



INTERNATIONAL HELLENIC UNIVERSITY
SCHOOL OF ENGINEERING
DEPARTMENT OF MECHANICAL ENGINEERING
Serres Campus

Graduate Studies Program:

"Renewable Energy Systems"

Academic Year 2023 - 24

**Master of Science (M.Sc.) in:
"Renewable Energy Systems"**

COURSE GUIDE



**Tenth Session:
October 2023 - January 2025**

Dear Students

Welcome to the Graduate Studies Program in **“Renewable Energy Systems”**, offered by the Department of Mechanical Engineering of the International Hellenic University, at Serres, Greece.



The 10th Session of the M.Sc. Program commences at the beginning of the Academic Year 2023 - 24.

FOCUS OF THE PROGRAM

The Graduate Studies Program organized and offered by the Department of Mechanical Engineering of the International Hellenic University, at Serres, Greece, focuses on the promotion and transfer of knowledge & expertise, operational tools & methodology in the field of Renewable Energy (RE) sources. It aims to train graduate students in the design, development & optimization of mechanical systems, equipment, and processes for the most efficient utilization of RE sources, in an effort to fill the gap between the growing industry demands for specialized RE expertise and the skills currently available in the job market.

The major axes of the Graduate Studies Program under consideration are:

- (a) To present and analyze the mechanical systems and processes used in the modern production of all major types of RE, as well as their design, development, and optimization principles, thus providing to graduate students the appropriate high level of knowledge and the specialized

- expertise needed to man the production and administration units of the companies associated with the exploitation of energy from RE sources.
- (b) To infuse to young scientists principles and values, in order to effectively contribute to climate protection - promoting the production of electricity from RE sources - which is a key component of sustainable development and a top environmental priority of our Country (see, e.g., Greek Legislation, Law No 3851/2010).
 - (c) To prepare energy executives specialists with a clear knowledge on the modern tendencies in Mechanical Science & Technology, and to cultivate their synthetic interpretive skills in order to become able to develop innovative approaches, to exploit opportunities and to solve problems in the energy sector.

In a few words, the Graduate Studies Program delivered by our Department aims to provide to graduate students solid knowledge foundations and principles, which will enable them to continuously rise in a constantly changing working environment.

DEGREE AWARDED

The Graduate Studies Program under consideration awards the Degree of ***Master of Science (M.Sc.)*** in designing, developing & optimizing mechanical systems for the most efficient utilization of RE sources:

**Master of Science (M.Sc.) in:
«Renewable Energy Systems»**



NUMBER OF ADMISSIONS

The number of students to participate in the Graduate Studies Program is set at ***twenty-five (25) per class***. The number of classes is determined by

the General Assembly of the M.Sc. Studies Program, depending on the number of the applicants. Selection is strictly based on the academic credentials of the applicants. On occasion, an interview may also be part of the selection process.



WHO CAN APPLY

The Graduate Studies Program in ***“Renewable Energy Systems”*** is specifically addressing the needs of graduates holding a University Degree in fields related to RE sources (i.e., Polytechnics, Environmental or/and Natural Sciences, etc.), including also graduates from the related Departments of the Technological Education Institutes. Nevertheless, eligible for admission are also graduates of other disciplines with strong background in Mathematics or/and Physics. Senior students can also apply, provided they will have completed their studies before the beginning of the courses. ***Very good knowledge of the English Language is required.***



DURATION OF STUDY

The M.Sc. Studies Program under consideration is delivered as a full-time or part-time study program. In the full-time program, studies last **three semesters**, always starting in October of each year and ending in January of the year after the next. Lecturing is delivered during the first two semesters, spanning from October to June of each academic year, while the last (third) semester is intended for the execution of the Master's Thesis. In the part-time program, studies last two more semesters (five semesters). Accordingly,



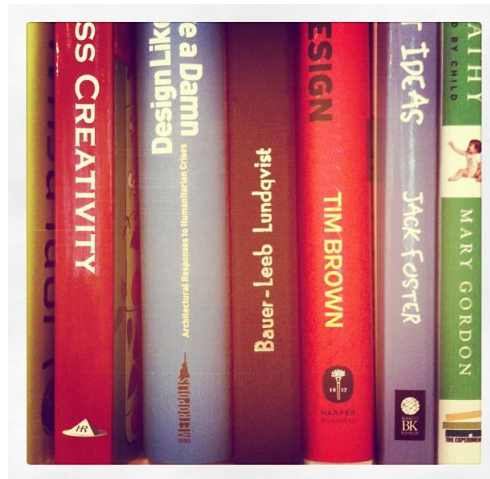
lecturing is delivered during the first four semesters and the last semester (fifth) is intended for the Master's Thesis.

CONTENT OF STUDIES

The curriculum of the M.Sc. Studies Program is formed on the basis of all modern trends of science and research, related to the design, development, and optimization of RE systems. It includes the following courses and tasks:

Foundation Courses: A total of ten (10) courses, assisting students to build all the background skills necessary for designing, developing, and optimizing RE systems. Each foundation course carries **six (6)** European credit transfer system (ECTS) units (1 unit = 26 hours study, according to ECTS).





Master's Thesis: To be completed by all students during the third (final) semester of their studies (or the fifth semester for the part-time program). The Master's dissertation corresponds to **thirty (30)** ECTS units.



- **The M.Sc. Degree is received after successful accumulation of ninety (90) ECTS units.**

The lecture-part of each course is covered in **thirteen (13) weeks**, the last one being reserved for the written evaluation. Classroom lectures of each course last **three (3) hours per week**. Both teaching and examinations of all courses are performed exclusively in Greek. They can also be offered in English, provided that at least ten (10) students apply for the English course.

A graduate student cannot flunk in more than **one course** per semester. In this case, the corresponding course is re-examined during the “**2nd chance**” **examination period**, taking place at late August.



The detailed content of the curriculum for the acquisition of the M.Sc. Degree in “**Renewable Energy Systems**”, delivered by the Department of Mechanical Engineering of the International Hellenic University, is as follows:

FIRST SEMESTER

Code	Course Title	F/O	Lec	Lab	HpW	ECTS units
101	Applied Thermodynamics	F	3	0	3	6
102	Advanced Materials Science & Technology	F	3	0	3	6
103	Computational Mechanics	F	3	0	3	6
104	Engineering Economics & Cost Analysis	F	3	0	3	6
105	Advances in Heat Transfer	F	3	0	3	6
	Total		15	0	15	30

SECOND SEMESTER

Code	Course Title	F/O	Lec	Lab	HpW	ECTS units
201	Mechanical Engineering Design & Optimization	F	3	0	3	6
202	Computational Fluid Dynamics	F	3	0	3	6
203	Energy Conversion Systems	F	3	0	3	6

Code	Course Title	F/O	Lec	Lab	HpW	ECTS units
204	Renewable Energy Sources I	F	3	0	3	6
205	Renewable Energy Sources II	F	3	0	3	6
	Total		15	0	15	30

THIRD SEMESTER

Code	Course Title	M	Lec	Lab	HpW	ECTS units
301	M.Sc. Diploma Thesis	M	-	-	-	30
	Total		-	-	-	30

Legend: **F:** Foundation Courses **O:** Optional Courses
 Lec: Lectures **Lab:** Laboratories
 HpW: Hours per Week **M:** Mandatory

MASTER THESIS

During the second semester, the students are expected to propose an outline for their M.Sc. Thesis dissertation and choose one of the available Thesis supervising Professors. The outline must identify the problem to be studied, the methodology to be followed and the literature to be used. The M.Sc. Thesis is worked out **individually**.



TUITION FEES & FELLOWSHIPS

Tuition fees for the three semesters are **2,400 €** and they can be paid in three equal installments (800 € per semester). Each payment should take place at least **thirty (30) days** before the beginning of the corresponding

semester. Any possible adjustment of the fees must have the approval of the General Assembly of the International Hellenic University.



Each semester ***fellowships are awarded to the students***, based exclusively on academic performance. As far as a number of twenty-five (25) participants is concerned, there is ***one full*** fellowship, waiving 100% of the first installment of the tuition fees, and a number of up to 30% of the number of the participants ***full*** fellowships, awarded to the students with both excellent performance and short income, according to the law N.4957/2022.

APPLICATION

Applicants are expected to submit all necessary documents by **September 14, 2023**, to the Secretariat of the Program, either in person or by registered surface mail. The mailing address is:

Secretariat of the M.Sc. Program in:
“Renewable Energy Systems”,
Department of Mechanical Engineering,
International Hellenic University,
62124 Serres, GREECE.



- Applicants must also register electronically, through the website of the Program, by filling in the corresponding [application form](#).

Documents required:

1. Application Form: The electronic version should be filled online, at <http://engineering.teicm.gr/msc>, and its [paper version](#) should be included in the folder to be submitted, together with the documents listed below.
2. Curriculum Vitae.
3. Certified copy of the B.Sc. Degree.
4. Certified Transcripts.
5. Two Recommendation Letters.
6. Certified Knowledge of the English Language.
7. Copy of the undergraduate Diploma Thesis (if applicable to RE).

Submission of any other document, **that could possibly support the application** (e.g., scientific publications, awards, fellowship, or employment certificates, etc.), is strongly encouraged.

➤ **All documents must be original or certified copies thereof.**

The names of all successful applicants will be announced at the website of the M.Sc. Studies Program of the Department of Mechanical Engineering of the International Hellenic University, <http://engineering.teicm.gr/msc>, by **September 14, 2023**.

➤ **The courses of the M.Sc. Studies Program in "Renewable Energy Systems" will commence on October 9, 2023 (for more information see the [Academic Calendar](#)).**

Further information is available at the website of the Department of Mechanical Engineering of the International Hellenic University, as well as through the Secretariat of the M.Sc. Studies Program:

Mrs. Melpomeni **NTOKA**: **tel.:** +30-2321-0-49125
e-mail: info@mech.ihu.gr



EPILOGUE

Facing a period of potentially transformative change, the Department of Mechanical Engineering of the International Hellenic University, at Serres, Greece has a crucial role to play and an important calling: To demonstrate to our nation and the world that progress is possible against the great problems of today and tomorrow, such as energy and climate, through the wise treatment of science and technology. In this context, further study on RE systems & processes is needed. We believe that, upon deliverance of the M.Sc. Studies Program in **“Renewable Energy Systems”**, we can set a path towards the future for RE expertise, and, building on our spirit, we can deliver the executives that will drive the next wave of economic growth.

The Director of the M.Sc. Studies Program,

Professor **Anastasios MOISSIADIS**