secretariat records the minutes of the CC meetings, which are signed by all members present at the meeting. In the event of a discussion of a special topic, the study of which has been assigned to a DMSc instructor who is not a member of the GPC or the CC, then, during the discussion of the topic, the instructor is invited by the GPC or the CC to participate in the meeting of the corresponding body, as a rapporteur, without the right to vote.

D) The Director of the DMSc is appointed by decision of the GPC, from among its members, who comes from the faculty members of the Department of Biochemistry and Biotechnology, by priority at the rank of Professor or Associate Professor, for a two-year term, with the possibility of renewal without limitation.

The Director of the DMSc has the following responsibilities:

1. chairs the GPC and the CC of the DMSc, draws up the agenda and convenes the meetings,
2. presents issues concerning the organization and operation of the DMSc to the GPC
3. presents to the CC and the other bodies of the DMSc and of the University issues related to the effective operation of the DMSc,
4. is the Scientific Director of the DMSc in accordance with article 234 of Law 4957/2022 and exercises the corresponding responsibilities,
5. monitors the implementation of the decisions of the DMSc bodies and the Regulation of Operation, as well as the execution of the DMSc budget,
6. exercises any other responsibility, which is defined in the Decision to Establish the DMSc.

The Director of the DMSc is not entitled to remuneration or any compensation for the execution of the responsibilities assigned to him/her and related to the execution of his duties.

By decision of the Research Committee, a Deputy Scientific Director of the project/programme may be appointed, if deemed necessary, following a relevant decision of the General Assembly.

The administrative and secretarial support for the educational activities of the DMSc in Synthetic Biology, which takes place at the University of Thessaly, is undertaken by the Secretariat of the DMSc.

The administrative and secretarial support for the educational activities of the DMSc, which take place at McGill University, is undertaken by the Secretariat of the Graduate Program in Biological and Biomedical Engineering of the McGill University.

Administrative employees who support the DMSc beyond of their working hours at the University, as well as those who have been assigned work related to the DMSc, may be remunerated for the services they provide.

Article 5. Categories and number of applicants

1. Graduates of Faculties of Health Sciences, Natural Sciences, Agricultural Sciences, Engineering and other Departments of domestic universities or recognized equivalent institutions abroad with a relevant subject area, with a degree grade higher than 7.5 or equivalent, may be admitted to the Dual Master's program (DMSc).
2. The maximum total number of students admitted to the University of Thessaly is set at twenty-five (25).

Article 6. Admission procedure

1. The selection of students is carried out in accordance with the applicable legislation, the Regulation of Postgraduate and Doctoral Studies of the University of Thessaly and the provisions of this Regulation.
2. By decision of the Graduate Program Committee (GPC), every November a call for the admission of postgraduate students to the DMSc is published and posted on the website of the DMSc, of the University of Thessaly. The call includes all relevant details (dates and place of submission of the application, necessary supporting documents that must accompany it, etc.). The applications, together with the necessary supporting documents, are submitted electronically within a deadline specified in the call for applications (PHASE I).
3. This deadline may be extended by decision of the GPC (PHASE II).
4. The required supporting documents submitted by each candidate are as follows:
 - Application for candidacy
 - Copy of degree or certificate of completion of undergraduate studies
 - Transcript of records which indicates the current average grade point average. Final-year students must submit a certificate of graduation or their degree by their enrollment date in the DMSc.
 - Two letters of recommendation from university faculty members and/or employer(s)
 - Proof of excellent English language proficiency as certified based on one of the following:
 - a degree or postgraduate or doctoral degree from a foreign university
 - Test of English as a Foreign Language (TOEFL) score of at least 100 for the online exam, with a minimum score of 20 in each section, or a minimum score of 600 for the paper-based exam
 - International English Language Testing System (IELTS) score of at least 7.0
 - The above exams must have been successfully taken within the last two years prior to the application to the DMSc.
 - Clear photocopy of both sides of the ID card
 - A recent ID-type photograph

- A Solemn Declaration (via the gov.gr platform, or with certification of the authenticity of the signature at a Citizens' Service Centre – KEP), in which the candidate declares that the supporting documents submitted and included in his/her file are true.
5. The GPC may, by its decision, specify additional supporting document(s). The exact procedure is described in the call.
 6. Candidates who hold an undergraduate degree from foreign academic institutions are requested to submit their degree in order to verify whether the foreign academic institution is included in the Greek National Register of Recognized Foreign Academic Institutions, as well as the Greek National Register of Types of Degrees of Recognized Foreign Academic Institutions. Foreign degrees are submitted and accepted in accordance with the applicable provisions. It is noted that if the place of study or part of the studies are confirmed as the Greek territory, the degree is not recognized, unless the part of the studies completed in the Greek territory is in a public university.
 7. The Secretariat of DMSc check the necessary formal supporting documents submitted by the candidate, registers the application and forwards it to the Candidate Selection Committee.
 8. The selection of the admitted candidates is carried out by a committee of faculty members (Selection Committee), which is established by decision of the GPC, following a recommendation by the Director, and in which the Director of the Program participates.
 9. The selection criteria are made known to the candidates with the announcement of the DMSc and are indicatively the following:

	SELECTION CRITERIA	points %
1	Bachelor's/Diploma with a minimum grade of 7.5	35%
2	Relevant research activity (e.g. publications in scientific journals, announcements in scientific conferences, participation in research projects)	15%
3	Letters of recommendation	10%
4	Interview	40%
	TOTAL	100%

10. The selection process is carried out by the Selection Committee, which:
 - a) Prepares a complete list of the applicants
 - b) Rejects candidates who do not meet the selection criteria
 - c) Invites all candidates to an interview. The interview is conducted by the members of the Selection Committee
 - d) Evaluates the candidates and submits its proposal for final approval to the General Assembly.
11. The final list of successful candidates is validated by the GPC.
12. In the event of a tie in scores, by decision of the Graduate Program Committee, all tied candidates are enrolled as supernumerary. The enrollment of candidates in the DMSc is completed upon submission to the Secretariat of all the required supporting documents. In the event that one or

more students do not enroll, the wait-listed candidates, if any, will be called, based on their order on the approved ranking list, to enroll in the DMSc.

Article 7. Duration of Studies - Terms of Study

1. The duration of studies for the award of the Postgraduate Diploma is two (2) academic years.
2. The attendance to the courses in the DMSc is carried out in person or through synchronous online sessions and asynchronous organized activities on the educational platform.
3. The participation of the students is documented through physical and electronic attendance records, recording of participation in synchronous sessions and active involvement in asynchronous activities.
4. There is a possibility of extending the studies up to two (2) academic semesters, following a justified request from the student, and approval by the GPC. Thus, the maximum permitted time to complete studies is set at six (6) academic semesters.
5. Students who have not exceeded the maximum study time, following a justified application to the GPC, may suspend their studies for a period not exceeding two consecutive semesters. Suspension of studies is granted for serious professional, family, personal or health reasons.
6. During the suspension of studies, the student status is revoked, and all the relevant rights of the student are suspended. Student status is automatically re-acquired after the suspension ends. The period of suspension of student status is not counted towards the maximum duration of the study.
7. The continuation of studies is based on the curriculum, as it is in force at the time of resumption of the studies and not at the time of initial registration. The GPC may, by its specifically justified decision, settle any issue arising from the suspension of studies.
8. There is no provision for part-time study.

Article 8. Tuition fees and Scholarships

4.1 Tuition fees

1. For their studies in the DMSc, postgraduate students who do not fall under Article 86 of Law 4957/2022 and are European Union citizens shall pay tuition fees amounting to the sum of €3,500 per academic year. Postgraduate students who are citizens of non-European Union countries shall pay tuition fees amounting to the sum of €7,000 per academic year.
2. The fee is paid at the beginning of each semester.

3. Postgraduate students are required, after being notified of their acceptance to the postgraduate program, to pay the amount of €500 as a pre-registration fee to secure the position offered to them and the remaining amount of the first installment must be paid two (2) weeks before the start of the courses. In case of non-attendance at the DMSc, the advance payment is not refunded.
4. In the event of withdrawal or expelling of the postgraduate student from the program, the paid tuition fees are not refunded. In case of non-payment of the tuition fee, a certificate of completion of studies will not be issued.
5. Candidates who are accepted conditionally (pending certificate of completion of studies, proof of foreign language, etc.) pay the pre-registration fee and in case of failure to present the above supporting documents, the pre-registration fee is not refunded.
6. Any adjustment of the tuition fees may only be made for a new Cycle of Studies by decision of the GPC following a recommendation by the CC and is subjected to the approval of the Senate in accordance with the applicable provisions.

4.2 Exemption from tuition fees

1. Students registered in the DMSc, who meet the economic or social criteria and the conditions of excellence during the undergraduate studies, in accordance with applicable legislation, are exempt from tuition fees. The possibility of exemption from the obligation to pay tuition fees is provided exclusively for studying in one (1) MSc organized by a hellenic university. The total number of students studying free of charge may not exceed the number corresponding to thirty percent (30%) of all registered students per academic year.
2. Applications for exemption from tuition fees are submitted after the completion of the student admission process to the DMSc and within a period to be determined by the DMSc itself.
3. Those who receive a scholarship from another source, or they are citizens of non-EU countries, are not entitled to exemption from fees.
4. The examination of the criteria for exemption from tuition fees is carried out by the GPC and a reasoned decision is issued for the acceptance or rejection of the application.
5. Since the applicable legislation sets an age criterion, it is recommended, for reasons of good administration and equal treatment, that the date of birth of students be considered to be the 31 December of the year of birth.

4.3 Scholarships

By decision of the competent bodies, the DMSc grants excellence scholarships based on academic criteria. Scholarships are awarded to students who pass the exams held at the end of each semester, provided that they pay tuition fees. The amount of the scholarships will be determined each academic year by the CC depending on the income of the program. Scholarships are not awarded if the postgraduate student is already receiving a scholarship from another source. Scholarships are not awarded to students who have been admitted to the postgraduate program without the obligation to pay tuition fees.

Article 9. Course Program

1. The MSc begins on September 1st of each academic year.
2. A total of one hundred and twenty (120) credit units of the European Credit Transfer System (ECTS) and forty-five (45) McGill credits is required to obtain the DMSc.
3. During their studies, postgraduate students are obliged to attend and successfully pass the offered courses, conduct research, write scientific papers, etc., as well as to prepare a thesis.
4. The teaching of the courses is carried out through a combination of face-to-face, synchronous and asynchronous distance learning. Synchronous distance learning is implemented through scheduled online sessions in real time. Asynchronous distance learning is implemented through an integrated technological environment (educational platform), where organized learning activities are carried out through interaction between students and study of educational material.
5. The percentage of ECTS implemented through asynchronous distance learning methods does not exceed 25% of the total ECTS of the DMSc, in accordance with the applicable legal framework.
6. Individual study, the preparation of assignments and the preparation of evaluations are part of the total workload of students (ECTS workload) and do not constitute asynchronous distance learning.
7. The courses are organized in semesters, are held on a weekly basis and are conducted in English. The duration of the courses is determined by the Coordinating Committee and is announced in the timetable.
8. The curriculum of courses offered by the Department of Biochemistry and Biotechnology of the University of Thessaly, as well as the ECTS, is structured as follows:

1st Semester

Course code	Course title	ECTS
SB101	Foundations of Synthetic Biology	7
SB102	Genome and DNA Engineering	8
SB103	Synthetic Biology Experimental Design Lab	4
SB104	Responsible Innovation & Biosafety	4
SB105	Introduction to Computational/ Quantitative Synthetic Biology	7
	TOTAL	30

2nd Semester

Course code	Course title	ECTS
SB201	Protein & RNA Engineering	6

SB202	Metabolic Engineering and Bioprocess	6
SB203	Applied Machine Learning and AI for Synthetic Biology Design	6
	<i>Elective Courses</i>	12
	TOTAL	30

Course code	Elective Course title	ECTS
SBE01	Green Biotechnology	4
SBE02	Blue Biotechnology	4
SBE03	White biotechnology	4
SBE04	Yellow biotechnology	4
SBE05	Plant Metabolic Engineering	4
SBE06	Computational protein design course	4
SBE07	Metagenomics for synbio	4
SBE08	Synthetic RNA therapeutics	4
SBE09	Synthetic Microbial Ecology	4
SBE10	Cell-free Synbio Systems	4
SBE11	From Lab to Industry: Scale-up considerations	4
SBE12	Synthetic Biology in Gene Therapy	4

3rd Semester

Course code	Course title	ECTS
SB301	Co-supervised Thesis	30
	TOTAL	30

4th Semester

Course code	Course title	ECTS
SB302	Co-supervised Thesis	30
	TOTAL	30

This specific curriculum satisfies the requirements for the award of the Postgraduate Diploma in 'Synthetic Biology' by the University of Thessaly

9. **For the award of the Postgraduate Diploma in 'Synthetic Biology' by the McGill University, 45 McGill credits are required.** The curriculum of courses offered by the McGill University, as well as the credits, is structured as follows:

Course code	Course title	McGill credits
BBME-600	Seminars in Biological & Biomedical Engineering	3

BIEN-580	Synthetic Biology	3
BIEN-585	Metabolic Engineering	3
BMDE- 505	Cell and Tissue Engineering	3
BIEN-602	Biomanufacturing of RNA Biologics	3
BINF-511	Bioinformatics for Genomics	3
PHGY- 518	Artificial Cells	3
	Co-supervised Thesis	24
	TOTAL	45

10. The following courses are considered equivalent, and their credits shall be transferred to the students' records between the two universities

Course code	Course title	McGill Credits	Course code	Course title	ECTS
BIEN-580	Synthetic Biology	3	SB101	Foundations of Synthetic Biology	7
BINF511	Bioinformatics for Genomics	3	SB105	Introduction to Computational/ Quantitative Synthetic Biology	7
BIEN585	Metabolic Engineering	3	SB202	Metabolic Engineering and Bioprocess	6

11. The Master's thesis shall be co-designed and co-supervised between the two universities, and the corresponding credits shall be awarded

12. The distribution of courses per semester is made by decision of the GPC, according to the needs of the program and the availability of instructors and may deviate from the above indicative table.

13. Any modification to the curriculum and the reallocation of courses between semesters may be effected by decisions of the competent bodies (CC, GPC and Senate).

14. The academic calendar, as well as the course timetable, are compiled on the basis of the academic calendar of the McGill University under the responsibility of the Director of the DMSc. The course timetable notifies students of the days and hours of instruction for each course.

15. Collaboration with domestic and foreign research and academic institutions, as well as with key stakeholders from the private and public sectors both domestically and abroad, is enabled for the purpose of fulfilling the learning outcomes of the program.

Course Descriptions

SB101 Foundations of Synthetic Biology: This introductory course establishes the conceptual and methodological framework of synthetic biology as an engineering discipline. Students explore fundamental principles such as abstraction hierarchies, standardization of biological parts (e.g., BioBricks), modularity and orthogonality, and the Design-Build-Test-Learn (DBTL) cycle. The course introduces genetic circuits and biological logic, chassis selection and model organisms, as well as the concepts of minimal and synthetic cells. Students are also introduced to design standardization and documentation standards (e.g., SBOL) and to computer-aided design (CAD) tools for designing genetic circuits. Emphasis is placed on quantitative thinking, modeling awareness, and rational systems design, providing the knowledge base for subsequent laboratory, computational, and applied courses in the program.

SB102 Genome and DNA Engineering: This course provides a foundational overview of modern approaches to genome and DNA engineering. It introduces DNA synthesis and assembly technologies, CRISPR-based genome editing, and advanced cloning strategies (Gibson, Golden Gate, MoClo), alongside the principles of replicon and vector design. Students also explore deep sequencing technologies, highlighting their applications in the construction, editing, and analysis of synthetic genomes, gaining practical and conceptual understanding of the tools driving innovation in synthetic biology and genome engineering.

SB103 Synthetic Biology Experimental Design Lab: Students will develop essential hands-on laboratory skills required for synthetic biology. The laboratory exercises include: i) molecular cloning, namely PCR, restriction enzyme digestion, vector utilization, ligation, transformation, selection and screening strategies, as well as cell-free systems for in vitro transcription and translation; ii) cell culture techniques, including biosafety and waste management procedures, culture maintenance, quality control, and transient transformation methods; iii) brightfield/fluorescence microscopy and image analysis, including sample preparation, the use of fluorescent probes, confocal microscopy, and quantitative image analysis methods such as object recognition and data quantification; and iv) training in flow cytometry, including sample preparation, staining protocols, instrument setup, and data analysis using gating strategies.

SB104 Responsible Innovation & Biosafety: This course examines the ethical, biosafety and biosecurity, and governance dimensions of Synthetic Biology. As genome engineering, automated biofoundries, AI-assisted biological design, and high-throughput sequencing accelerate innovation, robust Responsible Research and Innovation (RRI) frameworks are essential. The course introduces biosafety principles, including risk classification, containment strategies, laboratory assessment, environmental release, dual-use research, and DNA synthesis screening/oversight. Students critically analyze the European and international regulatory frameworks governing GMOs, advanced therapies, and environmental applications. Through case studies and structured risk-assessment workshops, they evaluate engineered microbes, gene drives, and AI-designed systems, with emphasis on anticipatory governance, sustainability, stakeholder engagement, and responsible scientific practice.

SB105 Introduction to Computational/Quantitative Synthetic Biology: The course examines the fundamental concepts of Computational and Quantitative Synthetic Biology. It begins with basic

sequence analysis, UNIX/R scripting, and statistical concepts for processing and integrating large-scale data. It covers the main omics approaches (genomics, transcriptomics, proteomics, and metabolomics), from experimental design to evaluation, quality control, and differential analysis. Further topics in Structural Biology are included, covering protein structure prediction and interaction analysis (including protein-ligand, protein-protein, and regulatory interactions). The course concludes with a section on metagenome mining for novel enzymes. Throughout the course, students will also develop practical skills and hands-on experience through multi-layered omics projects.

SB201 Protein & RNA Engineering: This course explores modern strategies in protein and RNA engineering, covering rational protein design, directed evolution, and the de novo construction of novel biomolecules. It introduces RNA-based regulatory systems, including riboswitches, aptamers, and synthetic RNA logic circuits, highlighting their roles in gene control and biosensors. Students acquire a foundational understanding of the technologies used in synthetic biology and RNA biologics, such as DNA assembly, genome editing, and RNA production/purification.

SB202 Metabolic Engineering and Bioprocess: The role of metabolic engineering in the transition from fossil resources to a bio-based society. The design-build-test-learn cycle of metabolic engineering. Design, genetic engineering, and optimization of microbial biocatalysts. Metabolic network analysis, constraint-based metabolic modeling, microbial production of valuable chemicals. General practices of biochemical engineering. Growth models, strain development. Fermentation optimization, scale-up. Synthetic microbial communities and bioprocess optimization, case studies, sustainability analysis (Techno-Economic Analysis and Life Cycle Assessment).

SB203 Applied Machine Learning and AI for Synthetic Biology Design: This module provides comprehensive, hands-on training in machine learning approaches, from foundational concepts to advanced topics tailored to synthetic biology applications. Students develop strong machine learning skills, covering exploratory data analysis, dimensionality reduction, decision trees, and regression models, progressing to advanced AI approaches such as neural networks, deep learning, generative AI, and LLMs. Emphasis is placed on applying data-driven strategies to the optimization of biological sequences, pathway engineering, and whole-system design. The module also addresses emerging regulatory and standardization frameworks for AI in biotechnology, including Open and Sustainable AI. Through interactive coding sessions and a hands-on 'Bring Your Own Data' workshop, participants acquire the skills and experience required to advance AI-assisted innovation in synthetic biology.

SBE01 Green Biotechnology: This elective course provides advanced theoretical training in plant biotechnology. It integrates plant molecular biology, genomics, epigenetics, functional genomics, and bioinformatics with emerging approaches such as genome editing, synthetic biology, and systems biology for crop improvement and sustainable agriculture applications. Plant transformation systems and the use of plants as bioreactors for the production of high-value-added products are studied. Particular attention is given to climate-resilient crops and innovations supporting food security. In addition, the regulatory frameworks, biosafety parameters, and ethical dimensions of plant biotechnology are critically examined.

SBE02 Blue Biotechnology: This elective course explores the discovery, engineering, and biotechnological exploitation of aquatic biological systems using Synthetic Biology. Aquatic environments, the largest reservoir of global biodiversity, provide novel enzymes, metabolic

pathways, bioactive compounds, and extremophile organisms/environments. Advances in genomics, metagenomics, AI-assisted pathway mining, and genome engineering enable the rational design of systems. The course integrates marine molecular ecology with metabolic engineering, CRISPR editing, cell-free systems, and heterologous expression, examining applications in natural products, algal biotechnology, biofuels, biomaterials, carbon capture, biosensors, bioremediation, and biodiversity governance frameworks.

SBE03 White Biotechnology: This elective course focuses on the application of biotechnology for sustainable industrial production. It explores the use of microbial and enzymatic systems for the synthesis of biobased chemicals, polymers, fuels, and high-value compounds. Students examine metabolic engineering, pathway optimization, biocatalysis, and fermentation technologies within the context of green chemistry and circular bioeconomy principles. Emphasis is placed on process integration, resource efficiency, and real-world industrial case studies highlighting environmentally responsible manufacturing.

SBE04 Yellow Biotechnology: This elective course focuses on the use of insects and invertebrates as sustainable biofactories within circular bioeconomy systems. Students explore insect-based bioconversion of agro-industrial residues, the production of high-value biomolecules (e.g., antimicrobial peptides, enzymes), and frass-derived biofertilizers. Emphasis is placed on systems biology approaches, microbiome engineering, metabolic pathway optimization, and biosafety issues. Case studies include Black Soldier Fly platforms and synthetic biology strategies for enhancing biomass utilization. The course integrates molecular tools, omics analyses, and techno-economic assessment, equipping students to design innovative insect-based biotechnological solutions.

SBE05 Plant Metabolic Engineering: This elective course focuses on advanced training in the modification and optimization of plant metabolic pathways for improved productivity and value-added traits. Emphasis is placed on elucidating pathway biosynthesis, flux control, compartmentalization, and network interactions within the context of traditionally defined primary and secondary metabolism in plants. Metabolic engineering is analyzed following dominant and advanced methodologies for redirecting metabolic flux toward desired compounds, including multi-gene stacking, regulatory circuit design, and system-level metabolic network modeling. Case studies of successfully engineered plants for improved nutritional quality and stress tolerance, as well as for the production of pharmaceutical and industrial biomolecules, are presented.

SBE06 Computational Protein Design Course: This elective course introduces the structural and energetic principles governing protein architecture, forming the basis for computational design. It covers energy functions and scoring models used to evaluate protein conformations, along with core algorithms for sequence and structure optimization. Students are introduced to modern structure-prediction tools and major software platforms such as AlphaFold, Rosetta, FoldX, and AI-based methods. The course further examines strategies for engineering protein-ligand and protein-protein interfaces. Real-world case studies highlight applications in enzyme redesign. Therapeutic protein engineering and de novo protein creation are also discussed.

SBE07 Metagenomics in Synthetic Biology: This course examines metagenomics (the study of total environmental DNA) through the lens of discovering novel enzymes and biological functions. In the first part, sequence-based metagenomics approaches are analyzed, with emphasis on the

reconstruction and comparative analysis of the functional potential of complex microbial communities. In the second part, functional metagenomics strategies are presented, based on the construction of environmental DNA libraries and activity screening. Throughout the course, connections to Synthetic Biology are highlighted, particularly regarding the challenge of heterologous gene expression, as well as the use of environmental DNA ‘templates’ as a starting point for exploring novel functions.

SBE08 Synthetic RNA Therapeutics: This course explores novel approaches in synthetic RNA therapeutics, including RNA antagonists, chemically modified RNA, and synthetic circular RNA. It covers advanced delivery strategies such as nanoparticles and liposomes, as well as design principles that enhance stability, specificity, and efficacy. Students gain a foundational understanding of the technologies and strategies enabling the development of next-generation RNA-based drugs, with a focus on translational synthetic ribotherapeutics.

SBE09 Synthetic Microbial Ecology: From individual cells to community engineering: microbial ecology theories (the Black Queen Hypothesis, division of labor), fundamental principles of microbe-microbe interactions (e.g., cross-feeding, synergy, mutualism, etc.), flux-balance analysis in synthetic communities, design of regulatory mechanisms for synthetic microbial communities (e.g., quorum sensing), principles of synthetic community construction (top-down vs. bottom-up), microfluidics, microbiome genetic engineering, applications in health, industry and the environment, and ethical and biosafety issues.

SBE10 Cell-free Synbio Systems: This elective course covers cell-free systems for protein synthesis and biochemical reactions without living cells. Topics include in vitro transcription-translation using cell lysates, from DNA template preparation to protein detection and analysis. The module also introduces synthetic organelles (e.g., synthetic mitochondria and ribosomes) designed to create controlled microenvironments, with applications in medicine, metabolic engineering, and cell therapy. In addition, Cell-Free Metabolic Engineering (CFME) is explored for the in vitro production of biofuels and pharmaceutical precursors, with emphasis on pathway design, extract preparation, and reaction optimization for high-yield bioproduction.

SBE11 From Lab to Industry: Scale-up Considerations: This elective course addresses the transition from laboratory processes to pilot- and industrial-scale bioproduction. It covers key engineering and biological parameters affecting scale-up, including bioreactor design, mass and heat transfer, mixing, oxygen transfer, process control, and downstream processing. Students analyze challenges related to reproducibility, robustness, regulatory compliance, and techno-economic feasibility. Case studies present strategies for optimizing yield, productivity, and cost-effectiveness during industrial implementation.

SBE12 Synthetic Biology in Gene Therapy: This course examines the application of Synthetic Biology tools in modern gene therapies and clinical trials. The fundamental principles and evolution of gene therapy are presented, including vector-based and mRNA-based approaches, as well as CRISPR-based therapies for hematological disorders and CAR-T immunotherapies. Applications in metabolic diseases and cancer are approached through case studies from clinical practice. The course also introduces emerging strategies, such as targeted base editing, and discusses the related ethical issues. As part of a final assignment, students design a therapeutic gene-modification approach,

identifying the disease target, delivery vector, genetic circuit, and safety mechanisms.

BIEN 580 Synthetic Biology: Engineering principles in biology, standardization of biological components, BioBricks and parts registries, DNA assembly technologies, genome editing, and high-throughput genetic manipulation methods. Design and construction of biological pathways and strategies for transcriptional control are introduced through representative engineered systems.

BBME 600 Seminars in Biological & Biomedical Engineering: A series of lectures touching on synthetic biology and its applications relevant to the most recent developments, with discussion involving student participation.

BIEN 585 Metabolic Engineering: Principles and applications of metabolic engineering, including the Design-Build-Test-Learn cycle, microbial strain development, metabolic network analysis, and bioprocess optimization. Emphasis is placed on industrial biotechnology and sustainable production systems.

BIEN 602 Biomanufacturing for RNA Biologics: A basic and quantitative overview of RNA biologics. Introduction to unit operations of bioproduction related to RNA biologics (design tools and large-scale production systems for DNA templates for in vitro RNA transcription; small- and large-scale RNA bioprocessing systems) and to downstream approaches for RNA purification (such as tangential flow filtration systems and RNA-specific chromatography) for emerging mRNA therapeutics. Introduction to established and emerging applications of RNA biologics for gene and cell therapy.

BMDE 505 Cell and Tissue Engineering: Application of engineering, physical science, and biological science principles for the modification and creation of cells and tissues for therapeutic applications, as well as the industrial perspective and related ethical issues.

BINF 511 Bioinformatics for Genomics: Bioinformatics methods and approaches in relation to genomics, proteomics, and metabolomics strategies, with emphasis on functional genomics data. The course will cover an introduction to UNIX, Perl programming, data processing and integration, file parsing, and the design and implementation of relational databases, focusing on genomics-related solutions.

PHGY 518 Artificial Cells: Physiology, biotechnology, chemistry, and biomedical application of artificial cells, blood substitutes, immobilized enzymes, microorganisms and cells, hemofiltration, artificial kidneys, and drug delivery systems.

Article 10. Distance learning

1. The organization of the educational process of the DMSc is carried out using face-to-face, synchronous and asynchronous distance learning methods. The Founding Decision of the DMSc is accompanied by the Report on the methods of distance learning in the educational process, in accordance with paragraph 4 of article 5 of the Ministerial Decree 18137/16-2-2023, and contains an analysis of the methods of the organization of the distance educational process, such as synchronous, asynchronous, blended learning, digital educational material, any methods of digital assessment of students and digital assessment material, the University technical

infrastructure for supporting distance learning study programs and the digital skills of the teaching staff.

2. Synchronous distance learning is the educational method through technological mediation (teleconferencing environment) where the instructor and the students interact in a different space, but at the same time with the possibility of two-way communication and sharing of multimodal content (slides, video, etc.) in real time.
3. Asynchronous distance education is the educational method through an integrated technological environment (platform) of asynchronous education, where the instructor and the students interact in a different space and at a different time. Specifically, interaction takes place between: a. instructor - student, b. student - educational material, c. students. The educational process using asynchronous distance learning methods does not exceed twenty-five percent (25%) of the credit units of the DMSc.
4. Blended Learning is the educational method that is developed under pedagogical conditions through the combination of distance learning (synchronous or asynchronous) with the face-to-face educational process.
5. The monitoring of asynchronous educational material is carried out through the electronic platform of the [McGill Online](#). Non-participation in the mandatory activities of the platform leads to a reduction in the course grade.
6. The educational process may be carried out entirely, using distance learning methods, exclusively in the following cases:
 - a) When students enrolled at the partner University, which does not offer that specific course, are registered in the course,
 - b) In force majeure or extraordinary circumstances, where it is not possible to conduct the educational process in person or to use the infrastructure of the University of Thessaly and McGill University for the conduct of its educational, research and other activities,
 - c) organizing in-depth courses and tutorial exercises, in addition to the mandatory teaching hours per course.
7. Attendance of the DMSc courses is mandatory. Attendance means the student's participation in in-person and modern educational activities (teleconferences), as well as participation in activities of the asynchronous education platform. The student's presence in the synchronous sessions is recognized by logging into the system via an institutional account, for systems that use it. In the event that logging in via an institutional account is not possible, the student is required to use the combination of his/her first and last name and registration number as a username when logging into the synchronous session, while the instructor may identify the person who made the connection by verbal reference and/or showing the participant's face and/or identification document.
8. The certification of the student's participation in the educational process is certified as follows:

- a) For synchronous sessions in one of the following ways: i) Electronic attendance list, as shown in the list of participants of the teleconference/synchronous session provided by the synchronous distance learning platform, ii) Attendance list recorded in electronic form and submitted to the DMSc by the instructor, after requesting an oral report and/or showing the participant's face and/or identification document.
 - b) For asynchronous sessions, participation is certified through his/her activity in the system (exercises, assignments and other user activity), as well as the participation reports provided by the asynchronous distance learning platform used by the DMSc.
9. Absence Limit. The student is required to attend at least ninety percent (90%) of the synchronous educational sessions of each course. Absence beyond the above percentage implies mandatory re-enrollment in the course in the following academic year. Repeated failure to attend constitutes grounds for dismissal from the DMSc, following a decision by the GPC.
10. Failure to comply with attendance obligations constitutes academic insufficiency. The CC of the DMSc may call the student to provide explanations. In case of systematic non-participation, the student may be suspended from study or expelled.
11. The exams, which determine the grade of each course of the curriculum, will be carried out using one or a combination of the following methods and means of evaluating the performance of postgraduate students:
 - a) written exams,
 - b) oral exams,
 - c) individual or group assignments and/or exercises,
 - d) case studies,
 - e) presentations,
 - f) electronic tests or quizzes via the distance learning platform.
12. The examination of courses using distance learning methods is carried out using synchronous distance learning means, with identification of the examinee and continuous visual surveillance and with ensuring the integrity and reliability of the examination.
13. The choice of the evaluation method is made by the instructor, is mentioned in the course outline and is communicated to the students at the beginning of the course.
14. Students are required to participate in the exam with their computer's camera and microphone activated throughout its duration. The camera must be positioned in a way that both the student and the computer screen used for the exam can be seen. Deactivating the examinee's microphone or camera leads to their exclusion from the exam and their grade being nullified. The use of a virtual background or other technique to hide the area in which the examinee is located is prohibited.
15. The student is identified before the start of the exam, a process during which the student's identity is checked by showing his/her ID card or passport through the camera. The instructor may ask the student to rotate the camera so that the workspace appears. Failure to identify the student will result in the cancellation of the exam.

16. Supervision is carried out during the exam, during which the instructor and/or proctor monitors the examinees in real time via the videoconferencing platform. In case of suspected violation of the rules of academic ethics, the instructor may interrupt the exam and call the student to an immediate oral exam. The oral exam may be held immediately or at a time set by the instructor and takes precedence over the written assessment.
17. In the event of a technical problem such as a disconnection or technical failure, the student is required to reconnect immediately. If the problem persists, the exam may be repeated or taken orally. The student is obliged to inform the Support Manager and the instructor, who will record the incident and propose an alternative examination method at their discretion.
18. The conduct of distance examinations is carried out in accordance with the applicable legislation on the protection of personal data and the decisions of the competent bodies of the Institution.
19. Principles of Academic Ethics: Students must adhere to the principles of academic ethics, scientific integrity and personal responsibility when preparing assignments and participating in any form of assessment. Each submitted assignment must be the product of personal study and be accompanied by a full and correct reference to the sources.
20. Plagiarism: Plagiarism is considered the use of a third party's work in its entirety or in a paraphrase without a clear reference to the source. All assignments can be checked with special text similarity detection software.
21. The use of AI is permitted solely as a support and cannot replace the student's original written or research work. Submission of AI-generated content, in whole or in substantial part, as original individual work is prohibited. The use of AI-based assisted writing and content production tools is permitted only if:
 - a) it is explicitly stated in the bibliography or in a relevant note in the work, and
 - b) it is limited to support use.
22. In the event of plagiarism or undeclared use of AI tools, the work is nullified.
23. The postgraduate thesis must undergo a text similarity check before it is defended.
24. For forms of remote examination that require the use of an electronic platform, the authentication of the examinees will be carried out using their institutional account, upon issuance of which their details had been checked and their physical identification had been preceded by the secretariat. The use of the institutional account ensures that the authentication is carried out through a trusted service and that access passwords or other personal data of the users are not transferred without their consent to third party providers. The platform is managed and maintained by the Unit of Digital Governance of the University of Thessaly and [IT Service](#) of the McGill University. The support of the teaching staff and students in matters related to the distance learning system is provided at the Department level by the administrator and at the Institution level by the Unit of Digital Governance of the University of Thessaly.
25. The instructor should use the email addresses and other personal information of the examinees exclusively for the purpose of the examination and to ensure its reliability. He should also ensure that any personal data of the examinees is kept for the minimum and absolutely necessary period,

securely and in accordance with the applicable legislation and the personal data protection policy of each University.

26. The development of the digital skills of the teaching staff and the experience acquired through distance learning and distance examination, during the pandemic period, continues with ongoing information for the updating of knowledge and skills.
27. Internal distance learning guides of the two Universities, a brief description of the integrated distance learning system and user guides of the distance learning system for students and instructors are posted on the website of the DMSc.
28. Maintenance, including upgrades, is carried out either by the manufacturer itself or by the staff of the Unit of Digital Governance as well as the IT Service. User support will be carried out at the first level by the Distance Learning Support Managers appointed and employed by the DMSc, who are the point of contact with instructors and students. At a secondary level, the Distance Learning Support Managers will communicate with the services of each institution to resolve complex problems, while failures may be referred to the platform manufacturer or an external contractor.
29. The personal data protection policy of the University of Thessaly is posted on the institution's website <https://www.uth.gr/panepistimio/axiologisi-poiotita/prosopika-dedomena>. McGill University adheres to the [Act Respecting Access to Documents Held by Public Bodies and the Protection of Personal Information](#).
30. The implementation of the data protection policy is the responsibility of the Data Protection Officer of the University of Thessaly. For the retention, collection, and processing of personal data during examinations and teaching, utilizing remote evaluation methods, a policy is followed that ensures, on the one hand, the integrity and reliability of conducting oral or written examinations through remote means, and on the other hand, the correct application of EU and national legislation regarding personal data protection.
31. Information Management and issues related to Cybersecurity follow the guidelines of the institution's Information Security Policy, which defines the technical and administrative measures implemented by service users and the institution's Information and Communication Technologies services, in collaboration with the Data Protection Officer and the Information Security Officer.
32. In addition to the general provisions of the University Security Policy, Information and Communication Technologies services implement additional measures and issue guidelines to increase the level of security of the e-learning systems and ensure the integrity of examinations and the educational process in general.

Article 11. Examinations and assessment of postgraduate students

1. The educational work of each academic year at the University of Thessaly is structured into two semesters of study, the winter and the spring. The educational work of each academic year at McGill University is structured into three semesters of study, the autumn (Fall), the winter and the summer. The courses are held during the winter/autumn and the spring semesters, specifically

from September 1 to April 30 of each year. Attendance at courses/laboratories, etc. is mandatory. In the event of a course being cancelled, it is rescheduled. The rescheduling of courses is decided by the instructor in collaboration with the Director of the DMSc and students are informed accordingly.

2. The final evaluation may be carried out either after the completion of each academic semester or after the completion of the teaching work of each course or the completion of each educational activity. The final evaluation and grade in the individual courses of the DMSc are determined by the instructor, who may organize, at his discretion, written and/or oral examinations or may rely on assignments or laboratory exercises. The examinations, presentations and oral assessments may be carried out by remote means, ensuring the academic integrity and identity of the students.
3. In case of failure or non-attendance of the student in the course examination, the possibility of participating in a repeat examination is provided, which is organized one week after the end of each semester. Each postgraduate student may fail one (1) course per academic semester. Failure to pass two or more courses in a semester leads to dismissal from the program following a decision by the GPC.
4. The re-examinations of the courses (repeated examination and examination by a three-member committee) are carried out following relevant decisions. A decision by the GPC determines special cases of force majeure (illness, workload, etc.) in which a greater number of courses may be allowed. In the event that the student fails more than three (3) times in the same course, he/she is examined, upon his/her request, by a three-member committee of faculty members, whose members have the same or a related subject to the examined course and are appointed by the GPC. The person responsible for the examination (the lecturer) is excluded from the committee.
5. Grading at the University of Thessaly is done on a scale of 0-10: from 0 to 4.99 failing and from 5 to 10 passing.
6. Grading at the McGill University is done on a scale of 0-4: from 0 to 1.99 failing and from 2 to 4 passing.
7. The grading equivalent is as follows:

University of Thessaly	McGill University
8-10	3.7-4.0
7-8	2.7-3.3
5-6	2.0-2.3

8. The course grades are submitted to the DMSc Secretariat within thirty days of the date of the course examination.

9. Cases of misconduct such as copying in exams or in the preparation of assignments and solving exercises, inappropriate behavior, etc., entail dismissal from the Program following a decision of the General Assembly.
10. The written exam materials are kept mandatorily and under the supervision of the instructor for one (1) year. After the expiration of this period, the written exam materials cease to be valid and are destroyed, unless a relevant sanction, disciplinary or any other administrative procedure is pending.
11. The Regulation of the University regulates: a) alternative methods for the evaluation of students with disabilities and special educational needs, b) welfare measures for the evaluation of students who are proven to be ill or recovering from a serious illness during the examination period.

Article 12. Postgraduate Thesis

1. The DMSc requires the completion of a Master's thesis
2. In January of each year, the titles, research subjects and objectives of the postgraduate thesis projects are formulated with the collaboration of professors from the University of Thessaly and McGill University. Each postgraduate thesis is co-supervised by a professor from the University of Thessaly and a professor from the McGill University.
3. A thesis committee is formed for each suggested subject. The thesis committee consists of the thesis co-supervisors and one internal member who is an instructor in the DMSc. Optionally, one additional member who is a faculty member of any Department at the McGill University or the University of Thessaly may participate in the thesis committee.
4. Co-supervisors and members of the Master's Thesis Committee are appointed by decision of the GPC, following a relevant proposal by the CC, from the following categories of instructors of the DMSc, provided they have a doctoral degree (PhD):
 - a) members of the Faculty, Special Teaching Staff, Laboratory Teaching Staff, and Special Technical Laboratory Staff of the Department or other Departments of the same or another Higher Education Institution or Higher Military Educational Institution, with additional employment beyond their mandatory obligations, if the MSc program charges tuition fees,
 - b) Professors Emeriti or retired faculty members of the Department or other Departments of the same or another Higher Education Institution,
 - c) adjunct professors,
 - d) lecturers (under contract),
 - e) visiting professors or visiting researchers,

f) researchers and special functional scientists of research and technological institutions under Article 13A of Law 4310/2014 (A' 258) or other domestic or foreign research centers and institutes.

5. In exceptional cases, where there is an objective inability or an important reason (illness, absence abroad, etc.), the supervisor or a member of the Thesis Committee may be replaced, following a decision of the Director of the Program and the concurring opinion of the CC.
6. The candidate submits an application, in which the titles of three thesis projects are listed in order of preference. The CC examines the declared preferences of the postgraduate students, takes into account their performance in the courses during the first semester and schedules interviews with the co-supervisors. The interviews are conducted online. The final selection is made by the co-supervisors and is approved by the GPC.
7. The postgraduate thesis is carried out in person. The postgraduate thesis must begin no later than two (2) months after the end of the second semester. The progress monitoring and final evaluation procedures for the Master's thesis will utilize the McGill University platform.
8. An Initial Thesis Meeting must take place, and a standard progress form must be completed and signed by the student, within two (2) months from the commencement of the Master's thesis. An Initial Meeting with an 'Unsatisfactory' outcome must be repeated within four (4) weeks. A student will be required to withdraw from the Programme after two consecutive Initial Meetings for the Master's thesis when progress is deemed 'Unsatisfactory'.
9. A second Thesis Progress Meeting must take place, and a standard progress form must be completed and signed, within six (6) months of the Initial Thesis Meeting. Following a meeting where progress is judged unsatisfactory, a follow-up meeting to monitor progress must be held within three (3) months. A student will be required to leave the DMSc after two consecutive progress meetings where progress is judged unsatisfactory.
10. The student, the thesis committee and an internal member of the DMSc must be present at all meetings. Forms and policy statements are available on the SynBio Web site.
11. The Secretariat of the DMSc will notify the student that the Thesis Progress Meeting is due and attempt to schedule it. It is the student's responsibility to ensure that this occurs in a timely manner, assist with scheduling the meeting if necessary, and supply the necessary documentation. Failure to hold a meeting in a timely manner will result in an "Unsatisfactory" rating for the meeting report.
12. Students are required to prepare and circulate a report prior to each scheduled meeting. The submission of a report by the student for a meeting (initial report, progress report, etc.) must be made by a date set by the Secretariat and communicated to the student well in advance of the meeting. The report must be submitted no later than that date, even if the date falls on a weekend or holiday, and regardless of when the meeting takes place. Submission dates will be tracked by the Director of the DMSc. A report submitted late will result in the student receiving a warning that will be included in the student's record. A second report submitted late will be treated as equivalent to an 'Unsuccessful' meeting report for the purposes of determining the student's status in the program.

13. The final oral seminar must be scheduled prior to the initial thesis submission. The thesis committee must attend the seminar. The presentation of the thesis is carried out by teleconference. The committee prepares a progress evaluation report in which it states that the student may proceed with the submission of the master's thesis.
14. The student must complete the "Intention to Submit Doctoral Thesis" page on myThesis approximately two (2) months prior to the expected submission date of the dissertation.
15. At any time after completing the "Intention to Submit Doctoral Thesis", students may nominate potential examiners. For a Master's thesis, the examiner must be an academician with an established reputation and competence in the thesis research field. The examiner may come from inside or outside McGill University and the University of Thessaly. The examiner must be approved by the M.Sc. committee.
16. Once the examiner accepts the invitation, the student must submit the Master's thesis through the "Thesis Submission" page on myThesis by the expected thesis submission date. The content of the M.Sc. thesis must demonstrate familiarity with prior research in the field and ability to conduct research, organize results, and support the approach and conclusions in a scholarly manner. The thesis must be written in English and adhere to the McGill University Graduate and Postdoctoral Studies Guidelines. The initial thesis submission is completed via the McGill University's myThesis platform. A completed Initial Thesis Submission Checklist must be uploaded to myThesis as a supplementary document alongside the initial thesis. The Master's thesis committee then approves the initial submission, and the evaluation process begins.
17. When the successful evaluation report is received, the student is notified and invited to submit the final thesis through myThesis.
18. The thesis may be submitted at any time during the year. However, for each of the three annual degree granting/convocation dates, there are specific deadlines for the initial submission (when the thesis is sent to examiners for evaluation) and for the final thesis submission: April 15, August 15, and December 15.
19. A thesis is a public document and once the final thesis has been submitted, it is deposited into the eScholarship database of the McGill University and on the website of the [Institutional Repository of the University of Thessaly](#).
20. Regarding matters of confidentiality, personal data protection, and other ethical and deontology of graduate theses regulations, the Department of Biochemistry and Biotechnology has established a three-member Research Ethics and Deontology Subcommittee.
21. In terms of procedure, students must submit: 1) an application for proposal review, 2) a description of the research proposal, and 3) research protocols, informed consent forms, and any other supporting documents that are necessary based on the scientific field. Templates for the relevant forms can be found on the University of Thessaly website at the following web address: <https://www.uth.gr/panepistimio/thesmika/themata-deontologias>.

22. Following the review of the proposal, the Departmental Committee issues an Approval Certificate for the graduate thesis proposal. In the event that an application is rejected or a disagreement arises among Committee members, the matter will be forwarded to the Research Ethics and Deontology Committee of the University of Thessaly. Approval Certificates will be uploaded to the Quality Assurance Unit information system.
23. To obtain the Master's degree, every graduate student must attend and successfully pass all the courses offered by the DMSc and complete the Master's thesis, accumulating a total of one hundred and twenty (120) ECTS credits and forty-five (45) McGill credits.

Article 13. Intellectual Property Rights and Plagiarism

1. The intellectual property rights over Postgraduate Theses, as well as any potential patent rights or rights to the commercial exploitation of such work, are determined by relevant decisions of the Ethics Committee of the University of Thessaly.
2. Any form of plagiarism in course assignments, publications, or the writing of Postgraduate Theses, fabrication of research data, and unscientific conduct in general, is prohibited. The Ethics Committee is responsible for informing the DMSc students accordingly and for imposing penalties where necessary. Detailed guidelines on this matter will be issued by the Ethics Committee of the University.
3. When writing their scientific papers in the context of the courses as well as the postgraduate thesis, the student is required to respect the intellectual property rights of the authors of the sources used and to strictly follow the applicable academic rules for avoiding plagiarism. Plagiarism constitutes a serious academic offense.
4. No postgraduate thesis may be submitted for defense unless it has first been checked by the electronic plagiarism-prevention service of the University Central Library.

Article 14. Obligations and rights of postgraduate students

1. Postgraduate students have all the rights and benefits provided for undergraduate students, except for the right to free textbooks.
2. The organization and implementation of the DMSc educational process ensures equal access and participation for persons with disabilities and persons with special educational needs, in accordance with current legislation and the policies of the University of Thessaly. The DMSc takes appropriate measures to support these students by adapting educational materials, utilizing accessible digital technologies, and providing reasonable arrangements during the educational and examination processes, in cooperation with the competent services of the University.
3. Postgraduate students have the right to submit complaints or objections regarding matters of study, evaluation, or the operation of the DMSc. Objections are submitted in writing to the Secretariat of the DMSc within an exclusive deadline of ten (10) days from notification of the relevant decision or event, and are examined by the competent bodies of the DMSc. The procedure for examining complaints and objections is conducted in accordance with the principles of impartiality, transparency, and good administration.

4. Postgraduate students are required to:

- Attend all lectures/workshops of each course of the current curriculum and participate in the scheduled synchronous online sessions. Attendance and participation are documented electronically through the platforms of the University of Thessaly and McGill University.
- Supplied with and consult the necessary textbooks, published scientific articles, etc., that cover the syllabus.
- Submit, within the required deadlines, the assignments for each course.
- Attend the scheduled exams of each course with the Academic Identity Card. In the event that a student is unable to attend the scheduled exams, he/she is required to submit a written request in a timely manner for his/her non-participation in the exams, accompanied by official supporting documents (e.g. medical certification of illness). The Director of the DMSc decides on the possibility of the student being examined on a different date, which is determined within a reasonable period of time in consultation with the instructor of the course.
- Comply with the foreseen and defined dates regarding the submission of declarations, payment of tuition fees, etc.

5. Postgraduate students are invited to attend additional series of lectures and additional courses with computer laboratories using specific software, research seminars, conferences/workshops with a subject related to that of the DMSc, or other scientific events of the DMSc.

6. The GPC decides, following a proposal by the CC, to expel a postgraduate student:

- Ex officio upon his/her request
- If the student has not successfully passed all the courses of the postgraduate program and/or has not successfully completed the postgraduate thesis
- If he/she has exceeded the maximum duration of study in the postgraduate program, as defined in the current Regulation of Operation
- If he/she commits an offense such as academic misconduct during examinations or violation of the applicable provisions on intellectual property (Law 2121/93) when writing the assignments
- If he/she has not paid the tuition fee
- If he/she has violated the applicable provisions relating to the handling of disciplinary offenses as defined by the competent disciplinary bodies.

7. In the event of a student being expelled, a certificate for the courses in which he/she has been successfully examined may be issued, upon his/her request.

8. Each candidate, before enrolling in the program, must be aware of the current Regulation of Operation and declare in writing that he/she accepts the operating rules of the DMSc.

Article 15. Infrastructure and Funding of the DMSc

1. For the smooth operation of the DMSc, the organization of the educational process of the Postgraduate Program “Synthetic Biology” is carried out in a blended manner.

2. For the organization of Postgraduate Study Programs using distance learning methods, the University of Thessaly has a ready-to-use, integrated synchronous and asynchronous distance learning system. For the synchronous education, the Office 365 A1 for students/faculty application is provided (a leased system), while for the asynchronous education the eClass system is provided, installed using the University’s own resources and developed and maintained by the Greek Universities Network (GUnet). The two systems are distinct from one another; their combined use ensures an integrated distance learning system.

In particular, the MS-Teams application, which is part of the synchronous distance learning system, supports the conduct of videoconferences and the creation of virtual classrooms. It ensures real-time audio and visual communication using appropriate equipment (computers, cameras, microphones, speakers, headsets, high-speed networking) so that the instructor and the students can have voice and visual communication while located in different places. It further supports application and document sharing, the use of an electronic board, and access to chat rooms both between instructor and student and among students, for any collaboration, exchange of views, and preparation of joint assignments.

The eClass distance learning system for asynchronous distance education is a Learning Management System (LMS), which includes a Learning Content Management System (LCMS) application and provides course development and authoring capabilities. In eClass, educational material can be posted per course or other educational activity, which may include notes, presentations, exercises/activities with corresponding feedback, indicative solutions to these, as well as multimodal material (recorded lectures, in compliance with applicable personal data protection legislation), simulations, interactive educational material using distance learning methodology, etc. All educational material of any kind is provided exclusively for the educational use of students and is protected for any intellectual property rights in accordance with applicable legislation.

The environment of the integrated distance learning system of the University of Thessaly is in the Greek language. However, it is also fully supported in English.

The integrated distance learning system is fully accessible to persons with disabilities and persons with special educational needs.

3. The teaching staff of the DMSc possess the digital skills and fully meet the educational duties of distance education.

In particular, the instructors of the DMSc are familiar with the use of digital tools and platforms, such as eclass, MS-Teams, Zoom, and Webex. They are also familiar with digital communication and its use in teaching and in communicating with students.

4. The administrative and secretarial support of the DMSc is provided by the Department of Biochemistry and Biotechnology of the University of Thessaly. The persons who undertake the secretarial support must have experience in digital transformation practices.

5. Funding of the DMSc may come from: donations, benefits, bequests, sponsorships, research programs, EU or other international organization programs, tuition fees, and other sources, as provided for by applicable legislation.

The management of the DMSc's resources is carried out by the Special Account for Research Funds of the University of Thessaly.

The resources of the DMSc are allocated as follows:

a) An amount corresponding to thirty percent (30%) of total revenue derived from tuition fees is withheld by the Special Account for Research Funds of the University of Thessaly. This amount includes the percentage withheld in favor of the Special Account for Research Funds for the financial management of Postgraduate Study Programs. By decision of the Administrative Board, taken by the end of March of each year, it is decided whether the remaining amount, after deduction of the amount withheld in favor of the Special Account for Research Funds, is transferred to the regular budget or made available for the creation of projects/programs through the Special Account for Research Funds, for the purpose of covering, on a priority basis, the needs of Postgraduate Study Programs that operate without tuition fees, as well as the research, educational, and operational needs of the University.

From the DMSc's revenue derived from donations, sponsorships, and financial contributions of any kind, bequests, and resources from research projects or programs, the Special Account for Research Funds withholds an amount corresponding to 12%.

b) The remaining amount of total revenue is allocated to the operating expenses of the DMSc.

Article 16. Teaching Assignment / Instructors in the DMSc

1. The teaching work of the DMSc is assigned, by decision of the GPC, to the following categories of lecturers:

a) members of the Teaching Research Staff, Special Educational Staff, Laboratory Teaching Staff and Special Technical Laboratory Staff of the Department or other Departments of the same or another Higher Educational Institution or Higher Military Educational Institution, with additional employment beyond their legal obligations, if the Postgraduate Studies Program has tuition fees,

b) collaborating professors,

c) appointed lecturers,

d) visiting professors or visiting researchers,

e) researchers and Staff Research Scientists of research and technological bodies of article 13A of law 4310/2014 (A' 258) or other research centers and institutes in Greece or abroad,

f) scientists of recognized prestige, who have specialized knowledge and relevant experience in the subject of the DMSc.

2. All categories of instructors may be compensated exclusively from the resources of the DMSc. No compensation or other benefit may be paid from the state budget or the public investment

program. The amount of compensation of each instructor regarding the assignment of the teaching work is determined by the decision of the competent body of the DMSc.

3. By decision of the GPC, auxiliary teaching work may be assigned to doctoral candidates of the Department or the School that organize the DMSc, under the supervision of an instructor of the DMSc.
4. The right to supervise theses is granted to the instructors of the DMSc in accordance with this article, provided that they hold a doctoral degree.

The members of the thesis supervision committee must have the same or a related scientific specialty as the subject of the DMSc. By decision of the GPC, upon the recommendation of the CC of the DMSc, the supervision of theses may also be assigned to faculty members who have not undertaken teaching work in the DMSc.

5. Instructors in the DMSc are required to:
 - a) Provide teaching duties in the form of: i) Independent teaching of courses, mandatory and elective, ii) conducting laboratories and laboratory exercises, following a decision by the GPC regarding the assignment of teaching duties.
 - b) Supervise, support, and guide students during the preparation of assignments and Master's theses, as well as supervise students' laboratory training.
 - c) Submit and update the educational material for the courses assigned to them by the GPC on the eclass asynchronous e-learning platform.
 - d) Cooperate with the GPC to continuously improve the DMSc.
 - e) Undertake the duties of an Academic Advisor.
 - f) Comply with current legislation, the Internal Regulations of the University of Thessaly, and the decisions made by the governing bodies of the University of Thessaly and the Department of Biochemistry and Biotechnology.
6. Members of the Teaching and Research Staff, Special Teaching Staff, Laboratory Teaching Staff, and Special Technical Laboratory Staff may be employed in the DMSc solely on the condition that they have fulfilled their minimum teaching requirements. The employment of Teaching and Research Staff members exclusively within the Department's or School's MSc programs is prohibited.
7. All categories of instructors in the DMSc may be compensated exclusively from the DMSc resources. No compensation or other benefit may be paid from the state budget or the public investment program. Specifically, Teaching and Research Staff members are eligible for additional compensation for services provided to the DMSc provided that:

They provide teaching work consisting of: i) Independent teaching of courses (mandatory and elective), ii) conducting laboratories and laboratory exercises.

Their standard weekly teaching load in first-cycle (undergraduate), second-cycle (postgraduate), minor orientation, and short-duration programs within their own or another Department averages at least six (6) hours per week during the academic year. Any teaching work performed in second-

cycle programs with additional compensation, as well as foreign-language programs, winter, or summer schools, shall not be counted toward this minimum load.

8. The assignment of teaching duties for the DMSc is approved by a decision of the GPC prior to the start of the academic year. Upon a reasoned decision of the GPC, the assignment of teaching duties may be amended during the academic year.

Article 17. Academic Advisor

The GPC appoints a faculty member per cycle of studies as an academic advisor, in accordance with the academic advisor regulation. The advisor is responsible for monitoring and controlling the general course of the postgraduate student's studies. The advisor meets individually with the student at least once per academic semester (in person or via videoconference), advises and supports him/her on matters of study, courses, options and prospects.

Article 18. Award of the postgraduate degree

1. The Master's Degree (M.Sc. Diploma) is a public document. The format of the Master's Degree per postgraduate program category is uniform across all the Departments and Schools of the University of Thessaly and is included in the University Regulation for Postgraduate and Doctoral Studies. The Master's Degree is written in the English language and is accompanied by a Diploma Supplement in both Greek and English, in accordance with the provisions of Article 15 of Law 3374/2005 (Government Gazette 189, Issue A') and Ministerial Decision Φ5/89656/B3/13-8-07 (Government Gazette 1466, Issue B').
2. The student completes his/her studies for the Dual Master's Degree
 - a) by completing the minimum number of courses and sixty (60) ECTS as well as the successful completion of the Master's Thesis corresponding to an additional sixty (60) ECTS required for the award of the Master's degree by the University of Thessaly, and
 - b) by completing the minimum number of courses and twenty-one (21) credits, as well as the successful completion of the Master's Thesis corresponding to a further twenty-four (24) credits, required for the award of the Master's degree from the McGill University

The GPS certifies the completion of the studies in order for the Dual Master's Degree to be awarded.

3. Upon completion of the above procedure, the Master's student is granted a certificate of completion of studies, his/her student status is lost and his/her participation in the collective administrative bodies of the University ceases.
1. The Secretariat of the Department of Biochemistry and Biotechnology does not complete the stages of awarding the corresponding academic title, if it does not previously receive from the candidates, a certificate of deposit of the master's thesis from the Library of the University of Thessaly. Under the

responsibility of the central library of the University of Thessaly, all the theses are published in the institutional repository of the University of Thessaly <http://ir.lib.uth.gr>.

2. The DMSc leads to a level 7 qualification according to the European Qualifications Framework (EQF) and the National Qualifications Framework (NQF).
3. The MSc grade awarded by the University of Thessaly is characterized as follows: from 5 to 6.49 GOOD, from 6.50 to 8.49 VERY GOOD and from 8.50 to 10 EXCELLENT.

The MSc grade awarded by McGill University is characterized as follows: from 3.0 to 3.2: Grade B, from 3.3 to 3.6: Grade B+, from 3.7 to 3.9: Grade A-and 4.0: Grade A.

Article 19. Graduation

1. A student who has successfully completed his/her postgraduate studies shall take an oath at a graduation ceremony before the Rector or Vice-Rector as a representative of the Rector, the Dean of the School of Health Sciences, the Head of the Department of Biochemistry and Biotechnology and the Director of the DMSc. The graduation is not a constituent form of the successful completion of the studies, but is a necessary condition for the award of the postgraduate diploma.
2. In exceptional cases (studies, residence or work abroad, health reasons, etc.), postgraduate students who have successfully completed the DMSc may apply to the Secretariat of the Department of Biochemistry and Biotechnology for an exemption from the obligation to graduate. The exemption from the obligation to graduate is approved by the Head of the Department.
3. The text of the oath for graduates who obtain a DMSc is determined by a decision of the Senate. Graduates who do not wish to take a religious oath are permitted to simply invoke their honor and conscience.

Article 20. Evaluation of the DMSc

1. Evaluation by the Hellenic Authority for Higher Education

The DMSc is evaluated in the context of the periodic evaluation/certification from the Hellenic Authority for Higher Education. In this context, the overall assessment of the work carried out by the DMSc, the degree of achieving the objectives set at the time of its establishment, its sustainability, the promotion of graduates into the labor market, the degree of its contribution to research, its internal evaluation by postgraduate students, the feasibility of extending its operation, as well as other data regarding the quality of the work produced and its contribution to the national strategy for higher education are evaluated. If the DMSc during its evaluation stage is deemed not to meet the conditions for continuing its operation, its operation is completed with the graduation of the already registered students in accordance with the founding decision and the regulation of postgraduate and doctoral study programs.

2. Internal Evaluation

The internal evaluation of the Postgraduate Programs is carried out on an annual basis by the Quality Assurance Unit of the University of Thessaly. According to the University Internal Quality Assurance System for the optimization of the produced teaching work and the curriculum, in all Postgraduate Programs of the University of Thessaly, at the end of each semester, an evaluation of each course and each instructor is carried out by the postgraduate students.

Article 21. Duration of Operation of the DMSc

The DMSc will operate up to and including the academic year 2031-2032, provided that it meets the criteria of internal and external evaluation, in accordance with applicable legislation.

Article 22. Website of the DMSc

The official website of the DMSc — <http://synbio.bio.uth.gr/> — is continuously updated and contains all information and announcements of the, and constitutes the official means of informing students.

Article 23. Amendments to the Regulation

The provisions of this Internal Regulation of the DMSc may be amended by decision of the GPC, following a documented recommendation by the CC of the DMSc and approval by the Senate of the University of Thessaly and the Council of Graduate and Postdoctoral Studies of the McGill University. Matters of interpretation and application of the Internal Regulation, and any matters not provided for therein, shall be settled by the GPC.

Article 24. Final Provisions

Any issues not defined in current legislation, the Regulations for Postgraduate and Doctoral Studies of the University of Thessaly, or the present Internal Regulation, the competent bodies of the DMSc shall be authorized to decide.