

Regulation of studies, practice internship,  
mobility, preparation of assignments  
Postgraduate Program  
“Aerial Autonomus Systems”

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According to the decision of the Assembly of the Department of Electrical and Computer Engineering of the Aristotle University of Thessaloniki (session no. 20/6-6-2024), and the Senate of the Aristotle University of Thessaloniki (session no. 3151/23-10-2024), the present "Regulation on studies, internship, mobility, and thesis preparation of the Interdepartmental Postgraduate Program (IPPM)" constitutes an excerpt from the Operational Regulation of the IPPM, as approved in the aforementioned sessions, and is as follows:

## A. Study Regulation

The Interdepartmental Postgraduate Program "Aerial Autonomous Systems" has an Internal Operating Regulation (see Appendix A11 and below) and a Study Guide (see Appendix A8), which are posted on its website <https://websites.auth.gr/uavmaster>

### Article 1

#### Subject-Purpose of the Postgraduate Studies Program

The Schools of Electrical and Computer Engineering, Mechanical Engineering, and Rural and Surveying Engineering at the Faculty of Engineering of Aristotle University of Thessaloniki are organizing and operating from the academic year 2024-2025, the English-language Postgraduate Studies Program "AERIAL AUTONOMOUS SYSTEMS," in accordance with the provisions of this decision and the provisions of Law 4957/2022.

The Interdepartmental Postgraduate Studies Program aims at understanding the basic concepts, principles and technologies, but also at deepening the understanding of advanced methods of analysis, design, optimization and control of autonomous systems (unmanned vehicles). The program combines various areas of Engineering sciences, with a particular emphasis on their application in innovative, wide-ranging applications. These include, among others, agricultural and topographical observations, monitoring of forested areas, prevention and assistance in natural disasters, civil protection, as well as goods transportation.

The **purpose** of the Interdepartmental Master's Program (D.P.M.S.) is to equip students with advanced interdisciplinary skills necessary for the design, performance, optimization, operational utilization, and evaluation of the technical and economic sustainability of unmanned vehicle systems.

Within this framework, students will acquire specialized knowledge governing contemporary autonomous systems, focusing on issues characterized by interdisciplinary complexity, thereby expanding the scope of the Postgraduate Studies Program.

The **expected learning outcomes** and qualifications of those who successfully complete the program are estimated to be:

- The promotion of knowledge and the development of research in the scientific and technological area of autonomous systems.
- Equipping graduates with the necessary knowledge to integrate into a demanding, rapidly changing environment with interdisciplinary characteristics, as required by the new global conditions prevailing worldwide.

- Covering knowledge for research and teaching needs in the broad field of design and construction, control, telecommunications, operations, innovative mapping and positioning methods with the combination of modern technologies.
- Preparation for doctoral studies.

## Article 2

### Awarded Degree of Postgraduate Studies

The D.P.M.S. awards a Diploma of Postgraduate Studies (D.M.S.) with the title:

Degree of Postgraduate Studies in AERIAL AUTONOMOUS SYSTEMS

The D.P.M.S. has no specializations.

The successful completion of the Master's Program leads to Level 7 of the National and European Qualifications Frameworks, according to article **47 of Law 4763/2020 (FEK A'254)**.

## Article 3

### Administrative Bodies of the MCs Programs

Administrative bodies for organization and operation of the MSc programs are:

**I.** The Institution's Senate, which is entrusted with the academic, administrative, and organizational matters of the Postgraduate Studies Programs, exercises all authorities regarding the Postgraduate Studies Programs that are not assigned by law to other bodies.

**II.** The Postgraduate Studies Committee, established by decision of the Senate, consists of the responsible Vice Rector as the President, as well as one (1) member of the Teaching and Research Staff (D.E.P.) from each School of the Aristotle University of Thessaloniki (AUTH) and one (1) member from the categories of Special Teaching Staff (E.E.P.), Laboratory Teaching Staff (E.DI.P.), and Special Technical Laboratory Staff (E.T.E.P.) of AUTH. The members of the Committee have experience in organizing and participating in second-cycle programs. The term of the Committee is two (2) academic years.

The **Program of Studies Committee**, which is appointed by the Senate of the Aristotle University of Thessaloniki (AUTH), based on the relevant recommendations of the Schools Assemblies.

In detail, the Program of Studies Committee of the Interdepartmental Postgraduate Studies Program (D.P.M.S.) includes: Three (3) representatives with their substitutes from the School of Electrical and Computer Engineering, during the first two years and two (2) representatives with their substitutes from the cooperating Schools of Mechanical Engineering and Rural and Surveying Engineering. These members are appointed by the Assembly of each School, based on their teaching and research contributions and their expertise in matters of Interdepartmental Postgraduate Studies Programs.

During the second two-year period, in the Program of Studies Committee of the Interdepartmental Postgraduate Studies Program (D.P.M.S.), will participate the School of Mechanical Engineering with three (3) representatives with their substitutes, during the third two-year period the School of Rural and Surveying Engineering and the other cooperating Schools (excluding the above two), will participate with two (2) members. This cyclical process repeats accordingly, ensuring representation and participation from all relevant schools over time.

In total, in the Program of Studies Committee, participate seven (7) members of the Academic Research Staff. By decision of the Program of Studies Committee, a Coordinating Committee is established with a two-year term, in which the Director of the Interdepartmental Postgraduate Studies Program and four (4) members of the Program of Studies Committee, must participate.

**III.** The Program of Studies Committee has the following responsibilities:

- a.** It forms Committees for the evaluation of applications from prospective postgraduate students and approves their enrollment in the Interdepartmental Postgraduate Studies Program.
- b.** It assigns teaching duties to the instructors of the Interdepartmental Postgraduate Studies Program.
- c.** It recommends to the Institution's Senate, the modification of the decision establishing the Interdepartmental Postgraduate Studies Program, as well as the extension of the duration of the Program.
- d.** It forms examination committees for the evaluation of postgraduate students' theses and appoints a supervisor for each thesis.
- e.** It certifies the successful completion of studies in order to award the degree of the Interdepartmental Postgraduate Studies Program.
- f.** Approves the report of the Interdepartmental Postgraduate Studies Program, following the recommendation of the Coordinating Committee (C.C.).

By decision of the Program of Studies Committee, the responsibilities mentioned in points (a) and (d) may be transferred to the Coordinating Committee (C.C.) of the Interdepartmental Postgraduate Studies Program.

**IV.** The Coordinating Committee (C.C.) of the Interdepartmental Postgraduate Studies Program is established by decision of the Program of Studies Committee, with a two-year term. The participation of the Director of the D.P.M.S. and four (4) of the members of the Program of Studies Committee, in the Coordinating Committee, is mandatory.

The Coordinating Committee has the following responsibilities:

- a.** Prepares the initial annual budget of the MSc Program and its amendments, if the MSc has resources according to article 84 of Law 4957/2022, and recommends its approval to the Special Account for Research Funds.
- b.** Prepares the report of the Interdepartmental Postgraduate Studies Program (D.P.M.S.) and recommends its approval to the School's Assembly.
- c.** Approves the expenses of the D.P.M.S.
- d.** Approves the awarding of scholarships, reciprocal or not, in accordance with the provisions of the MSc's establishing decision and the Regulation of the Postgraduate and Doctoral Programs of Studies.
- e.** Recommends to the Program of Studies Committee the allocation of teaching duties and the assignment of teaching responsibilities to the categories of instructors as defined in Article 83 of Law 4957/2022.
- f.** Recommends to the Program of Studies Committee the invitation of Visiting Professors to cover the teaching needs of the Interdepartmental Postgraduate Studies Program.

- g. Prepares a plan for the modification of the program of studies, which it submits to the Program of Studies Committee for approval.
- h. It proposes to the Program of Studies Committee, the redistribution of courses among academic semesters, as well as issues related to the quality enhancement of the program of studies.

In the Coordinating Committee, Emeritus Professors of the School or collaborating Schools may participate, if they are involved in teaching activities within the Interdepartmental Postgraduate Studies Program.

The **Director of the MSc** is appointed by the Program of Studies Committee, for a two-year term, as one of the regular representatives from the Schools on a rotating basis:

1) Electrical and Computer Engineering, 2) Mechanical Engineering and 3) Rural and Surveying Engineering, in the order listed above.

*The Director shall have the powers provided for in Article 82 par. 4 of Law 4957/2022 and any others specified in the MSc' establishing decision:*

- a. Presides over the Coordinating Committee as well as the Program of Studies Committee and prepares the agenda, convening their meetings.
- b. Recommends issues concerning the organization and operation of the program to the Program of Studies Committee.
- c. Recommends to the Coordinating Committee and other bodies of the Interdepartmental Postgraduate Studies Program (D.P.M.S.) and the Institution, issues related to the effective functioning of the Program.
- d. Is the Scientific Coordinator of the Interdepartmental Postgraduate Studies Program (D.P.M.S.) according to Article 234 of Law 4957/2022 and exercises the corresponding responsibilities.
- e. Monitors the implementation of the decisions of the administration bodies of the MSc and the Postgraduate Studies' Regulation, as well as the implementation of the MSc budget.

The Director of the D.P.M.S., as well as the members of the Coordinating Committee and the Program of Studies Committee, are not entitled to any reward or any compensation for the performance of the responsibilities assigned to them and related to the performance of their duties.

The administrative support for the program will be provided by the Secretariat of the host School in collaboration with the Secretariat of the Interdepartmental Postgraduate Studies Program. The Secretariat of the Interdepartmental Postgraduate Studies Program is responsible for maintaining records and grades of postgraduate students. Additionally, it informs postgraduate students on issues related to the organization and operation of the program. Finally, it prepares the issues agenda submitted to the Program of Studies Committee.

#### **Article 4**

#### **Categories of candidates**

Holders of degrees/diplomas from Schools/Departments of Engineering, Physics, Computer Science, Mathematics, from domestic institutions or equivalent recognized institutions abroad, as well as graduates from the military academies of the Armed Forces are admitted to the MSc. By exception, graduates from other Schools of the positive sciences are accepted, if they can document many years of professional

experience at an appropriate level in relevant fields.

The recognition of foreign degrees for admission to the postgraduate program, is carried out by the Academic Schools. If the first cycle of studies has been completed abroad, the candidate is not required to obtain equivalence of degrees from DOATAP. Even if they provide an equivalence, the recognition is still carried out by the Academic Schools.

The Academic Schools are responsible only for the academic recognition of degrees and not for their equivalence. The responsibility for the equivalence of degrees remains with DOATAP.

Applicants who have already applied to, or are attending the D.P.M.S., under the condition of submitting an individual recognition act from DOATAP, are exempt from this obligation. Their application or continuation of their studies will be evaluated based on the criteria of the new law.

**Method of verifying** the general type of first cycle degree/diploma:

**1. The authenticity is certified by:**

- 1.1. With the Hague apostille
- 1.2. With the deposit of the degree/diploma and simultaneous notification of the Foreign University by the applicant. The notification is accompanied by an official email from the University of the Foreign Country giving the Secretariat of the respective Academic School the opportunity to check the authenticity,
2. If specialization indicated by the degree is required, the verification is conducted through its mention on the certificate and the detailed transcript of records or Diploma Supplement.
3. In case we are interested in the grade, we use the equivalency process notified by DOATAP.
4. The academic recognition only concerns the specific procedure, is granted by a decision of the School's Assembly and is not given to the person concerned. If the candidate wants a relevant certificate, he/she should apply to the DOATAP for Equivalence.

## Article 5

### Number of Applicants, Criteria and Selection Process

The number of students admitted per year is set at a minimum of 20 and a maximum of 35 postgraduate students. The D.P.M.S. cannot operate with fewer than 20 postgraduate students. Following the decision of the Program of Studies Committee, the D.P.M.S. announces positions by an open procedure. In particular, the notice shall specify the admission requirements, the number of admissions, the categories of candidates, the mode of admission, the selection criteria, etc., the deadlines for submitting applications and the supporting documents required. The notice of admission of postgraduate students is published on the website of the D.P.M.S. and the participating Schools. Applications accompanied by the necessary supporting documents, are submitted to the Secretariat of the MSc in either paper or electronic form.

The supporting documents are the following:

- Application form available from the D.P.M.S.
- Identity card or passport.

- Curriculum Vitae.
- Undergraduate degrees.
- Detailed transcript of records for undergraduate and/or postgraduate studies or submission of the Diploma Supplement that accompanies each degree/diploma.
- Two (2) recommendation letters. (At least one from a faculty member, and one letter from an employer is acceptable).
- English language Certificate, at least Level B.

In addition to the above documents, the candidate may submit, if available:

- a) Diploma or Postgraduate Diplomas from a Greek Institution or an equivalent Institution abroad.
- b) Doctoral degree from a Greek Institution or an equivalent Institution abroad.
- c) Documentary evidence of any research and writing activity, participation in student mobility training programs and professional experience or related experience.
- d) Certificates of previous experience.

The above documents are submitted either as an exact copy or as a simple photocopy.

The **selection criteria** for admission are:

- The overall grade of the undergraduate degree/diploma.
- The candidate's performance in a diploma or degree thesis.
- Any existing professional or research activity relevant to the scientific subjects of the MSc.
- Possession of other degrees or postgraduate qualifications relevant to the scientific subjects of the MSc.
- Publications in scientific journals and conference proceedings.
- Knowledge of the English language, as a prerequisite, at least level B2, according to the system of the Council of Europe, which is accepted by the A.S.E.P. Alternatively, a degree or postgraduate diploma of a Greek Institution or a similar Institution abroad, showing the successful completion of an English-speaking undergraduate or postgraduate program, may be submitted.

The selection process of the candidates, by decision of the Program of Studies Committee, is carried out by a three-member Selection and Examination Committee, consisting of Teaching and Research Staff of the faculty who have undertaken postgraduate work.

The Committee prepares a full list of all candidates and, after checking, rejects those who do not complete the minimum criteria laid down by the School and invites to an interview those candidates who complete the prerequisites.

For the quantitative evaluation of the criteria, a scoring system is applied to each criterion as follows:

**Degree points:** Calculated by the formula "Coefficient \* (grade of degree or diploma)". The coefficient is: a) **1.6** if the degree is from university schools with a duration of four years, b) **2.0** if the degree is from university schools with duration of five and six years.

**Thesis points:** The grade of the undergraduate/final thesis, provided that the thesis is deemed relevant to the subject of the postgraduate program. A maximum of 10 points can be awarded.

**Points related to postgraduate studies:** Possession of another postgraduate degree relevant to the subject area, receives 10 points.

**Points for relevant publications:** Publications related to the field of specialization can receive a maximum of 15 points, with up to 3 publications considered, at 5 points per publication.

**Points for relevant research and/or professional experience:** A maximum of 10 points. Specifically, 5 points are awarded per year of research or professional experience.

**Points for recommendation letters:** A maximum of 5 points (2.5 points per letter).

The Committee prepares a complete list of all candidates and, after the relevant review, rejects those who do not meet the minimum criteria set by the respective School. Then invites for an interview, where applicable, the shortlisted candidates who have met the prerequisites.

**Oral interview:** The oral interview is conducted by the Three-Member Selection and Examination Committee of the Postgraduate Program and aims to assess both the academic knowledge of the candidates required for attending the program and their abilities in areas such as reading and comprehension, analytical skills, the reasons for selecting this specific postgraduate program, the candidate's overall academic profile, and more. The interview is graded on a scale of 1-20, and the final grade is calculated as the average of the scores given by the three members of the Selection Committee. In case of a tie in points, candidates are accepted up to the maximum limit defined for admissions. If the number of tied candidates exceeds this limit, those with higher degree scores are given priority. After that, follows the examination of previous research work - publications, and the knowledge level of a foreign language.

After the completion of the procedure, the final list of successful candidates approved by the Program of Studies Committee and posted on the Secretariat's notice board and on the D.P.M.S. website.

Objections can be submitted within a deadline of five (5) calendar days from the publication of the results. Enrollment of admitted postgraduate students begins after an announcement by the Secretariat of the MSc program, which specifies their duration and required documentation.

If a candidate does not enroll within the specified deadline, it is considered a refusal of acceptance of the position, and his/her position covered by the next successful candidate.

## Article 6

### Duration and Terms of Attendance

The duration for the award of the Diploma of Postgraduate Studies is set at three (3) semesters, of which the last semester will be available for the preparation and writing of the thesis. There is a possibility of a

justified suspension of studies which may not exceed 2 consecutive semesters maximum and only once and does not count towards the maximum duration of normal studies. During the period of suspension, the postgraduate student shall lose his/her student status. Upon resumption of study, postgraduate students shall be reinstated to regular study status with all the rights and obligations provided for in the MSc.

In addition, upon reasoned application before the completion of the normal period of study, the postgraduate student may request ***an extension of 2 semesters***, which concerns the completion of studies or the preparation of the postgraduate thesis. At the end of the extension, the postgraduate student is removed from the Master's program by decision of the Program Committee.

In case of failure, the course may be retaken once more on dates to be determined by the Coordinating Committee within a period not exceeding one month from the announcement of the results.

Postgraduate students have the possibility of part-time study, the duration of which may not exceed twice the normal duration of studies. Part-time attendance is provided for those who have proven that they are working at least twenty (20) hours per week and for non-working postgraduate students who are unable to meet the minimum requirements of the "full-time" program and for special cases of exceptional seriousness (Indicatively: illness, workload, serious family reasons, military service, reasons of force majeure), which are defined by the Program of Studies Committee and are included in the Postgraduate Studies Regulation.

Applications from postgraduate students for part-time enrollment, suspension, or extension of studies are made before the start of the academic semesters.

**Indicative reasons for a student's removal from the program include:**

1. Student's application.
2. Unjustified exceeding of the absence limit, due to force majeure reasons beyond 20% of the maximum course hours.
3. Inadequate submission of requirements, such as failing to submit assignments or non-participation in exams, exceeding the time limit for thesis completion without adhering to the provisions outlined in Article 5 of this regulation.
4. Behaviors that violate academic integrity, such as plagiarism, cheating during exams.

For matters concerning re-examination of courses or deletion, the Program of Studies Committee decides upon recommendation from the Coordinating Committee, which defines the conditions for re-examination and deletion.

Postgraduate students enroll and participate in the MSc program under the terms and conditions specified in the Postgraduate Studies Regulation. Postgraduate students have all the rights, benefits, and facilities provided to undergraduate students, except for the right to receive free textbooks. The MSc program ensures facilities for postgraduate students with confirmed disabilities or special educational needs. The infrastructure of the host School is used for access to the classrooms, appropriate teaching methods are selected, longer written examinations, oral examinations and extended submission of assignments are provided. Arrangements are made by decision of the program of Studies Committee and depending on the specific educational needs of the student concerned.

## Tuition Fees

Tuition fees are set at € 2.000,00 per full semester (€ 6.000,00 in total) for EU citizens and € 3.000,00 per full semester (€ 9.000,00 in total) for third country citizens. Payment of the full amount for each semester is deposited at the beginning of each semester, within two weeks from its inception. The payment is deposited into the Special Account for Research Funds (ELKE) of the Aristotle University of Thessaloniki. In the case of part-time enrollment, the amount of €6,000.00 or €9,000.00 is distributed proportionally.

Failure to pay the financial obligations constitutes sufficient reason for not awarding the Diploma or deleted from the D.P.M.S.

The right to receive free tuition due to financial or social criteria is granted to those postgraduate students who fulfil the excellence criterion in their first cycle of studies, which corresponds to a minimum grade of 7.5 out of 10 (7,5/10). The specific terms and conditions of the right to free tuition in postgraduate programs are described in the applicable legislation as well as in the decision of the Minister of Education, Religious Affairs and Sports. Exempt students should not exceed thirty percent (30%) of the total number of students admitted to the postgraduate program and this applies to participation in only one postgraduate program. If the number of eligible students exceeds this percentage, selection is based on a ranking order starting with those who have the lowest income.

The tuition fee exemption application is submitted by the interested party to the postgraduate program, after the student's selection process is completed. The possibility of exemption from the obligation to pay tuition fees is provided exclusively for enrollment in one (1) postgraduate program, organized by a domestic higher education institution.

A student of the MSc who fulfils the requirements is entitled to free tuition if the following criteria apply:

- a) The average of the sum of the taxable incomes of the last two (2) financial years of all family members of the applicant for exemption from tuition fees, i.e. the applicant himself, his parents, regardless of whether they file a joint or separate tax statement, and his siblings up to twenty-six (26) years of age, if they are unmarried and have the same taxable income within the meaning of article 7 of Law No. 4172/2013 (A' 167), does not exceed seventy percent (70%) of the national median disposable equivalent income, according to the most recently published data of the National Statistical Service of Greece (EL.STAT.), if the applicant has not reached the twenty-sixth (26th) year of age and is unmarried or has not entered into a cohabitation agreement,
- b) The average of the applicant's personal taxable income of the last two (2) financial years does not exceed one hundred percent (100%) of the national median disposable income equivalent, according to the most recently published data of the National Statistical Service of Greece, if the applicant has reached the age of 26,
- c) The average of the sum of the taxable income of the last two (2) financial years of the applicant for exemption from tuition fees and his or her spouse or partner, if married or in a civil partnership, regardless of whether they file a joint or separate tax statement, does not exceed one hundred percent (100%) of the national median disposable income equivalent, according to the most recently published data of National Statistical Service of Greece (EL.STAT.).

If the applicant for exemption has not reached the age of 26 and is a child of a family with three or more children or a child of an unmarried parent or an orphan of at least one (1) parent or a person with a disability or a member of a household with a person with a disability, he/she may apply for a half (50%) exemption from the obligation to pay tuition fees, if the average in case a) of par. 4 exceeds seventy percent (70%) and does not exceed one hundred percent (100%) of the national median disposable

equivalent income.

In any case, if the number of those entitled to free tuition exceeds 30%, the selection is based on the lowest income. In case of a tie again, then the order of ranking is considered. Finally, if there is an absolute tie, a draw is conducted in the presence of the candidates. Absence of a candidate from the draw is not a reason for cancellation.

The evaluation of the criteria for exemption from tuition fees, is carried out by the Program of Studies Committee, which issues a reasoned decision regarding the acceptance or rejection of the application.

This does not apply to citizens of third countries.

An application for a refund of one semester's tuition fees is permitted only if the applicant claims and sufficiently proves the existence of an exceptionally serious reason for discontinuing his/her studies. The application must be submitted to the Program of Studies Committee, no later than twenty (20) days after the start of the semester's classes.

In cases of deletion, the tuition fees are not refundable.

## **Article 7**

### **Rights and Obligations of Attendance**

Postgraduate students admitted to the M.Sc. program are obligated to:

1. Attend all classes of the M.Sc. program continuously. Attendance is mandatory for all courses, lectures, seminars, workshops, and other activities. Absences are permitted up to 10% of the total hours for the semester and not exceeding 20% per course. In case of professional work or other inelastic reason invoked in writing by the person concerned, they can be doubled, after examination and approval of the request by the Program of Studies Committee. For the workshops, attendance is compulsory without the possibility of absence. In case of absence due to force majeure, substitution is possible on another date with the agreement of the lecturer. In the case of a request for the right to retake a course, the absences are considered by the Program of Studies Committee, in order to decide on the request. Otherwise, the postgraduate student is obliged to retake the course in the following academic year.
2. To submit course declarations by the deadline each semester.
3. Submit the assignments required for each course within the deadlines.
4. Attend exams.
5. Submit to the Secretariat, together with the thesis to be evaluated, a declaration that there is no evidence of plagiarism.
6. Pay the tuition fees within the dates specified.
7. Have settled all their financial obligations, as well as any other obligations to the Institution, before the swearing-in ceremony. Otherwise, they will not be entitled to take the oath and/or receive the postgraduate diploma.
8. If they have received a scholarship, to contribute reciprocally by providing academic support, such as tutoring sessions, contributing to the library and research, and wherever needed in university services.
9. It is possible to study simultaneously in an undergraduate program of studies and a postgraduate program of studies or in two (2) of the same or another School of the same or another Institution.

10. Respect and comply with the decisions of the postgraduate institutions and academic ethics. Failure to comply with the above, without documented justification, may result in failure of a course or exclusion from the program.

Failure to comply with all of the above, without a serious and documented justification, constitutes grounds for the removal of the postgraduate student from the program.

**Article 8**  
**Program of Studies – Knowledge status**

**A. PROGRAMME STRUCTURE**

The MSc is structured in 3 semesters. In the A' semester six (6) courses are taught, all of them compulsory, while in the B' semester six (6) other courses are selected from the total number of courses offered. In the third semester a postgraduate thesis is written.

**INDICATIVE PROGRAMME OF STUDIES**

A' Semester (Total ECTS 30) (All compulsory)				
a/a	Course Title	Course Type (comp./elect.)	Distance Learning	ECTS
1	Sensor systems for autonomous vehicles – UAVs	C	80%	5
2	Advanced Aerodynamics	C	80%	5
3	Intelligent Robotic Systems	C	100%	5
4	GNSS and Inertial positioning for Autonomous Systems	C	80%	5
5	Dynamics and Control I	C	80%	5
6	Lightweight materials (incl. composites), specifications and requirements for UAV applications	C	100%	5
B' Semester (Total ECTS 30) (All elective)				
a/a	Course Title	Course Type (comp./elect.)	Distance Learning	ECTS
1	Big data Analysis	E	50%	5
2	Structural design - Hardware system design of UAV's (synthesis, static and quasistatic analyses)	E	100%	5
3	Manufacturing of lightweight systems focusing on UAV applications.	E	80%	5
4	Fixed wing UAV layout design and synthesis.	E	80%	5
5	Flight Mechanics and UAV	E	80%	5

	Performance			
6	Unmanned Aerial Vehicles as Mapping Systems	E	100%	5
7	Advanced topics to Wireless Communications	E	100%	5
8	Dynamics and Control II	E	80%	5
9	Advanced RF aspects of UAVs	E	80%	5
10	Airworthiness	E	80%	5
C ' Semester (Total ECTS 30)				
a/a	Course Title	Course Type (comp./elect.)	Teaching Hours	ECTS
1	Master's Thesis	C		30

**Teaching and Thesis Language:**

All courses of the M.Sc. program will be taught in English. The same applies to assignments, progress assessments, examinations, and dissertations of the program, which will also be entirely in English. Textbooks, notes, and all other teaching materials provided to students will be in English as well.

The start and end dates of courses, as well as the duration of examination periods, are determined by the academic calendar or by decision of the Program of Studies Committee.

**B. Brief Description of Courses**

**Advanced Aerodynamics**

Wall-bounded flows and boundary layer theory. 2D and 3D external aerodynamics with emphasis on transitional and turbulent flows on airfoils and wings. Normalized aerodynamic and stability coefficients, lift buildup and drag breakdown, drag polars. Numerical methods (rapid, low-fidelity and high-fidelity), source- and vortex-panel methods and CFD basic principles and applications. Special considerations on intakes, flow control techniques and high-lift devices.

**Advanced RF aspects of UAVs**

The course provides a deep understanding of RF communication in UAV systems. Essential concepts like electromagnetic wave propagation, frequency bands allocation, and international regulations governing UAV communications are explored. Antenna design principles are explored, encompassing metasurface-based structures and miniaturized antennas to address challenges specific to UAV size, weight, and power constraints. Radar technology, including radar cross-section reduction, beamforming and direction-of-arrival estimation, is a subsequent focus, providing insights into critical aspects of UAV functionality. The latter part of the course delves into advanced topics of direction-of-arrival estimation and beamforming methods, incorporating cutting-edge approaches, such as vector space analysis and neural networks.

**Advance topics to Wireless communications**

This course addresses the fundamentals of wireless communications and provides an overview of existing and emerging wireless communications networks. It covers radio propagation and fading models, fundamentals of cellular communications, multiple access technologies. Also, the fundamentals of 4G and 5G will be presented

### **Airworthiness**

Airworthiness regulations and UAV legislation. Design and testing based on FAR23 and STANAG4671 codes. Preparation of airworthiness checklists and documentation.

### **Big Data Analysis**

The course aims to introduce students to the basic concepts comprising big data analytics, i.e. characteristics of big data applications, contemporary big data architectures, exploration and visualization of big data, knowledge extraction from big data.

### **Dynamics and Control I**

Kinematics and Kinetics of Systems of Particles - Euler's Laws. Rigid Body Dynamics and equations of motion for rigid UAV models, longitudinal and lateral/directional static and dynamic stability (emphasis on spatial and spherical motion). Bodies with Axisymmetric Inertia. Elements of Space Mechanics. Vibration of SDOF, MDOF and Continuous Systems (Integration of the equations of motion, free and forced response formulation of the equations of motion, determination of natural frequencies and mode shapes, modal and static analysis). Development of model-based optimal control systems for flight attitude and navigation. Intelligent flight path calculation.

### **Dynamics and Control II**

Analytical Dynamics (Lagrangian / Hamiltonian Mechanics) and Multibody Dynamic Modeling. Computational dynamics and Co-simulation of rigid and deformable UAV models: Dynamic response and Fluid-Structure interaction analysis using appropriate software. Development of robust control systems, optimal online state and parameter estimation for flight attitude and navigation.

### **Fixed-wing UAV layout and synthesis**

Conceptual, preliminary and detail design principles. Propulsion and propulsor considerations. Weight estimation methods and estimation of critical design parameters. Configuration layout design and synthesis, flight envelope design. Design trade studies and shape optimization methods. Innovative configuration layouts, Vertical Takeoff and Landing vehicles and solar-powered / hybrid-electric systems, low-observability and low RCS design principles.

### **Flight Mechanics and UAV performance**

Pitch, roll and yaw motions. Thrust available, thrust required, maximum speed, power required, power available and rate of climb calculation. Service ceiling, time to climb, gliding distance. Accelerated flights, turning radius, pull-up and pull down, manoeuvring, takeoff and landing distance calculation. Aircraft and UAV stability equations, trim diagrams, longitudinal, directional and lateral stability. Flight equations (equations of motion), decoupling and linearization, flight modes, stability derivatives, state-space representation.

### **GNSS and Inertial positioning for Autonomous Systems**

GNSS systems, Satellite Constellations (GPS, GLONASS, Galileo, BeiDou, QZSS), Code and phase measurements, measurement errors and modelling, positioning algorithms, carrier phase processing, and attitude determination, Navigation solution. Relative Positioning techniques, International GNSS services data products, data exchange, Real Time Kinematic positioning, new techniques for the navigation guidance and communication for autonomous systems. Static and Kinematic positioning software's. Precise Point

Positioning web-Platforms. Positional accuracy assessment. Inertial systems and Navigation Theory and Practice. Kalman filtering techniques, quality and performance, data fusion and integration with GNSS. Case study applications.

### **Intelligent Robotic Systems**

The course aims to introduce students to the basic concepts of intelligent and autonomous robotic systems, comprising theory about behaviors and architectures, information about sensors and actuators, methods for localization, mapping, path planning, navigation, exploration and coverage, as well as techniques for multi-robot and autonomous driving systems. The course participants upon completion will be able to understand how an autonomous robot operates, select sensors and actuators for an autonomous robot, based on task, environmental and financial requirements, select the appropriate techniques and algorithms for an autonomous robot, based on task and environmental requirements, and easily extend their knowledge to similar domains such as autonomous driving, Internet of Things or Cyber-Physical Systems

### **Sensor systems for autonomous vehicles – UAVs**

The purpose of the course is to introduce the students to the basic concepts of the field of sensors as well as the measurement and control systems of physical parameters for autonomous ground, flying and floating vehicles. Upon completion of the course, students are expected to know basic methods of displaying and recording measurement data as well as techniques for adjusting the signals provided by the sensors for their correct use and their interconnection with display and recording devices. They will also be able to understand the basic principles of operation of various integrated sensors for measuring common physical parameters, such as the accelerometer, magnetometer, gyroscope, thermometer, as well as systems such as LIDAR, SONAR, RADAR and GNSS (GPS , Galileo, etc.) as well as design and implementation issues of real-time systems (more specifically, theory, design and implementation of hardware in discrete and integrated circuits, software development, interconnection with the network through various protocols and applications of their use). Then the efficient and energy-optimal design and implementation of both the computing part and the sensor communication system will be considered. Energy harvesting techniques for powering autonomous vehicles will also be presented.

### **Unmanned Aerial Vehicles as Mapping Systems**

Unmanned Mobile Mapping Systems, Unmanned Aerial Mapping Systems, Unmanned Ground Vehicles Systems, Unmanned Marine Surface Vehicle Systems, Enabling factors and technologies, Navigation and Mapping sensors. Mission planning, Precise pose estimation and mapping, Sensor positioning and orientation, Structure from motion, SLAM- Simultaneous Localisation and Mapping, Dense image matching, 3D surface reconstruction. Comparison to other mapping methods, UAV methods, Sensing technologies (Multispectral, Hyperspectral sensors, Acoustic, Meteorological), Products and results, Accuracies. Archaeology & Heritage documentation, Agriculture & Forestry, Disaster management & Emergency response, Mapping & monitoring, Transportation, Environment – Energy. Advantages, Limitations, Gaps, Sensing technologies & Intelligent Sensing, LiDAR laser scanning, Photogrammetry, Hyperspectral imaging, Magnetic scanning, multi-sensor solutions. Societal challenges, Technological challenges, Regulatory challenges, market evolution and trends, Economic impact.

### **C. Knowledge Status - Student Assessment**

The assessment in individual courses or other educational activities (e.g., practical/clinical training) is conducted at the end of each semester through written or oral exams, completion of assignments, or a combination of the above.

The method of assessment is determined by the instructor of each course at the beginning of the academic semester. The percentage of participation in other educational activities (such as laboratory exercises, assignments, and seminars where applicable) in the final grade of each course, is determined individually for each course. This is done following the recommendation of the instructor of each course and is approved by the Coordinating Committee of the Postgraduate Program.

The grading scale for evaluating the performance of postgraduate students is defined from zero (0) to ten (10) as follows:

Excellent (8.5 to 10)

Very Good (6.5 to 8.49)

Good (6 to 6.49)

The passing grade is six (6) and above.

A postgraduate student who fails the exams of a course is graded with an "R" (Repeat). A student who receives a grade of "R" in one or two courses of a semester is re-examined only once in these courses within three months from the date of the results. In case of a new failure, the postgraduate student is examined, at his/her request, by a three-member committee of members of the Teaching and Research Staff of the D.P.M.S., who have the same or a related scientific subject with the examined course and are appointed by the Program of Studies Committee. The three-member committee shall not include the lecturer who marked the course. If a student receives a grade of "R" in more than two courses in a semester and fails after the re-examination, he/she is deleted from the MSc, by decision of the Program of Studies Committee.

Attendance of courses and educational activities is compulsory. A postgraduate student is considered to have attended a course (and is therefore entitled to participate in the examinations) only if he/she has attended at least 80% of the theoretical hours of the course and 80% of the laboratory training in any course provided. Otherwise, the postgraduate student is obliged to attend the course again during the next academic year.

The examinations are conducted in person at the facilities of the Faculty of Engineering. In cases of emergency or force majeure, exams may be conducted by electronic means, provided that the integrity of the evaluation process is guaranteed. In cases of illness, the lecturer should help the student in any way he/she deems appropriate (e.g. oral or remote examination).

A grade of "ELL" (incomplete) is given by the instructor in special cases at his/her discretion, such as the inability of the postgraduate student to take part in the examinations or to deliver a paper for professional or health reasons. In this case, a new deadline is set and if the student fulfils all his/hers obligations within this deadline, the grade "ELL" (incomplete) can be replaced with a normal grade.

The grade of the Diploma of Postgraduate Studies (D.M.S.) is the weighted average of the courses of the MSc and the Postgraduate Thesis (the weighting is based on the credits of the courses and the M.Sc.) and shall be calculated, to the second decimal place, in the following manner: The grade of each course and the Postgraduate Thesis (where applicable) is multiplied by the corresponding number of credits (ECTS) and the sum of the products is divided by the minimum number of credits required for the award of the Master's degree.

The mathematical formula is the following:

Grade of D.M.S. = (Course grade 1 x ECTS of course 1 +

Course grade 2 X ECTS course grade 2 + ...+

Grade of postgraduate thesis X ECTS of postgraduate thesis/ Total number of ECTS.

#### **D. POSTGRADUATE THESIS**

If the postgraduate student has successfully passed all the courses of the a' and b' semester of the MSc, he/she can join the process of writing the postgraduate thesis at the beginning of the c' semester. For the preparation of a Postgraduate Diploma Thesis, the Program of Studies Committee, following an application by the candidate on specified dates, in which the proposed title of the postgraduate thesis, the proposed supervisor and an abstract of the proposed thesis are indicated, appoints the supervisor and sets up a three-member Examination Committee for the approval of the thesis, one member of which is the supervisor.

**The right to supervise MSc thesis, is granted to lecturers of the categories described in article 83 of Law No. 4957/2022:**

- a. Teaching Staff (DEP), Special Teaching Staff (E.E.P.), Laboratory Teaching Staff (E.DI.P) and Special Technical Laboratory Staff (E.T.E.P.) of the School or other Schools of the same or another Higher Educational Institution (A.E.I.) or Higher Military Educational Institution (A.S.E.I.), with additional employment beyond their legal obligations.
- b. Emeritus Professors or retired members of the participating Schools or other Schools of the same or another Institution.
- c. Cooperating instructors
- d. Appointed lecturers
- e. Visiting professors or visiting researchers
- f. Researchers and special operational scientists of research and technological institutions of Article 13A of Law No. 4310/2014 (A' 258) or other research centres and institutes in Greece or abroad.

The three members of the Examination Committee must have the same or related scientific specialization with the cognitive scientific subject of the D.P.M.S.

The preparation of the MSc's Thesis is governed by the Code of Academic Ethics of the Aristotle University of Thessaloniki. Every author or co-creator of any intellectual work/project is entitled to be referred to and recognized as such, enjoying the property and moral rights/authorities arising from the work/project. By exception, if the original intellectual creation (work/project) is the final output of a paid research project, which has been commissioned by an institution outside the A.U.T.H, the property rights of the author or co-creators may be limited under the terms of the contract under which the research work/project in question is commissioned, while the moral rights remain with the author or authors, subject to the contractual limitations necessary for the exploitation/economic exploitation of the resulting intellectual creation. For the presentation of the Postgraduate Thesis, the positive recommendation of the Three-member Examination Committee is foreseen. In case the presentation of the Postgraduate Thesis is carried out in public, a specific date and place is set by the Coordinating Committee of the D.P.M.S.

After the presentation of the Postgraduate Thesis, a protocol is drawn up in which the individual grade of each member of the three-member Examination Committee, the average grade and any comments or remarks are indicated. After its approval by the Committee, it is posted on the School's website. If the evaluation of the Postgraduate Thesis is negative, the postgraduate student may submit his/hers thesis incorporating the remarks for its improvement within a period of time determined by the Three-member Examination Committee. If the second evaluation is also negative, the postgraduate student loses the right to be awarded the MSc.

In exceptional cases, if there is an objective impossibility or an important reason, it is possible to replace the supervisor or a member of the Three-member Examination Committee, as well as to change the topic of the Postgraduate Thesis, after the decision of the Program of Studies Committee.

The total duration of the examination is a minimum of thirty (30) and a maximum of forty-five (45) minutes. The time allowed for questions from the examiners, may not be less than ten (10) minutes. The evaluation considers the scientific quality, the integrity of the text and the oral presentation, as well as the

knowledge of the subject as evidenced by the candidate's answers to the examiners' questions. After its approval by the Committee and the incorporation by the student of possible corrections and comments, the text is obligatory posted on the website of the Central Library of the Aristotle University of Thessaloniki and recorded in the thesis archive of the MSc.

The language of writing and examination of the theses is English. The title and the abstract should be translated into Greek as well. The thesis does not typically exceed 100 pages and includes: cover page with the thesis details, abstract, title and abstract in Greek, table of contents, chapters of the main part of the thesis, bibliographical references and appendices. The page size is A4. The elements "Summary" and "Content", are not numbered and the relevant pages may be numbered in Roman numerals. The chapters and any subchapters of the main part of the thesis are numbered (e.g. Chapter 2, Section 2.1, Subsection 2.1.1, etc., up to four-digit numbering). The titles of Chapters are written in bold capital letters, while the titles of Sections are written in bold small letters. The first page of the first chapter of the main part, is also the page from which the page numbering starts (and is referred to in the table of contents). Tables and figures are captioned and numbered by chapter, e.g. Table 2.1, Figure 3.2 and so on). Fonts can be Times New Roman or Arial and 11- or 12-point size. The equations are also numbered by chapter, which is placed in parentheses on the right-hand side of the page, in the order of the relevant equation. Appendices should also be numbered and titled (e.g. Appendix A1, Appendix A2, etc.).

## **Article 9 Scholarships**

The Aristotle University of Thessaloniki may grant reciprocal scholarships to postgraduate students, with the obligation to support the educational process and provide auxiliary teaching work.

The Postgraduate Program awards excellence scholarships. The terms, rights, and obligations for granting the scholarship are outlined in the relevant announcement following a decision by the Program Committee.

## **Article 10 Teaching Staff**

The teaching work of the Interdepartmental Program of Postgraduate Studies is assigned, following a decision of the Coordinating Committee of the D.P.M.S., to the following categories of lecturers:

- a)** Teaching and Research Staff (D.E.P), Special Teaching Staff (E.E.P.), Laboratory Teaching Staff (E.DI.P) and Special Technical Laboratory Staff (E.T.E.P.) .) of the School or other Schools of the same or another Higher Educational Institution (A.E.I.) or Higher Military Educational Institution (A.S.E.I.), with additional employment beyond their legal obligations, if the MSc has tuition fees,
- b)** Emeritus Professors or retired members of the participating Schools or other Schools of the same or another Institution.
- c)** Cooperating instructors
- d)** Appointed lecturers
- e)** Visiting professors or visiting researchers
- f)** Researchers and special operational scientists of research and technological institutions of Article 13A of Law No. 4310/2014 (A' 258) or other research centres and institutes in Greece or abroad.
- g)** Scientists of recognized prestige, who have specialized knowledge and relevant experience in the scientific area of the MSc.

At the beginning of the program, a permanent member of the Teaching and Research Staff of the program

is appointed for each postgraduate student as an academic advisor. His/her role is to watch the progress of the students' studies, to be informed by the lecturers of any co-responsibility, as informing them may result in failure in the course. In addition, regarding the choice of the postgraduate thesis research interests of the postgraduate students, they contact their academic advisor who ensures the smooth progress of their studies.

The academic advisor provides necessary guidance to the postgraduate student in order to cope with the requirements of the Master's Program.

The academic advisor gets in touch with each student which he/she is responsible for, at least twice each semester.

The duties of the academic advisor among others, include:

Identifying the needs and research interests of postgraduate students, supporting their inclinations and skills and encouraging them to pursue scientific fields that match with their interests.

Informing and facilitating contact between postgraduate students and the administration bodies of the Master's Program, as well as administrative services.

Providing assistance in drafting their individual semester study plan and select the topic of their Master's Thesis.

The academic staff, the administrative personnel, and the relevant services of the institution, collaborate and support academic advisors in their work. They take into consideration information, observations, suggestions, and requests from advisors, regarding any deficiencies or dysfunctions that create issues for students, as well as proposals for addressing them.

Upon the recommendation of the Coordinating Committee, doctoral candidates are assigned teaching work under the supervision of an instructor of the MSc. Such work is defined as assisting the Teaching Research Staff (D.R.P.) in their teaching work, the training of students, the conduct of laboratories, laboratory exercises and assistance in examinations.

Instructors, during the period they are on sabbatical or suspension, may provide teaching work for the MSc, if they consider that their program allows it, provided of course that under the circumstances this is practically feasible, a matter to be decided by the competent authorities on a case-by-case basis.

## **Article 11**

### **Program Revenue – Financial Management Procedure**

The MSc is funded by postgraduate students' tuition fees as specified in its founding act. Any other potential sources of funding (e.g. the budget of the Aristotle University of Thessaloniki, Donations, Endowments, Bequests, Public Sector's Sponsorships, European Union's Research Programs or other International Organizations, if the categories of expenditure are eligible, Special Account for Research Funds ATh, any other legitimate reason), will be used to upgrade the education and training offered to postgraduate students and potentially to reduce the tuition fees.

The payment of the tuition fees, amounting to 6000,00 € per study cycle for EU citizens and 9000,00 € for third country citizens, is made in instalments by the student himself, or by a third party, on behalf of the student, within the months of September for the 1st and 3rd semester and February for the 2nd semester, in equal instalments of 2000,00 € and 3000,00 € respectively. Specifically, following the announcement of selection results for admission to the 1st semester of studies, a prepayment of €500.00 must be made within 1 month. This prepayment is deducted from the 1st installment. Failure to meet this deadline results in the registration being considered invalid, and the next eligible candidate will be invited to enroll.

The management of the resources of the MSc program is handled by the Special Account of Research Funds (E.L.K.E.) of the Aristotle University of Thessaloniki.

The resources of the MSc programs are distributed as follows:

- a)** Thirty percent (30%) of the total income from tuition fees, is withheld by the E.L.K.E. This amount includes the percentage withheld for the E.L.K.E.'s financial management of the MSc programs.
- b)** The remaining amount of the total income of the MSc, is available to cover the operating costs of the MSc.

The distribution of the 30% income, as determined by a decision of the AUTH's Administrative Council, is defined as follows:

Ten percent (10%) is withheld by the Special Account Research Funds, as management expenses.

The 10% that will be returned to the participating Schools of the MSc program, will be distributed among the Schools based on the percentage of course coverage time. For example, for 10 hours: If School 1 has 6 hours, School 2 has 3 hours, and School 3 has 1 hour, then School 1 will receive 60% of the distributed amount, School 2 will receive 30%, and School3 will receive 10%.

In case of termination of operations for any reason, the surplus will be distributed among the Schools according to the same algorithm.

The 2% will be allocated to cover operational expenses of the institution, specifically for the needs of the Graduate Studies Support Service.

The 8% will be allocated to the Faculty of Engineering.

The above allocation may be modified by decision modified by decision of AUTH's Administrative Council.

The D.P.M.S. prepares an analytical budget for the five (5) years of operation in accordance with the legislation in force, which includes all the resources of the program and its operating costs.

## **Article 12**

### **Administrative Support – Material/Technical Infrastructure**

For the operation of the MSc program, the entire existing material/technical infrastructure of the participating Schools will be utilized. Additionally, classrooms of the participating Schools will be allocated for teaching purposes. In addition, after agreement and if it is financially feasible, specialized scientific instruments, equipment and devices belonging to the Aristotle University of Thessaloniki in general or to Institutions and Institutions of the public or private sector may be used. The cost of the use of such instruments and devices will be taken over by the D.P.M.S.

The administrative and secretarial support of the MSc program will be provided by the Secretariat of the leading School in collaboration with the Secretariat of the MSc program.

## **Article 13**

### **Graduation Ceremony**

The Program of Studies Committee confirms the successful completion of the studies and decides to award the Postgraduate Diploma to the graduates.

#### **Article 14** **Type of Awarded Postgraduate Diploma**

The title of the Postgraduate Diploma is a public document and is awarded in one of the School's Postgraduate Programs.

The Postgraduate Diploma is issued by the Secretariat of the Interdepartmental Postgraduate Program (D.P.M.S.). The diploma includes the Schools involved in the D.P.M.S., the emblem of the institution, the date of completion of the studies, the date of issuance of the Postgraduate Diploma, the graduation protocol number, the title of the D.P.M.S., the details of the postgraduate student, and the evaluation grade: Good, Very Good, Excellent.

Before the awarding of the Postgraduate Diploma and after the successful completion of the Interdepartmental Postgraduate Program, a certificate of successful attendance and completion of the program may be issued to the graduate.

In addition to the Postgraduate Diploma, a Diploma Supplement is issued [Article 15 of Law 3374/2005 and Ministerial Decision F5/89656/BE/13-8-2007 (FEK 1466, Part B)], which is an explanatory document that provides information about the nature, level, education framework, content, and status of the studies successfully completed. It does not replace the official Postgraduate Diploma or the detailed transcript of grades issued by the Institutions.

#### **Article 15** **Plagiarism**

When any postgraduate work submitted, the postgraduate student is required to indicate if he/her has used the work and opinions of others.

Copying is considered a serious academic offense. Plagiarism includes copying someone else's work as well as using someone else's work—published or unpublished—without proper citation. Presenting any supporting material, even from the postgraduate student's own studies, without appropriate citation can lead to the School's Assembly decision for deletion.

In the above cases—and following a recommendation from the supervising professor—the School's Assembly may decide to expel the postgraduate student.

Any academic misconduct or violation of academic ethics is referred to the Coordinating Committee of the Interdepartmental Postgraduate Program for assessment and recommendation on how to address the issue to the Program of Studies Committee. The offences of copying or plagiarism and in general any violation of the provisions on intellectual property by a postgraduate student during the writing of coursework or the preparation of a postgraduate thesis are also considered as infringements.

For violations of ethical rules and quality of studies, responsible is the Ethics Committee of the Institution.

## Article 16

### Certification – Evaluation of Postgraduate Programs

After the decision to establish an Interdepartmental Postgraduate Program and before the start of its operation, certification from the Hellenic Authority for Higher Education (H.A.H.E.) is required according to paragraph c) of article 8, paragraph 1 of Law 4653/2020 (FEK A' 12). Following their establishment, Postgraduate Programs are periodically certified, according to subparagraph bb) case b) of paragraph 1 of article 8 of Law 4653/2020, within the framework of the evaluation of the academic School to which they belong.

In case the decision to establish the Interdepartmental Postgraduate Program is modified, a new certification by the Hellenic Authority for Higher Education (H.A.H.E.) is required, if the modification concerns elements such as the scientific subject, the purpose of the program, the learning outcomes, the qualifications obtained upon successful completion, and the specializations that award different diplomas.

The Postgraduate Programs of each School, including interdisciplinary, interinstitutional, and joint Postgraduate Programs, where the School provides administrative support, are evaluated as part of the periodic evaluation/certification of the academic unit by the Hellenic Authority for Higher Education (H.A.H.E.). In this framework, the general evaluation of the work carried out by each D.P.M.S., the level of fulfilment of the objectives set at the time of its establishment, its sustainability, the absorption of graduates in the job market, the level of its contribution to research, its internal evaluation by postgraduate students, the feasibility of extending its operation, as well as other elements relating to the quality of the work produced and its contribution to the national strategy for higher education.

If, at the stage of its evaluation, a MSc is deemed not to fulfill the conditions for its continued operation, its operation is completed with the graduation of the already enrolled students in accordance with the founding decision and the regulations for postgraduate and doctoral programs of study.

#### **Internal Evaluation MODIP**

In order to ensure and improve the quality of the D.P.M.S., the Quality Assurance Unit of the Aristotle University of Thessaloniki (MO.DI.P.) carries out a periodic internal evaluation of the D.P.M.S. within the framework of the Internal Quality Assurance System of the Institution and in accordance with the instructions and guidelines of the H.A.H.E.

The obligations of the Administrative Bodies and the lecturers of the D.P.M.S., include all the procedures provided for, based on the instructions and guidelines of the MO.DI.P.-A.U.TH. for the internal and external evaluation and certification of the Programs of Studies and academic units.

#### **Evaluation of Teaching Staff and Courses by the students**

With the sole purpose of improving the level of studies of the D.P.M.S. and with absolute assurance of anonymity, students are invited to evaluate the courses and the lecturers of each semester.

In order to ensure the uniform maintenance of the statistical data and the extraction of usable conclusions for the educational work of the Schools and the Institution as a whole, the evaluation questionnaires are prepared by MO.DI.P. and may be partially differentiated, based on the particular characteristics and needs of each academic unit and/or each course. They are completed electronically.

The evaluation is conducted under the responsibility of each School's Internal Evaluation Team, in

collaboration with MO.DI.P. of AUTH, and is carried out through MO.DI.P.'s Quality Management Information System. The Schools' administration and Internal Evaluation Teams, are required to take systematic actions to ensure student's participation in the evaluation, following the guidelines of MO.DI.P. and relevant decisions of the Senate.

The Internal Evaluation Team (OMEA) of each School monitors, through the Quality Management Information System of MO.DI.P. (Quality Assurance Unit) at Aristotle University of Thessaloniki, the percentage of student's participation in the evaluation process. Analyzes the related results and informs the Administrative Bodies of the Postgraduate Program and the corresponding academic unit accordingly. The evaluation questionnaires are specific to each taught course and each instructor individually.

The Administrative bodies of the D.P.M.S. and the academic unit, in cooperation with the School's Internal Evaluation Team, are required to study the evaluation results, announce their findings, decide on the publication of the summary results of the evaluation, when deemed necessary and in any case after the announcement of the grades of the semester's courses, in accordance with the current legislation for the protection of personal data. They are also responsible for taking actions to address any identified issues.

### **Article 17**

#### **Studies Guide**

The MSc publishes a Study Guide in order to inform postgraduate students about its operation. The Studies Guide may include:

1. General Information as well as useful electronic information about the Institution and the School, especially about administrative services or collective bodies that the postgraduate student can contact for the successful completion of his/her studies.
2. The purpose, the subject of the D.P.M.S. and the qualifications acquired after the award of the Diploma of Postgraduate Studies.
3. The academic calendar, which includes the start and end dates of academic semesters, examination periods, holidays, periods for the presentation of postgraduate theses and any other obligations such as internships, seminars, conferences, etc.
4. The course program, the credit units, the teaching staff, the rights and obligations of postgraduate students.
5. The official language of teaching and preparation of the postgraduate thesis.
6. The administration of the D.P.M.S.
7. Databases.
8. Library's use.
9. Services to postgraduate students.

### **Article 18**

#### **Complaint and Appeal Management Mechanism**

For matters concerning complaints and appeals of the students of the Program during their studies at A.U.Th., the Regulation on the operation of the complaint and appeal management mechanism for students, approved for the Interdepartmental Postgraduate Program by the Department of Electrical and Computer Engineering, as currently in effect, is applied.

### **Article 19**

#### **Regulation on the operation of the Academic Advisor institution**

For matters concerning the operation of the Academic Advisor institution of the Program during their studies at A.U.Th., the Regulation on the operation of the Academic Advisor institution, approved for the Interdepartmental Postgraduate Program by the School of Electrical and Computer Engineering of A.U.Th., as currently in effect, is applied.

### **Article 20**

#### **Transitional Arrangements**

Any issue that may arise in the future and is not covered by the relevant legislation or the Postgraduate Studies Regulation will be addressed through decisions of collective bodies, by amending the Regulation.

## **B. Mobility Regulation**

The students of the Program may, under the same terms and conditions as the other students of the School of Electrical and Computer Engineering, participate in Erasmus practical training (Erasmus+ Placement), provided that such mobility does not affect their participation in the educational activities of the Program.

For the students of the Program, the provisions for mobility through Erasmus+ Placement, as applicable to the other students of the School of Electrical and Computer Engineering, apply *mutatis mutandis*. Given the operation and rationale of the Program, other forms of mobility are not feasible.

## **C. Thesis Regulation**

According to the Decision of the Senate of Aristotle University of Thessaloniki No. 78656/23.06.2023 "Approval of the Postgraduate Programs Regulation of Aristotle University of Thessaloniki (A.U.Th.)" (FEK 4084/B-23.06.2023), the following applies:

### **Article 9 – Program of Studies – Knowledge Status (Master's Thesis)**

For the preparation of a Master's Thesis, as specified, the Coordination Committee, upon request from the candidate on specific dates, reviews the proposed title of the thesis, the suggested supervisor, and includes an abstract of the proposed work. The committee appoints a three-member Examining Committee to approve the thesis, with one member being the supervisor.

The right to supervise Master's Thesis is granted to the instructors of the categories as described in Article 83 of Law 4957/2022.

**a)** Members of the Teaching and Research Staff (D.E.P.), Special Educational Staff (E.E.P.), Laboratory Teaching Staff (E.D.I.P.) and Specialized Technical Laboratory Staff (E.T.E.P.) of the School or other Schools of the same or another Higher Education Institution or Higher Military Educational Institution, with additional employment beyond their legal obligations, if the Master's Program includes tuition fees.

- b) Emeritus Professors or retired members of the Teaching and Research Staff of the School or other Schools of the same or another Higher Education Institution.
- c) Cooperating Professors,
- d) Appointed Instructors,
- e) Visiting professors or visiting researchers,
- f) Researchers and special operational scientists of research and technological institutions of Article 13A of Law No. 4310/2014 (A' 258) or other research centres and institutes in Greece or abroad. The members of the three-member Examination Committee, must have the same or related scientific specialization with the cognitive subject of the MSc.

The preparation of the Master's Thesis is governed by the Academic Code of Ethics of A.U.Th. Every creator or co-creator of any intellectual work is entitled to be mentioned and recognized as such, enjoying both the property and moral rights/powers that derive from the specific work. By exception, if the original intellectual creation ("work") is the final output of a paid research project commissioned by an entity outside A.U.Th., the property rights of the creator or co-creators may be limited based on the terms of the contract commissioning the said research project. However, the moral rights remain with the creator(s), subject to the necessary contractual restrictions for the exploitation/economic utilization of the produced intellectual creation.

For the presentation of the Master's Thesis, a positive recommendation from the Three-Member Examination Committee is required. In the case where the defense of the Master's Thesis is conducted publicly, a specific date and location are set by the Coordinating Committee of the Postgraduate Program.

After the defense of the Master's Thesis, a record is drafted that includes the individual grade of each member of the Three-Member Examination Committee, the average grade, and any observations or remarks. Upon approval by the Committee, the Master's Thesis is mandatorily posted on the website of the relevant School. If the evaluation of the Master's Thesis is negative, the postgraduate student may resubmit the thesis, incorporating the remarks for improvement, within a period specified by the Three-Member Examination Committee. If the second evaluation is also negative, the postgraduate student loses the right to be awarded the Master's Degree.

In exceptional cases, if there is an objective inability or significant reason, it is possible to replace the supervisor or a member of the Three-Member Examination Committee, as well as to change the topic of the Master's Thesis, following a decision by the Assembly of the relevant School.

In the respective Regulations for Postgraduate Studies, details are specified including the type of Master's Thesis (theoretical, applied, experimental), the length, font style, writing format, the number of copies to be submitted, and any other relevant aspects concerning its structure. It also outlines the schedule for revisions and corrections.

The grade of the Master's Degree (M.Sc.) is derived from the weighted average of the courses of the M.Sc. program and the Master's Thesis (the weighting is based on the credit units of the courses and the thesis) and is calculated, with precision to the second decimal place, as follows:

**The grade of each course and the Master's Thesis (where applicable) is multiplied by the corresponding number of credit units (ECTS), and the sum of these products is divided by the minimum number of credit units required for obtaining the M.Sc.**

The mathematical formula is as follows:

$$\frac{\text{Grade Diploma of Postgraduate Studies} = (\text{Grade course 1 X ECTS course 1} + \text{Grade course 2 X ECTS Course 2} + \dots + \text{Grade Postgraduate Thesis X ECTS Postgraduate Thesis})}{\text{TOTAL OF ECTS}}$$

### **Article 28 – Plagiarism**

By submitting any master's thesis, the graduate student is required to state whether he/she has used the work and opinions of others. Copying is considered a serious academic offense. Plagiarism is defined as copying someone else's work, as well as using someone else's work, published or unpublished, without proper citation.

The inclusion of any documented material, even from the candidate's own studies, without appropriate citation, may constitute grounds for the decision of the Assembly of the Host School to expel the student.

In the above cases, and following a justified recommendation from the supervising professor, the Assembly of the Host School may decide to expel the student. Any misconduct or violation of academic ethics is referred to the Coordinating Committee of the Postgraduate Program for judgment and recommendation on how to address the issue to the School's Assembly. Violations also include offenses such as copying or plagiarism and, more generally, any violation of the provisions concerning intellectual property by a graduate student during the writing of papers within the framework of courses or the preparation of a master's thesis.

All procedures related to the preparation of the master's thesis (M.T.) are detailed in paragraph D of Article 8 of the Regulations for Postgraduate Studies of the Interdepartmental Program "Aerial Autonomous Systems" (see Appendix A11):

- The process of applying for the start, topic designation, and supervisor assignment of the master's thesis.
- The process of appointing the Three-Member Examination Committee.
- Guidelines for writing the master's thesis, such as the language of writing, suggested formatting, and the minimum acceptable length in terms of pages.
- Guidelines for the presentation and grading of the master's thesis.

Additionally, the website of the Interdepartmental Postgraduate Program provides a timeline of the necessary procedures, templates for application documents that need to be submitted, a detailed thesis writing template in both Greek and English, as well as additional guidelines on how to prepare and use

bibliographic references.

## D. Internship Regulations:

The Interdepartmental Postgraduate Program "Aerial Autonomous Systems" does not include an internship in its program of studies, and therefore does not have a corresponding set of regulations.