



INTERNAL REGULATION OF THE POSTGRADUATE PROGRAM

"DIGITAL TECHNOLOGIES AND SMART INFRASTRUCTURE IN AGRICULTURE"

DEPARTMENT OF NATURAL RESOURCES DEVELOPMENT &
AGRICULTURAL ENGINEERING

ARTICLE 1 – General provisions

The Department of Natural Resources & Agricultural Engineering of the School of Environment and Agricultural Engineering of the Agricultural University of Athens organizes and will operate for the next six (6) academic years, i.e. from the year 2021-2022 to the year 2026-2027, according to the decision of the Senate of the Agricultural University of Athens and the Postgraduate Studies Program entitled: "**DIGITAL TECHNOLOGIES AND SMART INFRASTRUCTURE IN AGRICULTURE**".

The MSc of the Department of NRD&AE of the Agricultural University of Athens (AUA) was established taking into account the provisions of:

- A. Articles 30 until 45 and 85 of N. 4485/2017 (A' 114) 'Organization and operation of higher education, arrangements for research and other provisions'
- B. Articles 14 and 15, of N. 3374/2005 (GG 189, T. A', 2.8.2005) «Quality assurance in higher education. Credit transfer and accumulation system– Diploma supplement',
- C. of the article 80, Fri. 11a of N. 4009/2011 (GG 195 T. A'), «Structure, operation, Quality assurance of studies and internationalisation of higher education institutions", as amended by the provisions of Art. 47 Fri. c of n. 4025/2011 (GG 228 A), of Art. 5 Fri.8 of N. 4076/2012 (GG 159 A) and Art. 34 Fri.2 of N. 4115/2013 (GG 24 A).

ARTICLE 2 – Object-Purpose

Objective: The Department of NRD&AE of the Agricultural University of Athens, within the framework of the MSc, aims to provide specialized knowledge and scientific

training in modern subjects to support issues related to agricultural and environmental engineering.

It also educates and provides research knowledge at postgraduate level in the disciplines and research interests of the faculty members who serve in it.

Purpose: The purpose of the Department of NRD&AE, within the framework of the MSc, is:

- a) The promotion of scientific knowledge and the development of research and applications on issues related to specializations in the Postgraduate Program and the disciplines served by the Department.
- b) The creation of specialized scientists capable of being active at research level or responsibly staffing public and private sector services in the field of specialization and thus contributing substantially to the formation of space and sustainable development with scientific criteria.

ARTICLE 3 Master's Degree

The MSc of the Department of NRD&AE leads to the award of a postgraduate degree leading to the acquisition of a Master's Degree in "**DIGITAL TECHNOLOGIES AND SMART INFRASTRUCTURES IN AGRICULTURE**".

ARTICLE 4 Organizational and Administrative Structure of the Postgraduate Program

The Assembly of the Department, the Coordinating Committee of the Postgraduate Program and the Director of the Postgraduate Program contribute to the organizational and administrative structure of the Postgraduate Program:

1. The Assembly of the Department

The Assembly of the Department on issues related to the 2nd cycle of studies is attended by its members, except representatives of undergraduate students, in accordance with the provisions of law 4957/2022.

The Assembly of the Department has the responsibilities provided for in Law 4957/2022 as in force each time.

Specifically:

- It is responsible for the preparation and submission to the Senate of AUEB of proposals for the establishment of Postgraduate Programs in the Department and has all the responsibilities provided by the current legislation.

- Elects the Director of postgraduate studies and appoints the members of the Coordinating Committee
- It determines the details of the application of the selection criteria for postgraduate students, as provided for in Law 4957/2022.
- It shall establish the examination committees.
- It appoints the committees for drawing up the reserve list and selecting the admissions.
- Validates reserve lists.
- Assigns the teaching of courses to the Postgraduate Program.
- It appoints the members of the advisory committees for the preparation of the Postgraduate Thesis, as well as the members of the three-member examination committees respectively.
- It awards the Diplomas of Postgraduate Studies.
- It addresses any issue provided for by the individual provisions of the current legislation and the Postgraduate Studies Regulation of the Department.

2. Coordinating Committee

The Coordinating Committee of the Postgraduate Program consists of five (5) faculty members of the Department, who have undertaken postgraduate work and are elected by the Assembly of the Department for a two-year term, may be the same as the other Postgraduate Programs of the Department. The CC is responsible for monitoring and coordinating the operation of the programme.

3. Director of the Postgraduate Program

The Director of each Postgraduate Program is a member of the Postgraduate Program and is appointed together with his Deputy, by decision of the Assembly of the Department for a two-year term, who may be the same as the other Postgraduate Programs of the Department. He presides over the S.E., is a faculty member of the first grade or the rank of Associate Professor, is of the same or related subject with the subject of the Postgraduate Program and performs the duties defined by law and the Regulation of Postgraduate Studies. The Director of the Postgraduate Program makes recommendations to the competent bodies of the Foundation on any issue related to the effective operation of the program. The Director may not have more than two (2) consecutive terms and is not entitled to additional remuneration for his administrative work as Director.

The Director of the Postgraduate Program presides over and coordinates the work of the Postgraduate Program, monitors the organization and operation of the Postgraduate Program and proposes to the Assembly of the Department any issue related to the effective implementation and good operation of the Postgraduate Program.

4. Special Committees

For the better organization and operation of the Postgraduate Program, individual committees are formed by decision of the Assembly of the Department to assist the work of the Director and the Coordinating Committee (control and evaluation of the files of the candidate postgraduate students, examination of candidates, financial management, etc.)

The term of office of the representatives of the Department in the Special Committees of the Postgraduate Program is defined by the S.T. each year.

ARTICLE 5 – Teaching Staff

1. The teaching of the courses of the MSc, as well as the conduct of seminars, workshops, practical exercises, etc. can be undertaken according to law 4957/2022:
 - a. by at least sixty percent (60%) faculty members and E.E.P., T.I.P. and E.T.E.P., or retired faculty members of the relevant Department or teachers in accordance with Presidential Decree 407/1980 (A' 112) or article 19 of Law 1404/1983 (A' 173) or par. 7 of article 29 of Law 4009/2011. The members of E.E.P., E.DI.P. and E.T.E.P. must hold a Ph.D. degree. The Assembly of the Department evaluates the needs of the Postgraduate Program in teaching staff and, provided that the existing members of FACULTY, E.E.P., T.I.P. and E.T.E.P., retired faculty members and teachers in accordance with Presidential Decree 407/1980 (A' 112) or article 19 of Law 1404/1983 (A' 173) or par. 7 of article 29 of Law 4009/2011, are not sufficient, with a reasoned decision decides to assign teaching work to faculty members of other Departments of the same HEI or to invite faculty members of other HEIs or researchers from research centers of article 13^A of Law 4310/2014 (A' 258).
 - b. Researchers of recognized research institutions in Greece or abroad, who hold a PhD degree related to the subject they will be called upon to teach and have sufficient scientific, research and writing activity on this subject.
 - c. Scientists of recognized prestige, as well as executives of the public or private sector, provided that they have specialized knowledge and relevant experience on the subject of the Postgraduate Program.
2. The assignment of teaching a course or part of a course, as mentioned in paragraph 1 of this article, is made by decision of the Assembly of the Department.
3. The syllabus of all courses (compulsory and elective) is determined by the Assembly of the Department, following proposals from the relevant Departments and Laboratories of the Department of CSR&GM.

- The teaching of the courses includes the theoretical part of the course, the tutorial, laboratory and practical exercises, as well as seminars and lectures on specific topics related to the course syllabus and corresponding field work.

ARTICLE 6 – Notice and Conditions of Participation of Candidates

- Graduates of Agronomists, Foresters, Sciences, Polytechnic Schools, Informatics or related Departments of Greek Universities or recognized equivalent Departments abroad of related specialties are admitted to the Postgraduate Program, provided that they have been recognized by DOATAP. Graduates of relevant Departments of Higher Technological Educational Institutes (ATEI) are also admitted.
- The Assembly, following a proposal by the Coordinating Committee, reserves the right, after examining the curriculum of the department of origin of the candidate Postgraduate Students, to oblige them to successfully attend, as supernumerary, undergraduate courses of the Department of CSR and GM, in order to complete their knowledge in subjects that have not been taught.

ARTICLE 7 – Selection criteria for postgraduate students

The selection of M.F. candidates is made by the S.C. based on the provisions of Law 4957/2022 where the following criteria are taken into account:

- The degree grade.
- Knowledge of the English language at a level that, at the discretion of the selection committee, will allow the student to adequately meet all academic obligations (weight factor 10%). The level of language proficiency required is at least "good knowledge (B2)". In case of non-presentation of a recognized language certificate, the accepted candidates will undergo written examinations by the English Language School of the University.
- The personal interview by the Special Committee.
- The content of two letters of recommendation.
- The relevance of the subject of the dissertation and its grade. The existence of a relevant dissertation strengthens the candidacy, but it is not mandatory.
- Previous research activity, as evidenced by publications or announcements in scientific conferences.
- Other relevant scientific or professional qualifications.

The scoring limits and the weight of the selection criteria are defined in the following table, while the implementation details can be modified by the Assembly of the Department.

N/A	CRITERION	SCORE LIMITS	GRAVINESS
K1.	DEGREE GRADE	5–10	20%
K2.	PERSONAL INTERVIEW	3–10	20%

K3.	RELEVANCE OF THESIS STUDY	5–10	5%
K4.	LEVEL OF ENGLISH LANGUAGE LOWER 5%, TOEFL, ADVANCED 8% PROFICIENCY 10%	0–5 (In case of examination)	10%
K5.	REFERENCE LETTERS	0–10	5%
K6.	OTHER POSTGRADUATE PROGRAM	10	10%
K7.	DOCTORATE	10	15%
K8.	PUBLICATIONS	10	5%
K9.	OTHER PREVIOUS RESEARCH ACTIVITY, OR RELEVANT PROFESSIONAL EXPERIENCE	Based on years Based on years	5% 5%

For foreign students in the criterion for selecting the degree grade, A will correspond to 20%, B to 15% and B – to 10%.

For foreign students, English language proficiency will be certified based on a specific threshold in TOEFL (80) or IELTS (6.0) or C2 level qualifications.

ARTICLE 8 – Procedure for evaluating candidates' applications

1. The evaluation of candidates, who have submitted all the required supporting documents within the prescribed deadlines, is carried out by the special evaluation committee of the Department, which is established by decision of the Assembly
2. The Assembly of the Department determines by decision the number of admitted postgraduate students who will attend the offered Postgraduate Program as well as the details of the application of their selection criteria, the definition of additional criteria or the conduct of examinations and interviews, the results of which are taken into account during the selection
3. In case it is decided by the Assembly of the Department to conduct entrance examinations, the selection of the students admitted to the Postgraduate Program is under the responsibility of the S.E., which proposes to the Assembly committees for examinations, interviews and the nomination of M.P. candidates.
4. In the event of a tie between candidates, all candidates who are tied with the last candidate shall be entered as supernumeraries.
5. The reserve list shall be made public no later than fifteen calendar days after receipt of candidates' supporting documents. Once the results have been published, successful candidates must be aware of possible non-acceptance of their selection. The registrations of successful candidates take place within the dates set by the Assembly.

ARTICLE 9 – Selection Procedure for Candidates

Oral Interview of Candidates

For the selection of candidates in the Postgraduate Specialization Program, a relevant oral interview is conducted. The performance of the candidates during the oral interview is taken into account for their selection in the Postgraduate Program. The oral interview takes place on issues of wider pedagogical, scientific and social interest and aims at:

- The determination of the general scientific training of the candidate and the formation of his personality.
- Highlighting specific qualifications and other characteristics and activities of the candidate.
- The identification of possible deficiencies of the candidate, which would lead to the attendance by the candidate of additional undergraduate courses, laboratory exercises or practical exercises.
- The identification of the difficulties that the candidate may have for the continuous attendance of the courses and other obligations of the Postgraduate Specialization Program.
- The verification of particularities and other elements that the candidate has and which may play a role in his/her smooth integration into the Postgraduate Program.

The members of the committee evaluate each candidate separately and mark him with a specific number of points, which cannot be more than 10 merit points. The number of merit points (ECTS) that the candidate is finally credited with from his/her performance in the oral interview is the average of the numbers of merit points with which all members of the committee scored the candidate.

ARTICLE 10 – Criteria and procedure for selecting candidates

The evaluation points (A.M.) with which the candidate was credited from his/her specific qualifications, from his/her performance in the oral interview, are added together and constitute the total evaluation points (A.M.) of the candidate. This total determines the order of success of each candidate.

Based on the total number of merit points (IDs) obtained by each candidate, the Selection Board draws up a merit list of candidates.

The merit list includes, in order of success, all candidates and shows the successful candidates.

The table is then forwarded to the C.E. for review and submitted to the Assembly of the Department for approval.

An appeal against the success list can be made within 10 days from the date of announcement of the lists. The objection, which must be specific, is finally judged by the General Assembly of the Department.

ARTICLE 11 – Duration of Studies – Suspension of Studies

1. The duration of the full-time Postgraduate Program leading to the acquisition of the Master's degree is three (3) academic semesters. The first two (2) academic semesters concern the completion of courses and the third academic semester is available for the preparation, writing and presentation of the Postgraduate Thesis, as well as for attending relevant compulsory seminars and lectures.
2. In justified exceptional cases, this time may be extended by one (1) academic semester, following a proposal by the Coordinating Committee or an application by a Postgraduate Student and approval by the Assembly of the Department. If the above maximum time limit is exceeded, without fulfilling the educational obligations for obtaining the postgraduate degree, the M.F. is deleted by a declaratory act of the Assembly.
3. An Assembly of the Department, at the request of the interested Postgraduate Student and the recommendation of the S.E., for fully justified cases, may decide to accept the suspension of his/her studies for up to twelve (12) months. The period of suspension is not counted in the duration of studies.
4. In any case, the total time for obtaining a Master's degree may not exceed six (6) semesters, including the possible twelve-month suspension of studies.
5. The Postgraduate Program is also offered as part-time duration of four (4) semesters. The allocation of courses to semesters for part-time students is made by decision of the Assembly of the Department, following a proposal by the S.E.

ARTICLE 12 – Courses Taught and Credit Units (ECTS)

For the Master's Degree, students are required to attend the following courses and a series of seminars by experts coming from other educational institutions of the Public Sector or from the private sector. The selection of the above will be made in accordance with the provisions of Law 4957/2022. Courses are taught in English. The writing of the Master's Thesis is done in English. In addition, The postgraduate student is required to participate in seminars, lectures, field trips and field work. The total number of ECTS required for the acquisition of the Master's Thesis amounts to ninety (90) of which thirty (30) ECTS concern courses of the first semester of study, thirty (30) ECTS courses of the second semester of studies and thirty (30) ECTS for the preparation, writing and presentation of the Postgraduate Diploma Thesis. In order for

an elective course to take place, at least three (3) Postgraduate Students are required to have chosen it. Is it possible to conduct? elective course with a smaller number of Postgraduate Students, if the instructors can offer it.

The course schedule is as follows:

Table 1. Curriculum of the 1st semester of the MSc

N/A	Course Title	TEACHING HOURS	Credits (ECTS)
1	Έξυπνοι Αισθητήρες και Διαδίκτυο των Αντικειμένων / Smart Sensors and Internet of Things	3	6
2	Group A Elective Course	3	6
3	Group A Elective Course	3	6
4	Group A Elective Course	3	6
5	Group A Elective Course	3	6
	Total		30

The elective courses of Group A for the 1st semester of study are presented below:

1. Διαχείριση Κατανεμημένης Παραγωγής Ενέργειας και Έξυπνων Δικτύων / Management of Distributed Energy Production and Smart Grids.
2. Σχεδιασμός, διαχείριση και έλεγχος περιβάλλοντος θερμοκηπίων / Design, Management and Environmental Control of Greenhouses.
3. Ρύθμιση Τεχνητού Περιβάλλοντος Χώρων Στέγασης Αγροτικών Ζώων / Indoor Environmental Control for Animal Facilities.
4. Μη Καταστροφική Εκτίμηση της Ποιότητας Αγροτικών Προϊόντων / Nondestructive Evaluation Techniques for Analysis of Agricultural Products Quality.
5. Εξελιγμένα και Αυτόνομα Οχήματα και Μηχανήματα / Sophisticated and Autonomous Machinery and Vehicles.
6. Precise inputs management.
7. Remote sensing in agriculture.
8. Βιο-ενέργεια / Bio-Energy
9. Programming languages for applications

Table 2. The curriculum for the 2nd semester of study

N/A	Course Title	TEACHING HOURS	Credits (ECTS)
1	Embedded and Real-Time Systems	3	6

2	Group B Elective Course	3	6
3	Group B Elective Course	3	6
4	Group B Elective Course	3	6
5	Group B Elective Course	3	6
	Total		30

The elective courses of Group B for the 2nd semester of study are presented below:

1. Cyber-Physical Systems and Smart Infrastructures.
2. Computational Intelligence and Machine Learning.
3. Βελτιστοποίηση Ενεργειακής Απόδοσης (και Ευφυής Ενεργειακή Διαχείριση) στις Γεωργικές Εκμεταλλεύσεις / Optimization of Energy Efficiency Technologies (and Smart Energy Management) in Agricultural Enterprises.
4. Προηγμένες Τεχνολογίες στα συστήματα υδροπονικών καλλιεργειών / Advanced Technologies in Hydroponics Systems.
5. Waste management and circular economy systems.
6. Ιχνηλασιμότητα και Διαχείριση Εφοδιαστικής Αλυσίδας / Traceability and Supply Chain Management.
7. Data aggregation and analysis in precision agriculture.
8. Τεχνολογίες ηλεκτροπαραγωγής από ΑΠΕ – Electricity and power production from RET

The **3rd semester of study** corresponds to the preparation of the **postgraduate dissertation**, and is equivalent to **30 ECTS Credits**. At the same time, an **internship** of 1 to 3 months is provided to companies operating in the agri-food sector, during the 3rd semester, something that will further enhance the cognitive level of students as they will come into contact with the working environment and market of related sectors while they will be called upon to apply the knowledge acquired in the previous two semesters. The companies in which students will be able to carry out their internships will be proposed each year.

The Postgraduate Program provides important basic knowledge on the principles governing the operation of digital technologies and smart infrastructures through compulsory courses, while at the same time through elective courses it enables further specialization depending on the undergraduate academic level of postgraduate students and their interests in the following subjects:

- 1) Renewable Energy Technologies & Energy Efficiency, on Farms
- 2) Smart Agricultural Infrastructure (greenhouses, vertical farming systems and livestock facilities)

- 3) Post-harvest technologies (conventional conservation, degreening and controlled atmosphere chambers)
- 4) Robotics, Automation Systems and Artificial Intelligence
- 5) Precise input management
- 6) Waste Management
- 7) Supply Chain and Traceability of agricultural products
- 8) Data Analysis

The knowledge provided by the postgraduate program is essential for today's working conditions where, among other things, specialized studies are required in cases of design, development and management of digital technologies and smart infrastructures.

ARTICLE 13 – Diploma Thesis, Supervisor and three-member Examination Committee

In addition to the courses taught, each M.P. is required to prepare a Master's Thesis. Its subject and evaluation process is defined by Law 4957/2022. The writing of the Master's Thesis is done in English.

A) Appointment of Supervising Professor and Monitoring Committee:

1. The Assembly of the Department, on the proposal of the S.C., appoints for each M.P. the three-member Advisory Committee, one of which will be the supervising professor.
2. The three-member Advisory Committee consists of the Supervising Professor, who is a faculty member of the relevant Department and belongs to the rank of Professor or Associate Professor or Assistant Professor and two other members, who may be teachers of the MSc in accordance with the provisions of paragraph 1 of the article 5. The members of the committee must have the same or related scientific specialization with the subject of the Postgraduate Thesis, as defined by article 5 (par. 4) of Law 3685/2008.
3. The three-member Monitoring Committee is also the Examination Committee of the Postgraduate Thesis. For the quorum of the Examination Committee during the presentation and examination of the M.F. the presence of at least two (2) members is required, one of which will be the Supervising Professor.
4. It is possible for an M.F. with his application to the C.E. to request only once a change of the supervising professor, after stating in writing and adequately the reasons. The Assembly of the Department decides on the request, taking into

account the recommendation of the C.E. and the views of the supervising professor.

5. Change of supervisor may also entail a change of subject of the Postgraduate Thesis, without this being accompanied by an extension of the study time.
6. The M.F. collaborates with the Supervising Professor for the selection of the topic of the Postgraduate Thesis, which is approved by the Assembly of the Department and assigned after the successful examination of all courses of the 1st and 2nd semester.
7. Postgraduate students are fully integrated into the activities of the Department by participating in research and other activities determined by the Assembly of the Department upon proposal of the supervising professor.

ARTICLE 14 – Registration and Tuition Fees

The operating costs of the MSc will be covered by the payment of tuition fees by postgraduate students, which amounts to 2,500 Euro for domestic and EU students and 4,000 Euro for foreign students (non-EU), per postgraduate student for the total of his/her studies (3 full semesters). It is emphasized that within the framework of this MSc no fees are paid to the faculty members of AUEB who teach in the postgraduate program.

1. For each postgraduate student enrolled in the Postgraduate Specialization Program there is an obligation to pay tuition fees.
2. The tuition fees for the Postgraduate Program amount to 900 Euros for the first semester and 800 Euros for the second and third semesters for domestic students and 1400 Euros for the first semester and 1300 Euros for the second and third semester of studies for foreign students.
3. The procedure for the payment of tuition fees for the Postgraduate Program is done through the Special Account for Research Funds of AUEB. Tuition fees are used for all kinds of expenses required for the education of postgraduate students and generally for the operation of the Postgraduate Program.

Each expenditure is made by decision of the Assembly of the Department, upon the recommendation of the C.E.

ARTICLE 15 Operating Costs (cost category/cost €)

The MSc will operate with tuition fees amounting to 2,500 Euro for European students and 4,000 Euro for non-EU students, for all three (3) semesters of study. The budget has been prepared taking into account the maximum number of students (15) and an average expenditure of about 1,200 euros per student for the preparation of the

postgraduate study. If a smaller number of students is selected, income and expenses will be adjusted accordingly.

Exemption from tuition fees may have up to 30% of enrolled postgraduate students, in accordance with the provisions of law. 4957/2022. Specifically: Following the announcement of the selection results of postgraduate students, students with a personal income of less than 100% or their family disposable equivalent income does not exceed 70% of the national median disposable equivalent income, according to the recently published data of EL.STAT. apply for exemption from tuition fees. Applications are examined by the S.Q. and students with the lowest income are exempt from tuition fees.

(a) Expected INPUTS

	FINANCING	Amount in € per course of study
1	Tuition fees	35.500
2	Budget of the HEI and the bodies collaborating for its organization, according to article 43 of Law 4485/17	0
3	Donations, benefits, bequests and all kinds of sponsorships of public sector bodies, as defined in the indent. A' of para. 1 of article 14 of Law 4270/2014 (A' 143), or the private sector	0
4	Resources from research projects	0
5	Resources from programmes of the European Union or other international organisations	0
6	Revenue of the Special Accounts for Research Funds (E.L.K.E.) of the HEI	0
7	Any other lawful source (...detailed report...)	0
TOTAL		35.500

(b) Expected OUTPUTS

	EXPENSES	Amount in € per course of study
1	Hardware and software costs	8.000
2	Costs of awarding scholarships to postgraduate students	0
3	Consumables costs	8.000
4	Travel expenses of the Postgraduate Program's teachers	1.000
5	Travel expenses of students of the Postgraduate Program for educational purposes	1.000

6	Teaching fees of regular staff of HEIs and research centers and institutes participating in the organization of the Postgraduate Program	0
7	Remuneration of temporary teaching staff of HEIs participating in the organization of the Postgraduate Program,	0
8	Teaching fees of para. 5 of article 36 of Law 4485/2017	0
9	Administrative and technical support fees	5000
10	Other expenses, such as publicity-promotion expenses, purchase of educational material, organization of conference, expenses of field work	1.850
11	Operating expenses of the Institution (30%) with priority to meet the needs of the Postgraduate Programs that operate without tuition fees.	10.650
TOTAL		35.500

According to the results from the operation of the MSc, the budget per cycle of studies (3 semesters) does not vary, as the main expense centers, as mentioned above, as well as the tuition fees remain stable.

ARTICLE 16 Timetable of Studies – Attendance – Examinations

1. The duration of the full-time Postgraduate Program leading to the acquisition of the Master's degree is three (3) academic semesters. The first two (2) academic semesters concern the completion of courses and the third academic semester is available for the preparation, writing and presentation of the Postgraduate Thesis, as well as for attending relevant compulsory seminars and lectures.
2. In justified exceptional cases, this time may be extended by one (1) academic semester, following a proposal by the Coordinating Committee or an application by a Postgraduate Student and approval by the Assembly of the Department. If the above maximum time limit is exceeded, without fulfilling the educational obligations for obtaining the postgraduate degree, the M.F. is deleted by a declaratory act of the Assembly.
3. An Assembly of the Department, at the request of the interested Postgraduate Student and the recommendation of the S.E., for fully justified cases, may decide to accept the suspension of his/her studies for up to twelve (12) months. The period of suspension is not counted in the duration of studies.
4. In any case, the total time for obtaining a Master's degree may not exceed six (6) semesters, including the possible twelve-month suspension of studies.

5. The Postgraduate Program is also offered as part-time duration of four (4) semesters. The allocation of courses to semesters for part-time students is made by decision of the Assembly of the Department, following a proposal by the S.E.
6. The grading of the Master's Thesis is based on the scale 0–10. The grading with a grade equal to or greater than 6.5 is considered successful, evaluating the content of the work, the knowledge of the M.P. and the way the subject is presented.
7. The final grade of the Master's degree results from the grade of the postgraduate courses and the grade of the Postgraduate Thesis. For the calculation of the final grade, the average grade of all courses is multiplied by $2/3$, while the grade of the Master's Thesis is multiplied by $1/3$.
8. Examinations in the courses are held during and/or at the end of the semester. The examination of the courses takes the form of a written and/or oral examination and/or the submission of assignments. The score is made in the climate of 1-10. A successful examination is considered one that scores at least six (6) out of ten (10). The final grade of each course results from an examination procedure determined by the instructor in a way that he has defined at the beginning of the lectures. The results are issued by the instructors within twenty (20) days of the examination. In case of failure, the examination is repeated in a short time. In case of a second failure, the examination is repeated by a three-member committee of members D.Q.P. of the Department, who have the same or related subject matter as the course under examination and are defined by the General Assembly. In case of third failure, the student is automatically deleted from the Program's registers.

ARTICLE 17 Logistics

For the operation of P.M.S. The existing logistical infrastructure of the Laboratories of Agricultural Engineering and Agricultural Construction will be used:

Indicative equipment used in research and training on agricultural machinery and precision agriculture (application of advanced sensors for crop monitoring, application of information technologies and robotics in crop and livestock monitoring, application of artificial intelligence in the analysis of collected data from crops and animals, decision support systems for farm management).

- Small test room for pumping units
- Farm tractor

- Farm tractor machinery accessory series (such as plows, seeders, spraying complexes, Digging machines).
- 3 Drones (2 DJI Phantom 4 Pro and a DJI S800) equipped with multispectral (Micasense RedEdge and Parrot Sequoia) and thermal cameras (Flir Vue Pro) for data collection and mapping with aerial photographs.
- 3 foliage sensors (Skye SpectroSense 2, Trimble GreenSeeker and Holland Scientific Crop Circle ACS-470) for mapping crop spectral reflectance and robustness data.
- Ground electrical conductivity sensor Geonics Limited EM38-MK2 for the mapping of soil variability.
- RTK-GPS Topcon Hyper V to collect high-precision topographic data.
- Multispectral and thermal handheld cameras for field sampling in situ.
- Foliage sensors (Holland Scientific RapidSCAN CS-45, Trimble Greenseeker Handheld) and chlorophyll meters (atLEAF) handheld.
- Sensor Deal to map the architectural structure of crops.
- Pyramidal glass frame greenhouse of useful extent 100 m².

The Automation Group in Georgia has at its disposal a variety of active equipment components for educational, research and development purposes. The equipment is installed in specialized facilities of the Laboratory of Agricultural Engineering. The available equipment includes:

- Standard electrical/electronic laboratory equipment, such as oscilloscopes, signal generators, welding units, properly equipped computers etc.
- Wide variety of electric motors of various sizes, from miniature stepper motors DC up to more than 10 kW three-phase motors AC.
- Programmable electronic loads 2.2 kW (AC and DC)
- Control circuits/driving motors of various sizes and types, from L293 chips and units PWM up to unit phases of configuration, such as the unit Kemo M028, and three-phase systems.
- Power electronics equipment (Flexiva modules used as DC/DC Converters, programmable inverters, etc.).
- Electrical storage devices (400 Ah (C8)/ 48 V OPzS Electric accumulator bank, 350 Wh Hybrid Supercapacitor Bank)
- Industrial units PLCs and three-term automatic control units.

- Embedded systems modules,, such as, Units Raspberry pi (model 3), Units Arduino, Units Pycom and units Atmel.
- Integrated control and data collection systems (MACQU platform, NI Compact RIO, NI PCI–6259).
- Large number of sensing units of environmental magnitudes and parameters, such as, temperature, moisture, sunshine, soil moisture, Salinity, fluid flow, gas flow, pressure, acidity (pH), electrical conductivity, and other sensors.
- A significant number of units of specialized sensors, such as GPS and IMUs.
- Wireless microwave equipment units, such as units IEEE 802.11, LoRa and SigFox.
- Wireless Communications Power Measurement Equipment, such as measuring units Tenmars TM–195 3 Axis RF Fiel.
- Energy Measurement Equipment/power from standard wattmeters to minutes microchips such as the enumerator Coulomb LTC4150.
- Unmanned gaseous vehicles (UAVs, Drones) medium size (TXA–R10 type), suitable for performing spraying missions.
- Experimental autonomous robotic vehicles, intended for specific missions (Measurement collection, Sprays, etc.).

Indicative equipment for research and education of students related to post-harvest and post-harvest handling of fresh agricultural products.

- 5 Laboratory cold rooms for cooling fruit and vegetables.
- 1 Laboratory refrigeration chamber for freezing fruit and vegetables (–30oC).
- 3 horizontal type freezers (–30oC).
- 1 vertical quick-freezer (–80oC).
- 1 laboratory scale vacuum precooler.
- Equipment for packing fruit and vegetables in a modified atmosphere (Instruments for measuring and recording content CO₂, O₂ , N₂, & Water vapor, Respiratory rate measuring instruments for packaged and exposed fruit and vegetables, Apparatus for mixing respiratory gases CO₂, O₂, N₂ to achieve active modified atmosphere: portable equipment for measuring and recording ethylene production in climacteric fruits.
- 1 gas chromatograph

- Digital Image Analysis Equipment (Special photo cage, High precision digital camera, Digital Image Analysis Software) but also infrared image (High precision thermal camera).
- Equipment for the analysis of organoleptic properties of fruit and vegetables (3 Automatic titers a programmable, 1 viscometer Brookfield, Water Activity Measurement Equipment, Sugar measuring instrument).
- UV/Optical spectrum double beam spectrophotometer.
- 4 drying ovens (a rushed synagogue & 1 Vacuum).
- Measuring equipment & Log (Wired & Wireless) temperature and relative humidity (Onset indoor and outdoor data loggers).
- Permeability measurement equipment (CO₂, O₂ & H₂O) in packaging materials.
- 2 educational heat pumps (Water & Air) (one of which The/Y controlled).
- 1 Educational Water Cooler – self-construction.
- 1 System for measuring operating characteristics in centrifugal fans (The/Y controlled).

Indicative research and training equipment on renewable energy sources and energy efficiency.

2 microgrids of renewable energy sources are installed in the laboratory facilities.

1) The first microgrid is an experimental autonomous single-phase multigeneration microgrid, where its main characteristics are :

- A photovoltaic array of 1.7 kWp, monocrystalline silicon technology.
- A wind turbine 1 kW.
- One hydrogen fuel cell unit (1.2 kW PEM fuel cell)
- One electrolysis plant for hydrogen production (100 L/h)
- A programmable DC and AC load, 2.2 kW).
- One battery pack (400 Ah) In 48 VDC.
- The microgrid is connected based on the topology of SMA.

2) Second demonstration autonomous three-phase microgrid, electric vehicle charging station. The station covers the electrical needs of 10 electric bicycles and one electric bus.

The autonomous microgrid is designed based on the SMA topology. It consists of: (a) a photovoltaic array of standard polycrystalline silicon modules, rated

at 5 kWp, (b) three Sunny Island inverters, (c) a Sunny inverter for the photovoltaic array, and (d) a standard OPzV deep discharge solar battery array. The battery pack consists of 24 batteries of 2 V and 2160 Ah each.

Fully controlled electronic loads and power supplies.

Other equipment concerns various photovoltaic systems (monocrystalline, polycrystalline and thin-film) interconnected to the electricity grid with a total capacity of ~15 kW. A fully electronically controlled tracker for testing various types of photovoltaic panels. DC-DC converters.

Educational photovoltaic tracker (fully electronically controlled) for measuring and evaluating power generation from various photovoltaic panels.

Educational solar collector of vacuum tubes for the demonstration and evaluation of its thermal behavior.

Three small-scale reverse osmosis desalination plants (<50 m³/day) used as an alternative means of energy storage in desalinated water and supplied with energy from installed renewable energy technologies (photovoltaics and wind turbine) or microgrids.

5 kW Organic Rankine Cycle power generation system supplied with low temperature heat <100 °C from a (low concentration) photovoltaic array.

A fully automated weather station.

Digital measurement collection systems and corresponding sensors (temperature, humidity, power, current, voltage). Series of tabletop instruments for electrical measurements.

3) Experimental Organic Rankine Cycle machines for heat recovery from low temperature thermal processes and Renewable Energy Sources such as solar energy and biomass.

Indicative research and training equipment at the Lab. Agricultural Engineering on thermodynamics and heat and mass transfer:

- Device for the evaluation of different types of heat exchangers (squamous, double pipe, shell-pipes etc.)
- Device for the study of heat transfer by conduction, convection and radiation.

Indicative research and training equipment on agricultural construction and waste management:

- Experimental greenhouses (Cultivation in soil and hydroponic systems)
- Wireless sensor system for recording climate parameters (P.X. air temperature, relative humidity and air velocity)
- Three (3) closed plant growth chambers (growth room chambers / vertical farming) fully equipped with hydroponic system, Lighting (LED) and sensors recording environmental parameters
- 3D Sound anemometers and hot wire anemometer
- Ammonia measurement analyzer, CO₂ and NO_x
- System for recording normal plant functions (crop monitoring)
- Closed circuit systems (Recorders, Cameras, Microphones) for the continuous monitoring of the behaviour of farm animals
- High-speed material mixer
- Double-bladed estuary and granulator and Laboratory small-scale estuary
- Material flow indicator meter
- Auto analyzer MICRO–OXYMAX for testing biodegradation of organic substances in a humid environment
- Measuring system BOD (biologically required oxygen) Type WTW OxiTop
- Laboratory for the control of mechanical properties of materials. (i) Mechanical tests with type instrument INSTRON, (ii) Ambush net, (iii) ATLAS
- Degradation simulator through radiation exposure UVA–UVB
- Infrared spectrophotometer unit
- Infrared spectrum analyzers with transformations Fourier – Scanning differential calorimetry analyzers
- Equipment for simulating climatic conditions of experiments (temperature, moisture, lighting)
- Optical analog microscope with built-in camera
- The/Y for computational fluid mechanics simulations
- ANSYS BENCHMARK /MECHANICAL
- Platform ARCMaP
- Titration and measurement equipment PH
- Tachometers, Spatial walkers, Tape Measurers, Stages, Rectangles, Global Positioning System handheld receivers (GPS)
- Drying furnace

- Incineration furnace
- Precision balance
- Meter pH temperature conductivity
- Unit of determination of total nitrogen by Kjeldhal
- Biogas pilot plant.

ARTICLE 18 Evaluation of the Postgraduate Program

At the end of each semester, postgraduate students evaluate each course and each instructor. The overall evaluation of the program is carried out by teachers and students with a specially designed questionnaire. The evaluation is carried out in accordance with the provisions of Law 4009/2011. The evaluation procedures are carried out in accordance with the provisions of Law 4957/2022. Provision is made for the evaluation of the curriculum and small-scale modifications to the curriculum after the end of each course of study.

ARTICLE 19 Dissertation Assignment Procedure

At the beginning of the 2nd semester, in a joint discussion of Professors and students, the research interests of the faculty members are developed. to determine the topic of the Master's Thesis. The M.F. is then addressed to the faculty member whose research activities are the subject of his interest. The Supervising Professor, after determining the topic of the thesis, proposes the three-member advisory and examination committee of the M.F. to the Secretariat of the Postgraduate Program.

ARTICLE 20 Plagiarism-Intellectual Property Rights and Diploma Thesis

1. Plagiarism

a) Students should be aware that copying/plagiarism is considered serious academic misconduct. Plagiarism is the copying of someone else' s work, as well as the use of someone else's work - published or not - without proper attribution.

b) For any misconduct or violation of academic ethics (citation of any documentation without relevant reference), the Coordinating Committee of the University is informed.M.S. and the institutions of the Foundation, which may decide up to and including the expulsion of the student.

c) Violations are also considered the offenses of copying or plagiarism and generally any violation of copyright provisions by a postgraduate student during

the writing of papers in the context of the Thematic Units or the preparation of a Diploma Thesis.

d) Students must be aware of the rules on plagiarism and intellectual property and strictly observe them throughout their studies and cover the educational obligations arising from the Curriculum.M.S.

2. Intellectual Property Rights of Diploma Thesis

a) The intellectual property rights of the Diploma Thesis belong to the author (postgraduate student), as well as the examination and award of the M.D.E., presupposes that the Diploma Thesis is an element of his personal contribution, with a character of individuality, uniqueness and originality. The author is also responsible for the content of the Diploma Thesis.

b) Every postgraduate student of the P.M.S. he/she must submit a signed declaration (Article 8 of Law 1599/1986) of copyright and management of research data, concerning the completion of his/her studies, stating the following:

b1) The copyright of my Diploma Thesis, after its completion, will belong simultaneously to me and P.M.S. in which I will prepare it.

b2) The management of the data belongs jointly to me and the Supervising Professor of the Diploma Thesis.

b3) Any scientific publication and/or announcement (posted or oral), and/or reference from the documentation material/database of the Diploma Thesis, will be written by myself and the Supervisor (or a member of the three-member Examination Committee), depending on their contribution to research or to the writing of research papers.

b4) The Supervisor has the right to exploit and publish the results produced (data, studies, programs, applications, prototypes, etc.).etc.). This exploitation does not concern commercial exploitation, but action in the context of Research and Science.

b5) I certify that this Diploma Thesis is an original work, and as far as I know, does not affect the intellectual property rights of third parties. In the event that is included in D.Q. material, which is the intellectual work of third parties, a corresponding reference and reference is made to each creator, within its content .

ARTICLE 21 Grounds and Procedure for Deletion

If the above maximum time limit is exceeded, without fulfilling the educational obligations for obtaining the postgraduate degree, the M.F. is deleted by a declaratory act of the Assembly. Also, in case of failure in the grading of the Diploma Thesis (grading with a grade less than 6.5), the M.F. is entitled to be re-examined once again, not earlier than one (1) month nor later than three (3) months from the previous examination. In case of a second failure, M.F. is removed from the program by decision of the General Assembly

The deletion of M.F. in all cases is carried out by decision of the Assembly of the Department, upon the recommendation of the S.E. The Department of Natural Resources & Agricultural Engineering (TIN&G.M.) issues a relevant declaratory act.

ARTICLE 23 Award of a Master's Degree

After the completion of all the obligations of the M.P. and the successful examination, he is awarded the title of M.Sc. "Digital Technologies and Smart Infrastructure in Agriculture"

The final score is indicated in the M.D.E. as follows:

- From 5.00 to 6.49: GOOD
- From 6.50 to 8.49: VERY GOOD
- From 8.50 to 10: Excellent

In a public session of the Assembly of the Department, the minutes of the successful examination of the three-member Examination Committee are read and the announcement of the M.F. is made.

The confession of M.F. takes place in a special Public Ceremony. The Master's degree is signed by the Rector and the Head of the Department of Agricultural Addition and Agricultural University of Athens.

RULE 24 Amendments to Rules of Procedure

The Assembly of the Department has the ability to create new directions or modify existing ones. The courses of these directions will be taught in **English**.

ARTICLE 25 Transitional provisions

Any other issues that arise and are not regulated by this Regulation will be resolved by the competent bodies within the framework of the current legislation and especially Law 4957/2022 on postgraduate studies.

