ΔΗΜΟΚΡΙΤΕΙΟ ΠΑΝΕΠΙΣΤΗΜΙΟ ΘΡΑΚΗΣ
DEMOCRITUS UNIVERSITY OF THRACE

Rules and Regulations for Postgraduate Master Program

"Water Resources Engineering and Ecological Engineering"

Xanthi 2026

Επιτελική Δομή ΕΣΠΑ
ΥΠΟΥΡΓΕΙΟ ΠΑΙΔΕΙΑΣ ΘΡΗΣΚΕΥΜΑΤΩΝ ΚΑΙ ΑΘΛΗΤΙΣΜΟΥ
ΕΛΛΗΝΙΚΗ ΔΗΜΟΚΡΑΤΙΑ
Υπουργείο Παιδείας, Θρησκευμάτων και Αθλητισμού
Ελλάδα 2.0
ΕΘΝΙΚΟ ΣΧΕΔΙΟ ΑΝΑΚΑΜΨΗΣ ΚΑΙ ΑΝΘΕΚΤΙΚΟΤΗΤΑΣ
Με τη χρηματοδότηση της Ευρωπαϊκής Ένωσης
NextGenerationEU

PART A
ORGANIZATION AND OPERATION OF THE POSTGRADUATE STUDIES PROGRAM ENTITLED: "Water Resources Engineering and Ecological Engineering"

Article 1
General Provisions

The Department of Civil Engineering of the School of Engineering, the Soil, Water and Environment Teaching and Research Center of Avignon University and the Faculty of Biology of Adam Mickiewicz University organize and operate, as of the academic year 2027–2028, an Interinstitutional Postgraduate Studies Program (I.P.S.P.) entitled "Water Resources Engineering and Ecological Engineering", in accordance with the provisions of this decision and the provisions of Law 4957/2022 (Government Gazette A' 141), as amended and in force.

Article 2
Validity of the Postgraduate Studies Regulations

The provisions of the present regulations specify and supplement the legislative framework governing postgraduate studies, and in particular the provisions of Law 4957/2022 (A' 141), as amended and in force, and contribute to the unified regulation of operational matters of the said I.P.S.P.

Upon the establishment of the I.P.S.P., the present Postgraduate Studies Regulations are drawn up by decision of the Department Assembly, approved by the Senate, and, provided that they are certified by the Hellenic Authority for Higher Education (H.A.H.E.), are published in the Government Gazette, posted on the Department's website, and communicated to the Ministry of Education, Research and Religious Affairs.

Article 3
Subject and Purpose of the I.P.S.P.

The subject of the I.P.S.P.is the provision of postgraduate-level knowledge in the sciences of Hydraulic Engineering, Environmental Engineering, Hydrochemistry, Ecohydrology, Hydrogeology, Hydrodiplomacy, and other specialties related to water resources.

The purpose of the I.P.P. is, on the one hand, to provide specialized theoretical and research knowledge in the rapidly developing international scientific field of Water Resources Engineering and Ecological Engineering, with significant social impact, and on the other hand to provide specialized practical training.

The main goals of the Program are:

I. To train students in Water Resources Engineering and Ecological Engineering.
II. To specialize their knowledge in the methods and technologies applied in integrated water resources and aquatic systems management.

III. To teach them the theoretical and practical background required for integrated water resources management.
IV. To support the rapid integration of graduates into the job market of their home countries, the international labor market, and their successful professional careers.

Article 4

Governing Bodies of the Post-Graduate Study Programmes - Composition

1. The competent governing bodies for organization and operation of the Postgraduate Master's Programmes (PMPs) of Democritus University of Thrace shall be the following:
   a) The Senate of DUTH;
   b) the Assembly of each Department;
   c) the Coordination Committee (CC) of the PMP; and
   d) the Director of the PMP.
   e) The SPC

2. The Coordination Committee (CC) shall consist of the Director of the PMP and four (4) faculty members of the Department, whose scientific field is relevant to the subject of the PMP and who undertake teaching duties in the Programme.
   The members of the CC shall be appointed by decision of the Assembly of the Department.
3. In the case of inter-departmental, inter-institutional, and joint PMPs, the powers of the Assembly of the Department shall be exercised by the Study Programme Committee (SPC), whose composition and number of members shall be determined in the Special Cooperation Protocol of the PMP.
   The SPC shall consist of faculty members of collaborating Departments, in accordance with the provisions of the Special Cooperation Protocol. Where other bodies participate in the PMP pursuant to Article 80(6) of Law 4957/2022, at least one (1) representative of each partner body shall participate as a member of the committee. In such cases, the Coordination Committee (CC) shall be established by decision of the SPC and shall include the Director of the PMP and four (4) members of the SPC.
4. The Director of the PMP shall be elected from among the faculty members of the Department and shall, by priority, hold the rank of Professor or Associate Professor. The Director shall be appointed by decision of the Assembly of the Department for a two-year term of office, with the possibility of renewal without limitation. In the case of inter-departmental, inter-institutional or joint PMPs, the Study Programme Committee (SPC) shall appoint one (1) of its members as Director of the PMP.
5. In the event that the Director of the PMP resigns, passes away or is unable for any reason to perform his or her duties, the Assembly of the Department or, as the case may be, the SPC shall appoint a new Director for the remaining term of office of the outgoing Director, giving priority to the rank of Professor or Associate Professor with a scientific field relevant to the subject of the PMP. The same procedure shall apply in the case of replacement of members of the Coordination Committee.
6. The SPC shall consist of faculty members of the collaborating Departments and shall be established by decision of the Senate of the HEI undertaking the administrative support

of the PMP, following a proposal of the Assemblies of the collaborating Departments or the competent bodies of the cooperating institutions.

The exact number of members of the SPC and the representation of each collaborating Department or HEI, in Greece or abroad, shall be specified in the Special Cooperation Protocol.

According to Circular No. 135557/Z1/01-11-22 of the Ministry of Education, Religious Affairs and Sports, the SPC shall consist of five (5) members in the case of an interdepartmental PMP and seven (7) members in the case of an interinstitutional PMP. Where institutions in Greece or abroad that do not offer education and degrees equivalent to those of HEIs participate in the PMP, each body may be represented by one (1) member on the SPC, nominated by the competent governing body of the institution and participating in the teaching activities of the PMP.

7. Emeritus Professors of the Department or of collaborating Departments may participate in the PMP and in the CC, provided that they undertake teaching duties in the Programme.
8. The Director of the PMP and the members of the CC and the members of the study programme committee shall not be entitled to any remuneration, allowance or compensation for the exercise of the duties assigned to them in the context of the operation of the PMP. to the performance of their duties.

Article 5
Post-Graduate Study Programme Instrument Powers

1. The DUTH Senate shall have the following competences with regard to the Postgraduate Master's Programmes (PMPs):
   a) to approve the establishment of a PMP or amendment of its establishing decision
   b) to approve the extension of the duration of operation of PMPs;
   c) to establish the Study Programme Committee (SPC), in the case of inter-departmental or inter-institutional or joint PMPs;
   d) to decide on the discontinuation of PMPs offered by DUTH.
2. The Assembly of the Department shall be responsible for the organization, administration and overall management of the PMP and, in particular, shall have the following competences:

a) to submit to the Senate, through the Post-Graduate Studies Committee the elements provided for in Article 80(3)(a-p) of Law 4957/2022, together with the Operating Regulation of the PMP, the Diploma Supplement templates in Greek and English, the detailed revenue and expenditure budget, the feasibility and sustainability report, the detailed report in the case of distance learning PMPs, and, in the case of inter-departmental or inter-institutional PMPs, the Special Cooperation Protocol;
b) to establish the committees responsible for the assessment of applications of post-graduate candidates and to approve their enrolment in the PMP;

c) to allocate the teaching workload among the teaching staff of the PMP;
d) to propose to the Senate the amendment of the establishing decision of the PMP and the extension of its duration of operation;
e) to establish the examining committees for the evaluation of the Master's theses and to appoint the scientific referee (supervisor) for each postgraduate thesis;
f) to determine whether students have successfully completed their studies in order for the Master's Degree to be conferred;
g) to approve the review and evaluation of the Programme, following the recommendation of the CC;
h) to propose to the Senate the Special Cooperation Protocol in the event that the PMP is organised in collaboration with another Department of DUTH or with another HEI in Greece or abroad, as an inter-departmental or inter-institutional PMP, respectively.

By decision of the Assembly of the Department, the competences under points a) and d) may be delegated to the CC of the PMP.

3. The CC shall be responsible for monitoring and coordinating the operation of the Programme and, in particular, shall have the following competences:
   a) to prepare the initial annual budget of the PMP and its amendments, provided that the PMP allocates its resources in accordance with Article 84 of Law 4957/2022, and to recommend its approval to the Research Committee of the Special Account for Research Funds (SARF) of DUTH, with the exception of the quarterly revisions of the annual budgets provided for in Article 239(3)(b) of Law 4957/2022;
   b) to prepare the annual review of the Programme and to recommend its approval to the Assembly of the Department;
   c) to approve the implementation of expenditures and to delegate this responsibility to the Director of the PMP where appropriate;
   d) to approve the granting of scholarships, whether compensatory or non-compensatory, in accordance with the provisions of the establishing decision of the PMP and the Regulation on post-graduate and doctoral studies;
   e) to submit recommendations to the Assembly of the Department regarding the allocation of teaching duties among the categories of teaching staff referred to in Article 83 of 4957/2022;
   f) to propose to the Assembly of the Department the invitation of Visiting Professors to cover the teaching needs of the PMP;
   g) to prepare and submit to the Assembly of the Department proposals for the amendment of the study programme;
   h) to recommend to the Assembly of the Department the reallocation of courses among academic semesters, as well as matters related to the qualitative upgrading of the study Programme.

4. The Director of the PMP shall have the following competences:
   a) to chair the CC and, in the case of interdepartmental, interinstitutional or joint PMPs, the Study Programme Committee (SPC), to prepare the agenda and convene their meetings;

b) to submit to the Assembly of the Department proposals concerning the organization and operation of the PMP, in the case of single-department Programmes;
c) to submit recommendations to the CC and to the other governing bodies of the PMP and the Institution on matters relating to the effective operation of the Programme;
d) to act as the Scientific Coordinator of the Programme and to exercise the corresponding powers: being responsible for the proper implementation and certification of the physical object of the PMP, the feasibility of the expenditures related to its implementation, as well as for monitoring the financial object of the Programme and the execution of the budget; (see also Article 9 on management);
e) to monitor the implementation of the decisions of the governing bodies of the PMP and the Internal Regulation on Postgraduate and Doctoral Study Programmes;
f) to exercise any other competence provided for in the establishing decision of the PMP.

5. The representatives of the Departments participating in the SPC shall be obliged to inform the Assemblies of their respective Departments whenever requested to do so by the Head of the Department.

Article 6
Organization of the I.P.S.P.

The organization of the educational process of the Interdepartmental Postgraduate Studies Program (I.P.S.P.) may be carried out:
a) in person,
b) using methods of synchronous distance learning.

The educational process of the Postgraduate Studies Program is organized partly in person (90%) and partly through synchronous distance learning methods (10%). The percentage can be modified after SPC decision.

The semester and examination periods duration and timetables will be decided annually by SPC, according to Greek, French and Polish national legislation and University regulation. At the beginning of each semester, the semester timetable is drawn up. Each course is taught by one or more instructors. For each course, the SPC appoints one instructor as the course coordinator.

Course assessment is conducted through written or oral examinations, assignments, presentations, reports, or a combination of the above. The exact form of assessment is determined by the instructor(s) in accordance with the nature of each course.
The assessment criteria for each course are communicated at the beginning of the course by the faculty member serving as the course coordinator.

The Department of Civil Engineering provides the appropriate infrastructure to support distance learning (teleconference rooms and licenses for suitable teleconferencing and distance education software).

The procedures and methods of organizing the educational process through distance learning are described in the accompanying Report.

Attendance at courses is mandatory and is monitored under the responsibility of the instructor. If the number of absences exceeds ten percent (10%) and the reasons for absence are serious (excluding professional obligations), then, following an application by the postgraduate student concerned, the case is examined by the Coordinating Committee of the I.P.S.P., which approves or rejects the request and submits a recommendation to the Department Assembly for final approval.

Student assessment within the framework of distance learning Postgraduate Studies Programs is carried out through written or oral examinations conducted in person or through written or oral examinations conducted using distance learning methods, as well as through alternative methods such as the submission of assignments or the conduct of practical tests. In particular, written or oral distance examinations may be conducted through technological mediation and corresponding distance examination systems/applications, ensuring user authentication, physical identification, and supervision of the examination process where deemed necessary.

Postgraduate Studies Programs are internally evaluated within the framework of the Internal Quality Assurance System (IQAS) in accordance with Article 215 of Law 4957/2022, in order to ensure their quality.

Postgraduate Studies Programs are mandatorily certified by the Hellenic Authority for Higher Education (H.A.H.E.) prior to the commencement of their operation, in accordance with paragraph 7 of Article 80 of Law 4957/2022, and are periodically evaluated in accordance with Article 87 of the same law.

Article 7
Determination of the Maximum and Minimum Number of Admitted Students

The maximum number of students admitted to the I.P.S.P. is set at forty (40) per cycle of studies. The minimum number of admitted postgraduate students is set at ten (10), including those entitled to exemption from tuition fees.

Article 8
Teaching staff

1. Teaching duties in the Postgraduate Master's Programmes (PMPs) shall be assigned, by decision of the competent governing body, to the following categories of teaching staff:

a) members of the Faculty of the Department or of other Departments of DUTH or of other Higher Education Institutions in Greece or abroad, as well as members of the Laboratory Teaching Staff, Special Technical Laboratory Staff, and Special Teaching Staff

of the Department or of other Departments of DUTH or other Higher Education Institutions or Higher Military Educational Institutions (HMEIs), with additional employment beyond their statutory obligations, where tuition fees are imposed;

b) Emeritus Professors or retired members of the Faculty of the Department or of other Departments of DUTH or of other Higher Education Institutions;
c) holders of joint teaching positions (joint chairs);
d) adjunct professors and academic scholars of DUTH or other HEIs;
e) visiting Professors or visiting Researchers;
f) researchers and specialized scientists of research and technological organizations under Article 13A of Law 4310/2014 (Government Gazette, Series I, No. 258), or of other research centers and institutes in Greece or abroad;
g) scientists of recognised standing who have specialised knowledge and relevant professional experience in the field of study of the PMP.

2. By decision of the SPC, supplementary teaching duties may be assigned to doctoral candidates of the Department or School, under the supervision of a member of the teaching staff of the PMP.
3. The teaching duties of the PMP shall be assigned by decision of the competent governing body, following a recommendation of the Coordination Committee (CC) of the PMP or, in the case of inter-departmental, inter-institutional or joint PMPs, following a recommendation of the Director of the Programme. Specific conditions regarding the assignment of teaching duties may be laid down in the establishing decision of the PMP.
4. The teaching staff referred to in paragraph 1 points (a) to (f) shall have the right to supervise Master's Theses, provided that they hold a doctoral degree.
5. The competent governing body of the PMP may decide to assign the supervision of Master's Theses to members of the Faculty, as well as to members of the Special Teaching Staff and the Laboratory Teaching Staff of the Department, even if they have not undertaken teaching duties within the PMP

6.

a) All categories of teaching staff may be remunerated exclusively from the financial resources of the PMP. No remuneration or any other form of compensation shall be paid from the State Budget or the Public Investment Programme. The remuneration of each teacher shall be determined by decision of the competent governing body of the PMP assigning the teaching duties. In particular, members of the Faculty may receive additional remuneration for their teaching work in the PMP, provided that they fulfil the minimum statutory teaching obligations, in accordance with the Internal Regulations of DUTH. The same shall apply, by analogy, to members of the Special Teaching Staff, the Laboratory Teaching Staff and the Special Technical Laboratory Staff, provided that they fulfil their minimum statutory obligations.
b) For Greek and Polish faculty members the supervision of Master's Thesis and internships may be remunerated, subject to the relevant provisions of the Internal Regulation of the PMP, provided that the employment hours exceed the statutory obligations.

c) Members of the Faculty, the Special Teaching Staff, the Laboratory Teaching Staff and the Special Technical Laboratory Staff of the Department may be employed in the PMP only on condition that they fulfil their minimum statutory teaching obligations in accordance with the applicable legislation and the Internal Regulations of DUTH.

Article 9
Duration of Studies – Part-Time Study – Suspension of Studies

i. Duration of Studies

The standard duration of study in the Postgraduate Studies Program (IPSP) leading to the award of the Master's Degree (M.D.) is set at a minimum of four (4) semesters (120 ECTS), which includes the time required for the preparation and submission for evaluation of the Master's Thesis (M.T.). During the fourth semester, the internship-based Master Thesis is prepared, carrying thirty (30) ECTS.

Enrollment in the IPSP is considered completed upon:
a) completion of the minimum prescribed duration of study, and
b) successful completion of all educational activities, the internship and internship-based Master's Thesis, where applicable.

With regard to the maximum duration of studies, the postgraduate student is required to complete his/her postgraduate studies within a period equal to double the prescribed duration of the I.P.S.P.

Exceptional extension beyond the maximum duration of studies
a) A postgraduate student may apply for an exceptional extension beyond the maximum duration of studies for serious health reasons relating to the student personally or to a first-degree blood relative, spouse, or a person with whom the student has entered into a civil partnership. The application, addressed to the Coordinating Committee (C.C.), must be submitted to the Department Secretariat prior to the expiration of the maximum duration of studies and must be accompanied by supporting documentation substantiating the request, particularly regarding health issues concerning:
   aa) the postgraduate student, or
   ab) a first-degree blood relative, spouse, or a person with whom the postgraduate student has entered into a civil partnership.

Serious health reasons must be certified by a document issued by a public hospital or by a competent special committee of a public hospital.

b) To substantiate the stated health reasons, the application must be accompanied by a recent certificate of family status, where the health reasons do not concern the student personally, and by a certificate issued by a Health Committee or a medical opinion from a public hospital bearing the signature and seal of the Director of an NHS clinic, laboratory, or university department. The competent institutional service may request

any additional documentation deemed necessary for the examination of the application.

c) The Secretariat forwards the applications to the Assembly, which decides on the approval or rejection of the application and determines the duration of the additional study period. Further extensions beyond the maximum duration of studies may be granted again through the procedures described for part-time study and suspension of studies, provided that the conditions set forth in the relevant provisions and the present decision continue to apply.

ii. Suspension of Studies

In exceptional cases, postgraduate students may be granted a temporary suspension of studies, following the submission of a duly justified application, for a period not exceeding two (2) consecutive semesters. The application shall specify the requested period of suspension and the reasons (indicatively and not exhaustively: health reasons, force majeure, personal, family, or financial reasons, etc.). The application must be accompanied by all relevant supporting documents issued by competent public authorities or organizations substantiating the stated reasons, such as health issues concerning the applicant or relatives up to the second degree by blood, military service obligations, or serious financial reasons. In cases of force majeure or personal reasons, the application shall be accompanied by a solemn declaration under Law 1599/1986, describing the stated reasons, and no additional documentation is required.

The application is forwarded by the Coordinating Committee for approval to the Department Assembly. In exceptional cases and for reasons of force majeure, the application may be submitted after the end of the enrollment period. Academic semesters during which the postgraduate student is under suspension of studies are not counted toward the maximum duration of studies.

Suspension of studies is granted by decision of the Assembly, following a recommendation by the Coordinating Committee.

During the period of suspension, the postgraduate student loses student status. The suspension period is not counted toward the maximum duration of regular study.

Upon resumption of studies, the postgraduate student continues under the study regime applicable at the time of his/her initial enrollment.

Article 10
Accreditation of Postgraduate Master's Programmes (PMPs)

1. The Postgraduate Master's Programmes (PMPs) should be accredited periodically, in accordance with the provisions of Article 8(1) of Greek Law 4653/2020, as amended and in force, within the framework of the evaluation and certification of the academic unit to the coordinating Democritus University of Thrace.

2. The annual internal evaluation of each PMP shall be conducted in cooperation with the Quality Assurance Unit of Democritus University of Thrace (DUTH-QAU), in the context of the internal evaluation of the academic unit to which it belongs and in accordance with the procedures laid down in the Internal Quality Assurance System (IQAS) of the Institution.
3. The external evaluation and accreditation of the PMPs shall be carried out in cooperation with the DUTH-QAU, in accordance with the procedures established by the Hellenic Authority for Higher Education (HAHE).
4. The Postgraduate Master's Programmes of each Department, including interdepartmental, interinstitutional and joint PMPs whose administrative support is undertaken by that Department, shall be evaluated within the framework of the periodic evaluation and accreditation of the academic unit by the Hellenic Authority for Higher Education, in accordance with Article 87 of Law 4957/2022.

Within this framework, the evaluation shall cover, inter alia:

- the overall review of the work carried out by each PMP;
- the extent to which the objectives set at the time of its establishment have been achieved;
- its financial and academic sustainability;
- the employability and absorption of its graduates in the labor market;
- the contribution of the Programme to research;
- its internal evaluation by postgraduate students (GS);
- the feasibility of extending its operation;
- any other data related to the quality of its output and its contribution to the national strategy for higher education.

5. If, during the evaluation referred to in paragraph 1, a PMP is found not to meet the requirements for its continued operation, its operation shall be brought to completion with the graduation of the students already enrolled, in accordance with its establishing decision and the Regulation on Postgraduate and Doctoral Study Programmes.
6. Under the responsibility of the Director of the PMP, colloquia shall be organized for the discussion of the courses and their content, in order to assess, inter alia, the extent to which the Programme is aligned with scientific developments, labor market needs and broader societal needs.

Upon the expiry of the term of office of the Coordination Committee (CC), and under the responsibility of the outgoing Director, a detailed report shall be drawn up on the research and educational activities of the PMP, as well as on its other actions, with the aim of upgrading the studies, optimizing the utilization of human resources, improving the use of existing infrastructure and ensuring that the resources of the Programme are used in a socially beneficial manner.

The report shall be submitted to the competent Department to which the PMP belongs.

Article 11

Feasibility and Sustainability Study of the Postgraduate Studies Program (PSP)

1. Feasibility study

1.a. Necessity of establishing the IPSP and description of its objectives

Contemporary developments in science

Water resources engineering and ecological engineering are interdisciplinary subjects, aiming at the sustainable management and protection of water bodies, combining principles from the sciences of environmental engineering, ecological engineering, and civil engineering with hydrology. The subject includes the design and management of water supply, wastewater treatment, and flood protection infrastructure, while leveraging ecological solutions, such as wetlands and artificial ecosystems, to improve water quality and enhance ecological balance. According to ASCE (American Society of Civil Engineers), water resources engineering is the professional discipline for the management and sustainable use of water and related resources (https://www.asce.org/career-growth/civil-engineering-certification/water-resources-engineering), while Mitsch (2012) defines ecological engineering as the design of sustainable ecosystems, integrating human society with its natural environment for the benefit of both, a perspective commonly cited in scientific journals and textbooks according to Kim et al. (2025). Dale et al (2021) report that policymakers and governments around the world have recognized the urgent need to integrate ecosystems and ecological functions into spatial planning and technical design through the development of guiding concepts such as Green Infrastructures (European Commission, 2013, USEPA, 2014) and Nature-based Solutions (Cohen-Shacham et al., 2016, European Commission, 2015). Eco-engineering forms the theoretical and practical basis for the application of these approaches.

Contemporary developments in water resources engineering and ecological engineering focus on technological innovation, ecological integration, and advanced modeling. Significant advances include smart water management systems, desalination technologies, advanced water quality and quantity monitoring systems, water reuse techniques, green infrastructure for ecosystem restoration, the assessment of the impacts of climate change through advanced simulation techniques, hydrological, hydraulic and hydrogeological qualitative and quantitative modeling, which integrates data from many sources (hydrological, ecological, social) to simulate and predict complex water resource systems under changing conditions, as well as remote sensing technologies and Geographic Information Systems (GIS) for large-scale monitoring and analysis of water resources. There is an extensive international literature on the subject, with the following being some of the most recent relevant scientific papers: Aivazidou and Tsolakis (2023), He et al. (2021), Meng et al. (2024), Wang et al. (2024), Kumar and Yadav (2022).

Career prospects in water resources engineering and ecological engineering are strong, with opportunities in government agencies, local, regional, and national water management departments, private engineering companies, public and private water and sewerage companies, waste management companies, and academic institutions. Common professional roles include water resources engineer, hydrologist, environmental consultant, project manager water infrastructure, and the eco-restoration planner, with the labour market projected to grow at a rate similar to the average for all occupations. The demand for engineers, who are active in water resources engineering and ecological engineering, is

expected to increase steadily due to aging infrastructure, population growth, and the need for more efficient water systems.

1.b. Relevance of the Interdepartmental Postgraduate Programme (IPSP) to the first cycle of studies

The IPSP "Water Resources and Ecological Engineering" demonstrates clear relevance to the first cycle of studies, providing a coherent continuation of academic knowledge and specialization in the field of hydraulic engineering, water resources management, and water and wastewater treatment. At the same time, the structure of the curriculum and the teaching methodology of the IPSP focus on differentiating it from undergraduate studies through the provision of advanced knowledge and specialized skills.

The IPSP builds upon the knowledge acquired during the first cycle of studies in the fields of engineering, natural sciences, social sciences, geography, and other related disciplines. Its interdisciplinary approach ensures that students from diverse academic backgrounds can capitalize on their undergraduate knowledge while simultaneously deepening their understanding of new and specialized aspects of the subject area.

The first cycle of studies typically covers fundamental principles such as introductory courses to hydraulic engineering, water resources and wastewater management, and a basic understanding of natural and social phenomena. The IPSP utilizes this foundation to further develop the understanding and application of modern tools and methods for water resources and ecological engineering, making learning more targeted and practice-oriented.

The IPSP differs from the first cycle of studies by focusing on specialized knowledge and skills that are essential for the effective management on water resources and ecological engineering. Indicatively, these include:

- The use of intelligent decision-support systems for water resources management.
- The use of modern model tools on water resources and ecological engineering applications.
- In-depth study of climate change issues and their impacts on water resources and ecological engineering.

While the first cycle of studies provides theoretical understanding, the IPSP emphasizes practical application through case studies, simulations, and projects that replicate real-life scenarios. This practical dimension enables students to acquire experience that can be directly applied in the professional field. The IPSP also introduces innovative technologies, such as the use of Geographic Information Systems (GIS), Artificial Intelligence (AI), and big data in water resources and ecological engineering. These tools are not typically included in undergraduate programs and constitute a key pillar of differentiation in postgraduate education. Finally, the IPSP focuses on the management of water resources arising from

complex causes, integrating natural, social, economic, and political factors. This multidimensional approach goes beyond the basic training of the first cycle of studies and prepares students for the real-world demands of the profession.

1.c. Scientific competence of teachers

Faculty member	Specialization	Relevant publications
Democritus University of Thrace		
Professor Kagkalou Ifigenia	Water Environment Protection and Ecology	1. Sidiropoulos P., Chamoglou M., Kagalou I. (2017) Combining conflicting, economic, and environmental pressures: Evaluation of the restored Lake Karla (Thessaly-Greece). *Ecohydrology and Hydrobiology*, 17(3):177-189. 2. Gkelis S., Panou M., Chronis I., […], Kagalou I., Lazaridou M. (2017). Monitoring a newly re-born patient: water quality and cyanotoxin occurrence in a reconstructed shallow Mediterranean lake. *Advances in Oceanography and Limnology*, DOI: 10.4081/aiol.2017.6350. 3. Theologou I., Kagalou I., Papadopoulou M., Karantzalos K. (2016). Multitemporal Mapping of Chlorophyll–α in Lake Karla from High Resolution Multispectral Satellite data. *Environ. Processes*, Vol.3(3), 681-691. 4. Latinopoulos D., Ntislidou Ch., Kagalou I. (2016). Multipurpose Plans for the sustainability of Greek Lakes: Emphasis on multiple stressors. *Environ. Processes*, Vol.3(3), 589-602. 5. Alexakis D., Kagalou I., Tsakiris G. (2013). Assessment of pressures and impacts of surface water bodies in the Mediterranean: case study Pamvotis Lake-Greece. *Environ. Earth Sci.*, 70(2), 687-698.
Professor Panagiotis Angelidis	Environmental Hydraulics and Engineering Hydrology	1. Angelidis P., Kalpakis D., Gyrikis V., Kotsovinos N. (2017). “2D Brine Sewage after Impinging on a Shallow Sea Free Surface”. *Environ Fluid Mech*, vol.17, pp.615-628. 2. Maris F., Kitikidou K., Angelidis P., Potouridis S. (2013). “Kriging Interpolation Method for Estimation of Continuous Spatial Distribution of Precipitation in Cyprus”. *British Journal of Applied Science & Technology*, vol.3(4), pp.1286-1300. 3. Angelidis P., Maris F., Kotsovinos N., Hrissanthou V. (2012). “Computation of Drought Index SPI with Alternative Distribution Functions”. *Water Resources Management* (Springer), vol.26, pp.2453-2473. 4. Georgoulas A., Kopasakis K., Angelidis P., Kotsovinos N. (2012). “Numerical Investigation of Continuous, High Density Turbidity Currents Response, in the Variation of Fundamental Flow Controlling Parameters”. *Computers and Fluids* (Elsevier), vol.60, pp.21-35. 1. 5. Kopasakis K., Georgoulas A., Angelidis P., Kotsovinos N. (2012). “Numerical Modeling of the Long-term Transport, Dispersion and Accumulation of Black Sea Pollutants into the North Aegean Coastal Waters”. *Estuaries and Coasts* (Springer), vol.35(6), pp.1530-1550.
Professor	Mountain Water	1. P. Angelidis, F. Maris, N. Kotsovinos, Vl. Hrissanthou, (2012). “Computation of drought index SPI with alternative

Faculty member	**Specialization**	**Relevant publications**
Fotios Maris	Management	distribution functions". *International Journal of Water Resources Management*, Vol.23, No.4, 2009, Impact Factor 2.60. 2. F. Maris (2012). "A new innovative decision support system using fuzzy reasoning for the estimation of mountainous watersheds torrential risk (Tor-SYS): The case of river Kosynthos". *Fresenius Environmental Bulletin*, Vol.21, No.9a, 2012, pp.2711-2721, Impact Factor 0.716. 3. Paparrizos S., Anastasiou Th., Maris F., Kitikidou K., Potouridis S., (2014). Spatial Data Infrastructures (SDIs) in Greece: An assessment of geoportals for carrying out hydrological projects. *International Water Technology Journal*, 4(4), 222-232. 4. Paparrizos S., Maris F., Matzarakis A., (2016). Sensitivity analysis and comparison of various potential evapotranspiration formulae for selected Greek areas with different climate conditions. *Theor. Appl. Climatology*, DOI 10.1007/s00704-015-1728-z. 5. K. Karagiorgos, S. Fuchs, K. Kitikidou, F. Maris, S. Paparrizos, Th. Thaler, (2016). Assessment of flood risk perceptions and adaptation capacity: a comparative study between rural and peri-urban areas in Greece. *Hydrology and Earth System Sciences Discussions*, DOI10.5194/hess-2016-298.
Professor Christos Akratos	Water Resources and Wastewater Management	1. Mar-Yam Sultana, T.I. Tatoulis, C.S. Akratos, A.G. Tekerlekopoulou, D.V. Vayenas (2015). "Effect of operational parameters on the performance of a horizontal subsurface flow constructed wetland treating secondary cheese whey and Cr(VI) wastewater". *International Journal of Civil and Structural Engineering*, 2(1). 2. M-Y. Sultana, C.S. Akratos, S. Pavlou, D.V. Vayenas (2015). "Constructed wetlands in the treatment of agro-industrial wastewater: A review". *Hemijska industrija*, 69, 127-142. 3. M-Y. Sultana, C. Mourti, T. Tatoulis, C. Akratos, A.G. Tekerlekopoulou, D.V. Vayenas (2015). "Effect of hydraulic retention time, temperature, and organic load on a horizontal subsurface flow constructed wetland treating cheese whey wastewater". *Journal of Chemical Technology and Biotechnology*, 91, 726-732. 4. 4. Tatoulis T.I., Zapantiotis S., Frontistis Z., Akratos C.S., Tekerlekopoulou A.G., Pavlou S., Mantzavinos D., Vayenas D.V. (2016). "A hybrid system comprising an aerobic biological process and electrochemical oxidation for the treatment of black table olive processing wastewaters". *International Biodeterioration and Biodegradation*, 109, 104-112. 5. Tatoulis T., Stefanakis A., Frontistis Z., Akratos C.S., Tekerlekopoulou A.G., Mantzavinos D., Vayenas D.V. (2016).

Faculty member	**Specialization**	**Relevant publications**
		"Treatment of table olive washing water using trickling filters, constructed wetlands and electrooxidation". *Environmental Science and Pollution Research*, 24, 1085-1092.
Associate Professor Mike Spiliotis	Hydraulics	1. Spiliotis M., Tsakiris G. (2011). Water Distribution System Analysis: Newton-Raphson Method Revisited. *Journal of Hydraulic Engineering* (ASCE), 137(8): 852-855. 2. Tsakiris G., Spiliotis M., Vangelis H., Tsakiris P. (2015). Evaluation of measures for combating water shortage based on beneficial and constraining criteria. *Water Resources Management*, 29(2): 505-520. 3. Spiliotis M., Garrote L., Chavez-Jimenez A. (2015). Reorganization of water demand under changing conditions with possibilistic programming. *Journal of Hydroinformatics*, 17(2): 239-259. 4. Kitsikoudis V., Spiliotis M., Hrissanthou V. (2016). Fuzzy regression analysis for sediment incipient motion under turbulent flow conditions. *Environmental Processes*, 3(3): 663-679. 5. Kazakis N., Spiliotis M., Voudouris K., Pliakas F.K., Papadopoulos B. (2018). A fuzzy multicriteria categorization of the GALDIT method to assess seawater intrusion vulnerability of coastal aquifers. *Sci Total Environ*, 593-594: 552-566.
Associate Professor Achilleas Samaras	Maritime Hydraulics, Coastal & Harbour Engineering	1. Samaras, A.G. and Karambas, Th.V. (2024). Simulating erosive and accretive conditions in the swash: Applications of a nonlinear wave and morphology evolution model. Journal of Marine Science and Engineering, 12 (1), 140. 2. Samaras, A.G. (2023). Towards integrated modelling of Watershed-Coast System morphodynamics in a changing climate: A critical review and the path forward. Science of the Total Environment, 882, 163625. 3. Samaras, A.G. and Karambas, Th.V. (2021). Modelling the impact of climate change on coastal flooding: Implications for coastal structures design. Journal of Marine Science and Engineering, 9 (9), 1008. 4. Samaras, A.G., Gaeta, M.G., Miquel, A.M. and Archetti, R. (2016). High resolution wave and hydrodynamics modelling in coastal areas: operational applications for coastal planning, decision support and assessment. Natural Hazards and Earth System Sciences, 16 (6), pp.1499-1518. 5. Karambas, Th.V. and Samaras, A.G. (2017). An integrated numerical model for the design of coastal protection structures. Journal of Marine Science and Engineering, 5 (4), 50.
Assistant Professor Ioannis	Flood protection hydraulic works	1. Kossieris, P., Tsoukalas, I., Brocca, L., Mosaffa, H., Makropoulos, C., & Anghelea, A. (2024). Precipitation data merging via machine learning: Revisiting conceptual and technical aspects. Journal of Hydrology, doi: 10.1016/j.jhydrol.2024.131424

Faculty member	**Specialization**	**Relevant publications**
Tsoukalas		2. Tsoukalas, I., (2022). The tales that the distribution tails of non-Gaussian autocorrelated processes tell: Efficient methods for the estimation of the k-length block-maxima distribution. Hydrological Sciences Journal, doi:10.1080/02626667.2021.2014056. 3. Efstratiadis, A. Dimas, P., Pouliasis G., Tsoukalas, I., Kossieris, P., Bellos, V., Sakki, G-K., Makropoulos, C., Michas, S. (2021). Revisiting flood engineering practices and the concept of risk under a hybrid stochastic simulation framework, Water, 14(3), 457, doi: https://doi.org/10.3390/w14030457 4. Tsoukalas I., Kossieris, P., Makropoulos, C. (2020), Simulation of Non-Gaussian Correlated Random Variables, Stochastic Processes and Random Fields: Introducing the anySim R-Package for Environmental Applications and Beyond. Water 12, 1645, doi: 10.3390/w12061645 5. Tsoukalas I., Efstratiadis, A., and Makropoulos, C. (2019). Building a puzzle to solve a riddle: A multi-scale disaggregation approach for multivariate stochastic processes with any marginal distribution and correlation structure, Journal of Hydrology, 575, 354–380, doi: 10.1016/j.jhydrol.2019.05.017
Assistant Professor Christos Makris	Computational Fluid Mechanics	1. Makris, C.V., Memos, C.D. and Krestenitis, Y.N. (2016). Numerical Modeling of Surf Zone Dynamics under Weak Plunging Breakers with SPH Method. Ocean Modelling, Elsevier, Vol. 98, pp. 12–35. doi:10.1016/j.ocemod.2015.12.001 2. Makris C., Androulidakis Y., Karambas T., Papadimitriou A., Metallinos A., Kontos Y., Baltikas V., Chondros M., Krestenitis Y., Tsoukala V., and Memos C. (2021). Integrated modelling of sea-state forecasts for safe navigation and operational management in ports: Application in the Mediterranean Sea. Applied Mathematical Modelling, Elsevier. 89(2), pp. 1206-1234. doi:10.1016/j.apm.2020.08.015 3. Makris, C., Tolika, K. Baltikas, V., Velikou, K., and Krestenitis, Y. (2023). The impact of climate change on the storm surges of the Mediterranean Sea: coastal sea level responses to deep depression atmospheric systems. Ocean Modelling, Elsevier, Vol. 181, 102149. doi:10.1016/j.ocemod.2022.102149 4. Makris C., Mallios Z., Androulidakis Y., and Krestenitis Y. (2023). CoastFLOOD: A High-Resolution Model for the Simulation of Coastal Inundation Due to Storm Surges, Hydrology, MDPI, 10(5), p. 103. doi:10.3390/hydrology10050103 1. 5. Makris C., Papadimitriou A., Baltikas V., Spiliopoulos G., Kontos Y., Metallinos A., Androulidakis Y., Chondros M., Klonaris G., Malliouri D., Nagkoulis N., Zissis D., Tsoukala V., Karambas T., Memos C. (2024). Validation and

Faculty member	**Specialization**	**Relevant publications**
		Application of the Accu-Waves Operational Platform for Wave Forecasts at Ports. Journal of Marine Science and Engineering, MDPI, 12(2):220. doi:10.3390/jmse12020220
Assistant Professor Ilias Siarkos	Applied Hydrogeology in Civil Engineering	1. Siarkos, I., Mallios, Z., Tzoraki, O., Latinopoulos, P. (2025). A methodological framework for the optimal design of injection barriers against seawater intrusion in coastal-rural regions. *Science of the Total Environment*, 966(1), 178679. 2. Siarkos, I., Arfaoui, M., Tzoraki, O., Zammouri, M., Hamzaoui-Azaza, F. (2023). Implementation and evaluation of different techniques to modify DRASTIC method for groundwater vulnerability assessment: A case study from Bouficha aquifer, Tunisia. *Environmental Science and Pollution Research*, 30, 89459-89478. 3. Mallios, Z., Siarkos, I., Karagiannopoulos, P., Tsiarapas, A. (2022). Pumping energy consumption minimization through simulation-optimization modelling. *Journal of Hydrology*, 612, 128062. 4. Siarkos, I., Sevastas, S., Mallios, Z., Theodossiou, N., Ifadis, I. (2021). Investigating groundwater vulnerability variation under future abstraction scenarios to estimate optimal pumping reduction rates. *Journal of Hydrology*, 598, 126297. 5. Siarkos, I., Latinopoulos, D., Mallios, Z., Latinopoulos, P. (2017). A methodological framework to assess the environmental and economic effects of injection barriers against seawater intrusion. *Journal of Environmental Management*, 193, 532-540.
Professor Giorgos Mallinis, Aristotle University of Thessaloniki	Remote Sensing	1. Kokkoris I.P., Smets B., Hein L.G., Mallinis G., Buchhorn M., Balbi S., Cernecký J., Paganini M., Dimopoulos P. (2024). "The role of Earth observation in ecosystem accounting: A review of advances, challenges and future directions". Ecosystem Services, 70, 101659. 2. Fotakidis V., Roustanis T., Panayiotou K.L., Chrysafis I., Fitoka E.N., Mallinis G. (2024). "The EL-BIOS Earth Observation Data Cube for Supporting Biodiversity Monitoring in Greece". Remote Sensing, 16(20), 3771. 3. Stefanidis S.P., Proutsos N.D., Alexandridis V., Mallinis G. (2024). "Ecosystem Services Supply from Peri-Urban Watersheds in Greece: Soil Conservation and Water Retention". Land, 13(6), 765. 4. Vatitsi K., Siachalou S., Latinopoulos D., Kagalou I.I., Akratos C.S., Mallinis G. (2024). "Monitoring Water Quality Parameters in Small Rivers Using SuperDove Imagery". Water (Switzerland), 16(5), 758. 5. Vatitsi K., Ioannidou N., Mirli A., Siachalou S., Kagalou I.I., Latinopoulos D., Mallinis G. (2023). "LULC Change Effects on Environmental Quality and Ecosystem Services Using EO Data in Two Rural River Basins in Thrace, Greece".

Faculty member	Specialization	Relevant publications
		Land, 12(6), 1140.
Department of Environmental Engineering		
Professor Giorgos Sylaios	Management and Simulation of Coastal Water Systems	1. Symeonidis P., Boskidis I., Taskaris S., Sylaios G., Giannaros T., Seferlis M., Petrakakis M., Kelesis A., Tzoumaka P. (2016). Integrated Coastal Monitoring of Environmental Problems in a Sea Region and ways of their solution. *European Water*, 53, 27-35. 2. Sylaios G., Gkikas G., Tsihrintzis V.A. (2016). Editorial, Special Issue on WASTEnet International Conference. *European Water*, 53, 3-4. 3. Linker R., Sylaios G. (2016). Efficient model-based sub-optimal irrigation scheduling using imperfect weather forecasts. *Computers and Electronics in Agriculture*, 130, 118-127. 4. Tsakmakis I., Kokkos N., Pisinaras V., Papaevangelou V., Hatzigiannakis E., Arampatzis G., Gikas G.D., Linker R., Zoras S., Evagelopoulos V., Tsihrintzis V.A., Sylaios G. (2017). Operational Precise Irrigation for Cotton Cultivation through the coupling of Meteorological and Crop Growth Models. *Water Resources Management*, 31(1), 563-580. 1. 5. Melidis P., Sylaios G. (2017). Assessment of pollutant loadings from wastewater treatment plants in Kavala gulf. *Environmental Processes*, 4(2), 421-437, doi:10.1007/s40710-017-0214-2.
Professor Paraschos Melidis	Process Optimization and Control of Wastewater Treatment Plants	1. Azis, K., Ntougias, S., Melidis, P. (2025). Real-Time dynamic control of nitrification and denitrification in an intermittently aerated activated sludge system for enhanced nitrogen removal and energy efficiency: Toward sustainable operation. Sustainability, 17(22), 10417. 2. Makri, A., Remmas, N., Ntougias, S., Melidis, P. (2025). Enhanced Anaerobic Digestion of Cotton Stalk Residues Using Rumen Microbiota as Hydrolytic and Fermentative Inoculum for Renewable Energy Production. Environmental Processes, 12(2), 20. 3. Glarakis, J., Remmas, N., Azis, K., Melidis, P. (2023). Retrofitting a full-scale multistage landfill leachate treatment plant by introducing coagulation/flocculation/sedimentation and ultrafiltration process steps. Environmental Monitoring and Assessment, 195(2), 326. 4. Asteriadis, I., Azis, K., Ntougias, S., Melidis, P. (2021). A control strategy for an intermittently aerated and fed bioreactor to reduce aeration costs: A simulation study. Biochemical Engineering Journal, 173, 108081. 5. Melidis, P., Sanozidou, M., Mandusa, A., Ouzounis, K. (2007). Corrosion control by using indirect methods. Desalination, 213(1-3), 152-158.

Faculty member	**Specialization**	**Relevant publications**
Professor Spyridon Ntougias	Environmental Microbiology	1. Stavrakakis, I., Remmas, N., Melidis, P., Ntougias, S. (2024). Influence of the oxidative phosphorylation uncoupler m-chlorophenol on activated sludge production, nutrients removal efficiency and bacterial community structure of a membrane reactor system. *Biochemical Engineering Journal*, 209, 109386. 2. Mavriou, Z., Alexandropoulou, I., Melidis, P., Karpouzas, D. G., Ntougias, S. (2022). Bioprocess performance, transformation pathway, and bacterial community dynamics in an immobilized cell bioreactor treating fludioxonil-contaminated wastewater under microaerophilic conditions. *Environmental Science and Pollution Research*, 29(20), 29597-29612. 3. Zerva, I., Remmas, N., Melidis, P., Ntougias, S. (2021). Biotreatment efficiency, hydrolytic potential and bacterial community dynamics in an immobilized cell bioreactor treating caper processing wastewater under highly saline conditions. *Bioresource Technology*, 325, 124694. 4. Ntougias, S., Polkowska, Ż., et al. (2016). Bacterial community structures in freshwater polar environments of Svalbard. *Microbes and Environments*, 31(4), 401-409. 5. Ntougias, S. (2014). Phylogeny and ecophysiological features of prokaryotes isolated from temporary saline tidal pools. *Annals of Microbiology*, 64(2), 599-609.
Assistant Professor Nikolaos Remmas	Microbial Ecology of Activated Sludge	1. Glarakis, J., Remmas, N., Azis, K., Melidis, P. (2023). Retrofitting a full-scale multistage landfill leachate treatment plant by introducing coagulation/flocculation/sedimentation and ultrafiltration process steps. *Environmental Monitoring and Assessment*, 195(2), 326. 2. Remmas, N., Manfe, N., Zerva, I., Melidis, P., Raga, R., Ntougias, S. (2023). A critical review on the microbial ecology of landfill leachate treatment systems. *Sustainability*, 15(2), 949. 3. Stavropoulou, E., Remmas, N., Voidarou, C., Vrioni, G., Konstantinidis, T., Ntougias, S., Tsakris, A. (2023). Microbial community structure among honey samples of different pollen origin. *Antibiotics*, 12(1), 101. 4. Remmas, N., Manfe, N., Raga, R., Akratos, C. (2022). Activated sludge microbial communities and hydrolytic potential in a full-scale SBR system treating landfill leachate. *Journal of Environmental Science and Health, Part A*, 57(9), 764-772. 5. Remmas, N. (2022). Biotreatment potential and microbial communities in aerobic bioreactor systems treating agro-industrial wastewaters. *Processes*, 10(10), 1913.
University of Avignon		

Faculty member	**Specialization**	**Relevant publications**
Associate Professor Marina Gillon	Isotope hydrogeology and carbon geochemistry	1. Popp, A. L., Beria, H., Sprenger, M., Ala-Aho, P., Coenders-Gerrits, M., Groh, J., Gillon, M., ... & Kirchner, J. W. (2025). Recent advances in tracer-aided mixing modeling of water in the Critical Zone. Reviews of geophysics, 63(3), e2024RG000866. 2. Poulain A., Marc V., Gillon M., Mayer A., Cognard-Plancq A.-L., Simler R., Babic M., Leblanc M. (2021) Enhanced pumping test using physicochemical tracers to determine surface-water/groundwater interactions in an alluvial island aquifer, river Rhône, France, Hydrogeology Journal https://doi.org/10.1007/s10040-021-02331-1 3. Santoni S., Garel E., Gillon M., Marc V., Miller J., Babic M., Simler S., Travi Y., Leblanc M., Huneau F. (2021) Assessing the hydrogeological resilience of a groundwater-dependent Mediterranean peatland: Impact of global change and role of water management strategies, Science of the Total Environment 768, 144721 4. Gillon M., Barbecot F., Gibert E., Plain C., Corcho Alvarado J.A., Massault M. (2012)Origin of $\delta^{13}C\text{-}CO_2$ and $A^{14}C\text{-}CO_2$ variability in soil, Geoderma 189-190: 431-441. 5. Lefebvre, K., Barbecot, F., Larocque, M., & Gillon, M. (2015). Combining isotopic tracers (^{222}Rn and $\delta^{13}C$) for improved modelling of groundwater discharge to small rivers. Hydrological Processes, *29* (12), 2814-2822.
Assistant Professor Vincent Marc	Water tracing and surface water-groundwater interactions	1. Susanto, K., Malet, J. P., Chavanne, X., Marc, V., & Gance, J. (2025). Passively heated fiber optic distributed temperature sensing for long-term soil moisture observations. *Frontiers in Water*, *7*, 1574618. 2. Poulain A., Marc V., Gillon M., Cognard-Plancq A.-L., Simler R., Babic M., Leblanc M. (2021) Multi frequency isotopes survey to improve transit time estimation in a situation of river-aquifer interaction, Water 2021, 13, 2695. https://doi.org/10.3390/w13192695 3. Poulain A., Marc V., Gillon M., Mayer A., Cognard-Plancq A.-L., Simler R., Babic M., Leblanc M. (2021) Enhanced pumping test using physicochemical tracers to determine surface-water/groundwater interactions in an alluvial island aquifer, river Rhône, France, Hydrogeology Journal https://doi.org/10.1007/s10040-021-02331-1 4. Marc, V., Tison, F., Doussan, C., Dupont, J., Babic, M., Simler, R., & Ruy, S. (2024). Assessing the Hydrological Impact of Gravity-Fed Irrigation on Groundwater Recharge Using Long-Term Isotope Monitoring and Modelling. Hydrological Processes, 38(12), e70022 5. Mallet, F., Marc, V., Douvinet, J., Rossello, P., Joly, D., & Ruy, S. (2020). Assessing soil water content variation in a small mountainous catchment over different time scales and land covers using geographical variables. Journal of hydrology, 591, 125593.

Faculty member	**Specialization**	**Relevant publications**
Professor Konstrantinos Chalikakis	Hydrogeophysics and groundwater management	1. Bouimouass, H., Fourno, A., Hamon, Y., & Chalikakis, K. (2025). Global dataset of nearshore and submarine springs. *Data in Brief*, *59*, 111319. 2. Bouimouass, H., Fourno, A., Hamon, Y., & Chalikakis, K. (2024). A global analysis of nearshore and submarine springs: spatial distribution, controlling factors, and probability of presence. *Science of The Total Environment*, *955*, 177004. 3. Ntona, M. M., Chalikakis, K., Busico, G., Mastrocicco, M., Kalaitzidou, K., & Kazakis, N. (2023). Application of judgmental sampling approach for the monitoring of groundwater quality and quantity evolution in Mediterranean catchments. *Water*, *15*(22), 4018. 4. Kazakis, N., Mastrocicco, M., & Chalikakis, K. (2024). Groundwater Depletion: Current Trends and Future Challenges to Mitigate the Phenomenon. *Water*, *16*(17), 2385. 5. Bertrand, M., Bertrand, C., Mazzilli, N., Gigleux, S., Denimal, S., Valois, R., ... & Chalikakis, K. (2024). Advancing the Understanding of Complex Piezometric Information: A Methodological Approach Integrating Long-Term Piezometry, Surface Nuclear Magnetic Resonance, and Fracture Analysis Using Insights from the "Calcaires du Barrois" Series, France. *Water*, *16*(12), 1700.
Assistant professor Rémi Valois	Hydrogeophysics and groundwater flow processes	1. Valois, R., Navarro, G., MacDonell, S., Buvat, S., de Pasquale, G., Marc, V., ... & Bresciani, E. (2025). Role of Sparsely Glacierized Basins and Groundwater in Semiarid Andes Periglacial Headwaters. *Hydrological Processes*, *39*(10), e70294. 2. Dörr, F., Bauer, J., Rau, G. C., Lewi, E., Tran, H. V., Van, L. T. M., Valois, R,... & Norra, S. (2025). The recharge illusion: How seasonal surface loading can hide continuing groundwater resource declines in confined deltaic aquifers. *Journal of Hydrology*, 134674. 3. Dörr, F., Bauer, J., Rau, G. C., Valois, R., Tran, H. V., Pham, V. C., ... & Norra, S. (2025). Passive subsurface characterization in subsiding deltas: assessing land subsidence mitigation potential with frequency analyses of groundwater heads and superposing harmonic drivers. *Journal of Hydrology*, 133844. 4. Valois, R., Rivière, A., Vouillamoz, J. M., & Rau, G. C. (2024). Analytical solution for well water response to Earth tides in leaky aquifers with storage and compressibility in the aquitard. *Hydrology and Earth System Sciences*, *28*(4), 1041-1054.

Faculty member	**Specialization**	**Relevant publications**
		5. Valois, R., Rau, G. C., Vouillamoz, J. M., & Derode, B. (2022). Estimating hydraulic properties of the shallow subsurface using the groundwater response to Earth and atmospheric tides: A comparison with pumping tests. *Water Resources Research*, *58*(5), e2021WR031666.
Assistant Professor Adriano Mayer	Water geochemistry and water age	1. Citrini, A., Mayer, A., Camera, C. A., Erőss, A., Sültenfuß, J., Pezzera, G., & Beretta, G. P. (2024). Hydrogeochemical and isotopic characterization of the main karst aquifers of the middle Valseriana (Northern Italy): Nossana and Ponte del Costone springs. *Applied Geochemistry*, *169*, 106046. 2. Zemour, Y., Mebrouk, N., Mayer, A., Mekebret, I., & Sherif, M. I. (2023). Hydrochemical and geological controls on dissolved radium and radon in northwestern Algeria hydrothermal groundwaters. *Chemosphere*, *313*, 137573. 3. Sosote, I. L., Diaw, M., Mall, I., Chalikakis, K., Mayer, A., Valois, R., ... & Ali, A. M. (2025). Hydrogeological Configuration of Grande Comore Island: Use of 3D Geological Modelling and Piezometry. *Open Journal of Modern Hydrology*, *15*(2), 176-203. 4. Ducros, L., Eyrolle, F., Della Vedova, C., Charmasson, S., Leblanc, M., Mayer, A., ... & Giner, F. (2018). Tritium in river waters from French Mediterranean catchments: Background levels and variability. *Science of the total environment*, *612*, 672-682. 5. Miche, H., Saracco, G., Mayer, A., Qarqori, K., Rouai, M., Dekayir, A., ... & Emblanch, C. (2018). Hydrochemical constraints between the karst Tabular Middle Atlas Causses and the Saïs basin (Morocco): implications of groundwater circulation. *Hydrogeology Journal*, *26*(1), 71-87.
Assistant Professor Anne Laure Cognard-Plancq	Groundwater and surface water modeling	1. Nofal, S., Travi, Y., Cognard-Plancq, A. L., & Marc, V. (2019). Impact of infiltrating irrigation and surface water on a Mediterranean alluvial aquifer in France using stable isotopes and hydrochemistry, in the context of urbanization and climate change. *Hydrogeology Journal*, *27*(6), 2211-2229. 2. Olioso, A., Lecerf, R., Baillieux, A., Chanzy, A., Ruget, F., Banton, O., ... & Cognard-Plancq, A. L. (2013). Modelling of drainage and hay production over the Crau aquifer for analysing impact of global change on aquifer recharge. *Procedia Environmental Sciences*, *19*, 691-700. 3. Bel Hadj Salem, S., Chkir, N., Zouari, K., Cognard-Plancq, A. L., Valles, V., & Marc, V. (2012). Natural and artificial recharge investigation in the Zéroud Basin, Central Tunisia: impact of Sidi Saad Dam storage. *Environmental Earth*

Faculty member	**Specialization**	**Relevant publications**
		Sciences, *66*(4), 1099-1110. 4. Vallet-Coulomb, C., Séraphin, P., Gonçalvès, J., Radakovitch, O., Cognard-Plancq, A. L., Crespy, A., ... & Charron, F. (2017). Irrigation return flows in a mediterranean aquifer inferred from combined chloride and stable isotopes mass balances. *Applied Geochemistry*, *86*, 92-104. 5. Mohammed, G., Trolard, F., Gillon, M., Cognard-Plancq, A. L., Chanzy, A., & Bourrie, G. (2017). Combination of a crop model and a geochemical model as a new approach to evaluate the sustainability of an intensive agriculture system. *Science of the total environment*, *595*, 119-131.
Professor Marc Leblanc	Hydrogeology and remote sensing	1. Sahraoui, H., Fakir, Y., Bouimouass, H., Tweed, S., Leblanc, M., Benaddi, R., & Chehbouni, A. (2025). Spatial and depth distribution of salinity and nitrate in a depleted alluvial aquifer (Haouz plain, Morocco). *Journal of Hydrology: Regional Studies*, *57*, 102143. 2. Afamondji, K. M. C., Mohsine, I., Karmouda, N., Bouramtane, T., Tahiri, M., Kacimi, I., ... & Leblanc, M. (2025). Climate Extreme Indices Influencing GRACE Total Water Storage (TWS) in Semi-Arid Africa. *Journal of Arid Environments*, *229*, 105357. 3. Bouramtane, T., Mohsine, I., Karmouda, N., Leblanc, M., Estève, Y., Kacimi, I., ... & Chafki, O. (2025). Dimensionality reduction for groundwater forecasting under drought and intensive irrigation with neural networks. *Journal of Hydrology: Regional Studies*, *60*, 102477. 4. Kinoti, I., Leblanc, M., Lekula, M., Tweed, S., Kenabatho, P. K., Olioso, A., & Lubczynski, M. W. (2024). Hydrogeological conceptual model of Stampriet transboundary aquifer system in Southern Africa. *Groundwater for Sustainable Development*, *26*, 101301. 5. Sabri, A., Bahi, H., Bounoua, L., Tahiri, M., Tweed, S., Leblanc, M., ... & Kacimi, I. (2024). Predictive modelling on Spatial–temporal Land Use and Land Cover changes at the Casablanca-Settat Region in Morocco. *Modeling Earth Systems and Environment*, 1-24.
Assistant Professor Christophe Emblanch	Karst Hydrology	1. Serène, L., Mazzilli, N., Batiot-Guilhe, C., Emblanch, C., Gillon, M., Babic, M., ... & Blanc, M. (2025). Questioning calculation and interpretation of fluorescence indices in natural waters studies. *Journal of Hydrology*, *650*, 132524. 2. Serène, L., Cinkus, G., Mazzilli, N., Decitre, J. B., Emblanch, C., Tison, F., ... & Blanc, M. (2025). High-frequency hydrodynamic and hydrochemical data from karst unsaturated zone. *Data in Brief*, 111812. 3. Serène, L., Batiot-Guilhe, C., Mazzilli, N., & Emblanch, C. (2025). Fluorescence data of natural organic matter in

Faculty member	**Specialization**	**Relevant publications**
		groundwater from the Fontaine de Vaucluse karst system (2020 to 2021): Excitation-emission matrix (EEM) and 2D spectra at 254 nm excitation wavelength. Data in Brief, 60, 111493. 4. Serène, L., Batiot-Guilhe, C., Mazzilli, N., Emblanch, C., Babic, M., Dupont, J., ... & Massonnat, G. (2022). Transit Time index (TTi) as an adaptation of the humification index to illustrate transit time differences in karst hydrosystems: application to the karst springs of the Fontaine de Vaucluse system (southeastern France). Hydrology and Earth System Sciences, 26(19), 5035-5049. 5. Ollivier, C., Olioso, A., Carrière, S. D., Boulet, G., Chalikakis, K., Chanzy, A., Emblanch, Ch.,... & Weiss, M. (2021). An evapotranspiration model driven by remote sensing data for assessing groundwater resource in karst watershed. Science of the Total Environment, 781, 146706.
Assistant Professor Naomi Mazzilli	Karst Hydrology modeling	1. Wunsch, A., Liesch, T., Cinkus, G., Ravbar, N., Chen, Z., Mazzilli, N., ... & Goldscheider, N. (2022). Karst spring discharge modeling based on deep learning using spatially distributed input data. Hydrology and Earth System Sciences, 26(9), 2405-2430 2. Cinkus, G., Mazzilli, N., Jourde, H., Wunsch, A., Liesch, T., Ravbar, N., ... & Goldscheider, N. (2023). When best is the enemy of good–critical evaluation of performance criteria in hydrological models. Hydrology and Earth System Sciences, 27(13), 2397-2411. 3. Jeannin, P. Y., Artigue, G., Butscher, C., Chang, Y., Charlier, J. B., Duran, L., Mazzilli, N., ... & Wunsch, A. (2021). Karst modelling challenge 1: Results of hydrological modelling. Journal of Hydrology, 600, 126508. 4. Sivelle, V., Jourde, H., Bittner, D., Mazzilli, N., & Tramblay, Y. (2021). Assessment of the relative impacts of climate changes and anthropogenic forcing on spring discharge of a Mediterranean karst system. Journal of Hydrology, 598, 126396. 5. Cinkus, G., Mazzilli, N., & Jourde, H. (2021). Identification of relevant indicators for the assessment of karst systems hydrological functioning: proposal of a new classification. Journal of Hydrology, 603, 127006.
Adam Mickiewicz University		
Professor Ryszard Gołdyn	Ecology and Management of Freshwaters	1. Tammeorg O., Chorus I., Spears B.M., Noges P., Nurnberg G., Tammeorg P., Sondergaard M., Jeppesen E., Paerl H., Huser B.J., Horppila J., Jilbert T., Budzyńska A., Dondajewska-Pielka R., Gołdyn R., Haasler S., Hellsten S., Harkonen L.H., Kiani M., Kozak A., Kotamaki N., Kowalczewska-Madura K., Newell S., Nurminen L., Noges T., Reitzel K., Rosińska J., Ruuhijarvi J., Silvonen S., Skov C., Vazic T., Ventela A-M., Waajen G., Lurling M. (2024). Sustainable lake

Faculty member	**Specialization**	**Relevant publications**
		restoration: from challenges to solutions, *Wiley Interdisciplinary Reviews Water* 11(2) 2. Kowalczewska-Madura K., Kozak A., Budzyńska A., Dondajewska-Pielka R., Osuch E., Podsiadłowski S., Gołdyn R. (2024). Effects of continuous nitrate treatment of hypolimnion in s small, hypereutrophic lake, *Chemosphere* 363(8): 142815 3. Qin M., Fan, P., Li Y., Wang H., Wang, W., Liu, H., Messyasz B., Goldyn R., Li B. (2023). Assessing the Ecosystem Health ofLarge Drinking-Water ReservoirsBased on the Phytoplankton Index ofBiotic Integrity (P-IBI): A Case Studyof Danjiangkou Reservoir. *Sustainability* 15: 5282 4. Kowalczewska-Madura K., Dondajewska-Pielka R., Gołdyn R. (2022). The assessment of external and internal nutrient loading as a basis for lake management, *Water* 14(158): 2844 5. Gołdyn R., Szpakowska B., Świerk D., Domek P. Buxakowski J., Dondajewska-Pielka R., Barałkiewicz D., Sajnóg A. (2018). Influence of stormwater runoff on macroinvertebrates in a small urban river and a reservoir, *The Science of the Total Environment* 625: 743-751
Associated Professor Piotr Klimaszyk	Ecology and Management of Freshwaters	1. Klimaszyk P., Kuczyńska-Kippen N., Szeląg-Wasielewska E., ...Baikenzheyeva A., Rzymski P. (2022) Spatial heterogeneity of chemistry of the Small Aral Sea and the Syr Darya River and its impact on plankton communities. *Chemosphere* 307: 135788 2. Drewek A., Lubawy J., Domek P., ... Dzięgelewska A., Klimaszyk P. (2024). Behavioral and Biochemical Effects of Glyphosate-Based Herbicide Roundup on Unionid Mussels: Are Mussels Good Indicators of Water Pollution with Glyphosate-Based Pesticides? *Water*, 16(13) 3. Klimaszyk P., Borowiak D., Piotrowicz R., ...Szelag-Wasielewska E., Kraska M. (2020). The effect of human impact on the water quality and biocoenoses of the soft water lake with isoetids: Lake Jeleń, NW Poland. *Water* 12(4): 945 4. Drewek A., Rybak M., Drzewiecka K., ...Polak J., Klimaszyk P. (2022). The impact of iron coagulant on the behavior and biochemistry of freshwater mussels Anodonta cygnea and Unio tumidus during lake restoration. *Journal of Environmental Management* 318: 115535 5. Jakubiak P., Rybak M., Drzewiecka K., Niedzielski P., & Klimaszyk P. (2025). Hidden effects of aluminum coagulant on freshwater mussels: Responses of Anodonta anatina and Unio tumidus to lake restoration. *Ecotoxicology and Environmental Safety*, 305: 119277.

Faculty member	**Specialization**	**Relevant publications**
Professor Natalia Kuczyńska-Kippen	Biology and ecology of freshwater zooplankton	1. Karpowicz M., Kuczyńska-Kippen N., Sługocki Ł., Czerniawski R., Bogacka-Kapusta E., Ejsmont-Karabin J. (2025). Zooplankton as an indicators of lake trophic status: novel universal metrics from 224 temperate lakes, *Ecological Indicators* 179: 114236 2. Zhang C., Mahesuti R., Ruolan Y., Kuczyńska-Kippen N., Fressl J., Korac P., Spoljar M. (2025). The impact of climate warming on biomanipulation effectiveness in mitigating eutrophication in shallow small water ecosystems, *Ecological Indicators* 178: 114124 3. Kuczyńska-Kippen N., Zhang C., Mleczek M., Spoljar M. (2024). Rotifers as an indicators of trophic state in small water bodies with different catchment (filed vs. forest), *Hydrobiologia* 852(10): 2669-2685 4. Kuczyńska-Kippen N., Kozak A ., Celewicz S. (2024). Cynaobacteria respond to trophic status in shallow aquatic ecosystems, *The Science of the Total Environment* 949(1): 174932 5. Kuczyńska-Kippen N., Spoljar M., Pronin M., Zhang C., Mleczek M. (2024). Spring and autumn rotifer community structure differentiates shallow water bodies in two European ecoregions: Poland and Croatia, *Hydrobiologia* 851(12-13): 1-16
Professor Mariusz Pełechaty	Ecology and pollution of freshwater ecosystems	1. Brzozowski M., Pełechaty M. (2025). Calcium carbonate content for two morphotypes of an indicator charophyte species across a depth and light gradient in a mesotrophic lake. *Global Ecology and Conservation* 59: e03546 2. Pełechaty M., Pronin E., Pukacz A., Apolinarska K. (2024). Interspecies differences and lake-specificity in the δ13C and δ18O signatures of charophyte carbonate encrustations. *Freshwater Biology* 69(10): 1408-1419 3. Strzałek M., Kufel L., Apolinarska K., Becher M., Biardzka E., Brzozowski M., Kiełczewski R., Kowalewski G., Pukacz A., Woszczyk M., Pełechaty M. (2024). Recycling and deposition of inorganic carbon from calcium carbonate encrustations of charophytes. Limnology and Oceanography 69(2): 279-289 4. Gruszka P., Brzeska-Roszczyk P., Pełechaty M. (2023). Alien or endangered? Historical development of *Chara connivens* in the Baltic coastal waters and its implication for the species management. *Journal of Nature Conservation* 73: 126416 5. Pełechata A., Kufel L., Pukacz A., Strzałek M., Biardzka E., Brzozowski M., Kaczmarek L., Pełechaty M. (2023). Climate features or the composition of submerged vegetation? Which factor has a greater impact on the phytoplankton structure in temperate lakes? *Ecological Indicators* 146: 109840
Associated	Biology and	1. Wu M., Yan H., Fu S., Han X, Jia M., Dou M., Liu H., Fohrer N., Messyasz B., Li Y. (2025). Seasonal dynamics of

Faculty member	**Specialization**	**Relevant publications**
Professor Beata Messyasz	Ecology of Algae, Applied Hydrobiology	planktonic algae in the Danjiangkou Reservoir: nutrient fluctuations and ecological implications. *Sustainability* 17:406 2. Messyasz B., Strugała M., Łęska B., Piotrowicz Z., Treska E., Tabisz Ł., Pankiewicz R. (2024). The impact of polyphenols on the structure of diatom communities inhabiting *Cladophora glomerata* mats during the vegetation cycle. *Ecological Indicators* 159: 111703 3. Xinxin Qi, Zongwei Lin; Huimin Gao; Mali Li; Yuke Duan; Guohao Liu; Sangar Khan; Hongli Mu; Beata Messyasz, Naicheng Wu (2024). Small hydropower plants affect aquatic community diversity: A longitudinal study under ecological flow. *Journal of Environmental Management* 370: 122987 4. Nava V., Matias M., Castillo-Escriva A., Messyasz B., Leoni B., (2021). Microalgae colonization of different microplastic polymers in experimental mesocosms across an environmental gradient. Global Change Biology 28 (4): 1402-1413 5. Wijewardene L. , Wu N., Qu Y., Guo K., Messyasz B., Lorenz S., Riis T., Ulrich U., Fohrer N. (2021). Influences of pesticides, nutrients, and local environmental variables on phytoplankton communities in lentic small water bodies in a German lowland agricultural area. Science of the Total Environment 780: 146481
Associated Professor Renata Dondajewska-Pielka	Freshwater Resources Pollution and Management	1. Dondajewska-Pielka R. (2024). Spatial and temporal variability in the bottom sediment characteristics of a shallow lake under backwater separation and application of Effective Microorganisms, *Sustainability* 16 (19): 8650 2. Kowalczewska-Madura K., Kozak A., Budzyńska A., Dondajewska-Pielka R., Osuch E., Podsiadłowski S., Gołdyn R., 2024, Effects of continuous nitrate treatment of hypolimnion in s small, hypereutrophic lake, *Chemosphere* 363(8): 142815 3. Tammeorg O., Chorus I., Spears B.M., Noges P., Nurnberg G., Tammeorg P., Sondergaard M., Jeppesen E., Paerl H., Huser B.J., Horppila J., Jilbert T., Budzyńska A., Dondajewska-Pielka R., Gołdyn R., Haasler S., Hellsten S., Harkonen L.H., Kiani M., Kozak A., Kotamaki N., Kowalczewska-Madura K., Newell S., Nurminen L., Noges T., Reitzel K., Rosińska J., Ruuhijarvi J., Silvonen S., Skov C., Vazic T., Ventela A-M., Waajen G., Lurling M. (2024). Sustainable lake restoration: from challenges to solutions, *Wiley Interdisciplinary Reviews Water* 11(2) 4. Dondajewska R., Gołdyn R., Kowalczewska-Madura K., Kozak A., Romanowicz-Brzozowska W., Rosińska J., Budzyńska A., Podsiadłowski S. (2019). Hypertrophic lakes and the results of their restoration in Western Poland. [in:] Korzeniewska E, Harnisz M (eds) The Handbook of Environmental Chemistry. Polish River Basins and Lakes –

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		Part II: Biological Status and Water Management, Springer International Publishing: 373-399 5. Dondajewska R., Kozak A., Rosińska J., Gołdyn R. (2019). Water quality and phytoplankton structure changes under the influence of effective microorganisms (EM) and barley straw – lake restoration case study. *The Science of the Total Environment* 660: 1355-1366
Associated Professor Maciej Gąbka	Ecology and pollution of freshwater ecosystems	1. Wietecha M., Kopeć D., Niedzielka J., Wylazłowska J., Charyton J., Gąbka M., Rosadziński S., Lamentowicz M. (2025). Local scale assessment of peatland restoration priorities using multi-sensor airborne remote sensing and machine learning. *Ecological Indicators* 180: 114366 2. Draga M., Szcześniak E. Rosadziński S., Bryl Ł., Lisek D., Gąbka M. (2024). Alien aquatic plants in Poland: Temporal and spatial distribution patterns and the effects of climate change. *Global Ecology and Conservation* 55: e03247 3. Rybak A.S., Dziuba M., Pełechata A., Rybak M., Akter S., Czerepska A., Dulić T., Gąbka M., Hindakova A., Jurczak T., Kendir A., Mankiewicz-Boczek J., Meriluoto J., Wejnerowski Ł. (2024). Characterization of cyanobacterial mats from an artificial hot spring in Uniejów (Poland) and the potential use of their biomass. *Algal Research* 82: 103646 4. Jakubas-Krzak E., Gąbka M., Panek P., Kowalski W.A., Lisek D., Smoczyk M., Rybak A.S. (2023). The red alga *Hildenbrandia rivularis* is a weak indicator of the good ecological status of riverine habitats. *Ecological Indicators* 147: 109918 5. Hindakova A., Gąbka M., Hrivnak R. (2022). Checklist, Red List, and Distribution Pattern of Charophytes (Charophyceae, Charales) in Slovakia based on Critical Revision of Herbarium Specimens. *Diversity* 14(11): 897
Associated Professor Mikołaj Kokociński	Biology and Ecology of Cyanobacteria and Diatoms	1. Marón-López J., Font-Najera A., Kokociński M., Jarosiewicz P., Jurczak T., Mankiewicz-Boczek J. (2025). Influence of bloom stage on the effectiveness of algicidal bacteria in controlling harmful cyanobacteria: A microcosm study. *Environmental Pollution* 374: 126261 2. Kokociński M., Graco-Roza C., Jasser I., Karosiene J., Kasperovićiene J., Kobos J., Koreiviene J., Mankiewicz-Boczek J., Soininen J. Szczurowska A. Environmental factors determining the distribution patterns of invasive *Raphidiopsis raciborskii* and *R. mediterranea* in central east Europe. *Frontiers in Microbiology* 16: 1533716 3. Pleskot K., Cwynar L.C., Kołaczek P., Mroczkowska A., Suchora M., Kowalczyk C., Kokociński M. (2024). Impact of extreme coastal events on a brackish lake on the Burin Peninsula, Newfoundland, Canada. *Science of the Total Environment* 935: 173330 4. Leszczyńska K., Stattegger K., Moskalewicz D., Jagodziński R., Kokociński M., Niedzielski P., Szczuciński W. (2022).

Faculty member	**Specialization**	**Relevant publications**
		Controls on coastal flooding in the southern Baltic Sea revealed from the late Holocene sedimentary records. *Scientific Reports* 12(1): 9710 5. Mankiewicz-Boczek J., Morón-López J., Serwecińska L., Font-Najera A., Gałęzowska G., Jurczak T., Kokociński M., Wolska L. (2022). Algicidal activity of *Morganella morganii* against axenic and environmental strains of *Microcystis aeruginosa*: Compound combination effects. Chemosphere 309: 136609
Associated Professor Katarzyna Kowalczewska-Madura	Freshwater Resources Pollution and Management	1. Kowalczewska-Madura K., Dunalska J.A., Kutyła S., Kobus S. (2024). Bottom sediments as an indicator of the restoration potential of lakes – a case study of a small, shallow lake under significant tourism pressure, *Scientific Reports* 14(1): 13438 2. Kowalczewska-Madura K., Kozak A., Budzyńska A., Dondajewska-Pielka R., Osuch E., Podsiadłowski S., Gołdyn R., (2024). Effects of continuous nitrate treatment of hypolimnion in s small, hypereutrophic lake, *Chemosphere* 363(8): 142815 3. Tammeorg O., Chorus I., Spears B.M., Noges P., Nurnberg G., Tammeorg P., Sondergaard M., Jeppesen E., Paerl H., Huser B.J., Horppila J., Jilbert T., Budzyńska A., Dondajewska-Pielka R., Gołdyn R., Haasler S., Hellsten S., Harkonen L.H., Kiani M., Kozak A., Kotamaki N., Kowalczewska-Madura K., Newell S., Nurminen L., Noges T., Reitzel K., Rosińska J., Ruuhijarvi J., Silvonen S., Skov C., Vazic T., Ventela A-M., Waajen G., Lurling M. (2024). Sustainable lake restoration: from challenges to solutions, *Wiley Interdisciplinary Reviews Water* 11(2) 4. Kowalczewska-Madura K., Dondajewska-Pielka R., Gołdyn R. (2022). The assessment of external and internal nutrient loading as a basis for lake management, *Water* 14(158): 2844 5. Kowalczewska-Madura K., Dondajewska-Pielka R., Gołdyn R., Rosińska J., Podsiadłowski S. (2019). Internal phosphorus loading as the response to complete and then limited sustainable restoration of a shallow lake, *Annales de Limnologie - International Journal of Limnology* 55:4
Associated Professor Anna Kozak	Ecology of freshwater cyanobacteria and algae	1. Kuczyńska-Kippen N., Kozak A ., Celewicz S. (2024). Cynaobacteria respond to trophic status in shallow aquatic ecosystems, *The Science of the Total Environment* 949(1): 174932 2. Kowalczewska-Madura K., Kozak A., Budzyńska A., Dondajewska-Pielka R., Osuch E., Podsiadłowski S., Gołdyn R., (2024). Effects of continuous nitrate treatment of hypolimnion in s small, hypereutrophic lake, *Chemosphere* 363(8): 142815 3. Kowalczewska-Madura K., Kozak A., Kuczyńska-Kippen N., Dondajewska-Pielka R., Gołdyn R. (2022). Sustainable

Faculty member	**Specialization**	**Relevant publications**
		restoration as a tool for the improvement of water quality in a shallow, hypertrophic lake, *Water* 14(7): 1005 4. Celewicz S., Kozak A., Kuczyńska-Kippen N. (2022). Chlorophytes response to habitat complexity and human disturbance in the catchment of small and shallow aquatic systems, *The Scientific Reports* 12: 13050 5. Kozak A., Budzyńska A., Dondajewska-Pielka R., Kowalczewska-Madura K., Gołdyn R. (2020). Functional groups of phytoplankton and their relationship with environmental factors in the restored Uzarzewskie Lake, *Water* 12(2): 313
Associated Professor Tomasz Joniak	Ecology and pollution of freshwater ecosystems	1. Rybak M., Szymkowiak J., Woźniak M., Joniak T., Klimaszyk P., Wejnerowski Ł., Ratajczak I., Velthius M. (2025). Understanding stoichiometric adjustments in a freshwater plant: responses to sediments and water nutrient dynamics across lake trophic gradients, *Limnology and Oceanography* 70(8): 2067-2081 2. Rybak M., Rosińska J., Wejnerowski Ł., Rodrigo M.A., Joniak T. (2024). Submerged macrophyte self-recovery potential behind restoration treatments: sources of failure. *Frontiers in Plant Science* 15: 1421448 3. Rybak M., Drzewiecka K., Woźniak M., …, Joniak T. (2023). Iron overload consequences for submerged plants stoichiometry, homeostasis and performance. *Biogeochemistry* 163: 17-32 4. Rybak M., Drzewiecka K., Woźniak M., Ratajczak I., Joniak T. (2020). Iron-induced behavioural and biochemical responses of charophytes in consequence of phosphates coagulant addition: threats to lake ecosystems restoration. *Chemosphere* 254: 126844 5. Joniak T., Kuczyńska-Kippen N., Gąbka M. (2017) Effect of agricultural landscape characteristics on the hydrobiota structure in small water bodies. *Hydrobiologia* 793: 121-133
Assistant Professor Michał Rybak	Ecology and pollution of freshwater ecosystems	1. Rybak M., Szymkowiak J., Woźniak M., Joniak T., Klimaszyk P., Wejnerowski Ł., Ratajczak I., Velthius M. (2025). Understanding stoichiometric adjustments in a freshwater plant: responses to sediments and water nutrient dynamics across lake trophic gradients, *Limnology and Oceanography* 70(8): 2067-2081 2. Jakubiak P., Rybak, M., Drzewiecka, K., Niedzielski, P., & Klimaszyk, P. (2025). Hidden effects of aluminum coagulant on freshwater mussels: Responses of Anodonta anatina and Unio tumidus to lake restoration. *Ecotoxicology and Environmental Safety*, 305, 119277 3. Rybak M., Rosińska J., Wejnerowski Ł., Rodrigo M.A., Joniak T. (2024). Submerged macrophyte self-recovery potential behind restoration treatments: sources of failure. *Frontiers in Plant Science* 15: 1421448 4. Rosińska J., Rybak M., Kowalczewska-Madura, Dondajewska-Pielka R., Kozak A., Gołdyn R. (2022). Spatio-temporal

Faculty member	**Specialization**	**Relevant publications**
		variations in water quality of a river-lake system during restoration treatments. Environmental Monitoring and Assessment 194: 636 5. Rybak M., Drzewiecka K., Woźniak M., Ratajczak I., Joniak T. (2020). Iron-induced behavioural and biochemical responses of charophytes in consequence of phosphates coagulant addition: threats to lake ecosystems restoration. *Chemosphere* 254: 126844
Assistant Professor Agnieszka Budzyńska	Ecology of freshwater cyanobacteria and algae	1. Pietruczuk K., Budka A., …, Budzyńska A., … Szoszkiewicz K. (2023). Observed and estimated taxonomic diversity of different groups of aquatic organisms in the pristine rivers in the Biebrza National Park. *Ecohydrology&Hydrobiology* 24 (5) 2. Tammeorg O., Chorus I., Spears B.M., Noges P., Nurnberg G., Tammeorg P., Sondergaard M., Jeppesen E., Paerl H., Huser B.J., Horppila J., Jilbert T., Budzyńska A., Dondajewska-Pielka R., Gołdyn R., Haasler S., Hellsten S., Harkonen L.H., Kiani M., Kozak A., Kotamaki N., Kowalczewska-Madura K., Newell S., Nurminen L., Noges T., Reitzel K., Rosińska J., Ruuhijarvi J., Silvonen S., Skov C., Vazic T., Ventela A-M., Waajen G., Lurling M. (2024). Sustainable lake restoration: from challenges to solutions, *Wiley Interdisciplinary Reviews Water* 11(2) 3. Donis D., Mantzouki E., McGinnis D.F., …, Budzyńska A., …, Ibelings B.W. (2021) Stratification strength and light climate explain variation in chlorophyll a at the continental scale in a European multilake survey in a heatwave summer. *Limonology&Oceanography* 66: 4314-4333 4. Kozak A., Budzyńska A., Dondajewska-Pielka R., Kowalczewska-Madura K., Gołdyn R. (2020). Functional groups of phytoplankton and their relationship with environmental factors in the restored Uzarzewskie Lake, *Water* 12(2): 313 5. Budzyńska A., Rosińska J., Pełechata A., …, Pawlik-Skowrońska B. (2018). Environmental factors driving the occurrence of the invasive cyanobacterium Sphaerospermopsis aphanizomenoides (Nostocales) in temperate lakes. *The Science of the Total Environment* 650
Assistant Professor Andrzej S. Rybak	Biology and ecology of freshwater macroalgae	1. Rybak A.S., Woyda-Płoszczyca A.M. (2024). The influence of temperature on oxygen uptake of red alga *Hildebrandia rivularis* – the next step of the indicatory potential revision. *Environmental and Sustainability Indicators* 24: 100503 2. Rybak A.S., Dziuba M., Pełechata A., Rybak M., Akter S., Czerepska A., Dulić T., Gąbka M., Hindakova A., Jurczak T., Kendir A., Mankiewicz-Boczek J., Meriluoto J., Wejnerowski Ł. (2024). Characterization of cyanobacterial mats

Faculty member	**Specialization**	**Relevant publications**
		from an artificial hot spring in Uniejów (Poland) and the potential use of their biomass. Algal Research 82: 103646 3. Jakubas-Krzak E., Gąbka M., Panek P., Kowalski W.A., Lisek D., Smoczyk M., Rybak A.S. (2023). The red alga Hildenbrandia rivularis is a weak indicator of the good ecological status of riverine habitats. Ecological Indicators 147: 109918 4. Rybak A. (2021). Freshwater macroalgae, *Ulva pilifera* (Ulvaceae, Chlorophyta) as an indicator of the trophic state of waters for small water bodies. *Ecological Indicators* 121: 106951. 5. Rybak A. (2018). Species of Ulva (Ulvophyceae, Chlorophyta) as indicators of salinity. *Ecological Indicators* 85: 253-261
Assistant Professor Łukasz Wejnerowski	Biology and Ecology of Freshwater Zooplankton and Cyanobacteria	1. Rybak M., Szymkowiak J., Woźniak M., Joniak T., Klimaszyk P., Wejnerowski Ł., Ratajczak I., Velthius M. (2025). Understanding stoichiometric adjustments in a freshwater plant: responses to sediments and water nutrient dynamics across lake trophic gradients, Limnology and Oceanography 70(8): 2067-2081 2. Rybak M., Rosińska J., Wejnerowski Ł., Rodrigo M.A., Joniak T. (2024). Submerged macrophyte self-recovery potential behind restoration treatments: sources of failure. *Frontiers in Plant Science* 15: 1421448 3. Cerbin S., Pérez G., Rybak M., Wejnerowski Ł., Konowalczyk A., Helmsing N., Naus-Wiezer S., Meima-Franke M., Pytlak Ł., Raaijmakers C., Nowak N., Bodelier P.L.E. (2022). Methane-derived carbon as a driver for cyanobacterial growth. *Frontiers in Microbiology* 13: 837198 4. Falfushynska H., Horyn O., Osypenko I., Rzymski P., Wejnerowski Ł., Dziuba M.K., Sokolova I.M. (2021) Multibiomarker-based assessment of toxicity of central European strains of filamentous cyanobacteria *Aphanizomenon gracile* and *Raphidiopsis raciborskii* to zebrafish *Danio rerio*. *Water Research* 194: 116923. 5. Dziuba M.K., Kuczynski L., Wejnerowski Ł., Cerbin S., Wolinska J. (2021). Countergradient variation concealed adaptive responses to temperature increase in Daphnia from heated lakes. *Limnology and Oceanography* 66: 1268-1280
Assistant Professor Mateusz Draga	Ecology and pollution of freshwater ecosystems	1. Draga M., Gałka M., Knorr K.H., Glatzel S., Chojnicki B.H., Fritz C., Jassey V., Juszczak R., Meyer H., Robroek B., Thomas C., Lamentowicz M. (2026). Long-Term Ecological Baselines and Critical Thresholds in Ombrotrophic Peatlands of Europe: Implications for Restoration Strategies. *Global Change Biology* (Accepted – in print) 2. Draga M., Szcześniak E. Rosadziński S., Bryl Ł., Lisek D., Gąbka M. (2024). Alien aquatic plants in Poland: Temporal and spatial distribution patterns and the effects of climate change. *Global Ecology and Conservation* 55: e03247

Faculty member	**Specialization**	**Relevant publications**
		3. Draga M., Gąbka M. (2024). The beneficial effect of barley straw extract addition on the growth of two aquatic invasive alien species (*Elodea nuttallii* and *Cabomba caroliniana*) under laboratory conditions. *Biologia* 79(1): 11-21 4. Roszkowska M., Gawlak M. Draga M., Kaczmarek Ł. (2019). Two new species of Tardigrada from Ecuador (South America). *Zootaxa* 4545 (4): 511-530
Associated Professor Piotr Zduniak	Landscape ecology	1. Zduniak, P., Wojciechowska, J., Kasprzykowski, Z., & Komorowicz, I. (2025). Pellets of apex predators for monitoring metals and metalloids contamination in farmlands. Chemosphere, 374, 144231. 2. Kwieciński, Z., Gajzmer, M., Beszterda, M., Szala, K., Golawski, A., & Zduniak, P. (2024). Assessing plastic pollution in farmland: Impact of agricultural practices on bird nesting materials. Ecotoxicology and Environmental Safety, 285, 117077. 3. Flux, J. E., Tryjanowski, P., & Zduniak, P. (2022). Road-kills in New Zealand: long-term effects track population changes and reveal colour blindness. European Journal of Ecology, 8(2). 4. Papakosta, M. A., Bakaloudis, D. E., Yosef, R., Vlachos, C., Goutner, V., & Zduniak, P. (2023). Alleviating competition increases raptor breeding success: A case study of Jackdaws and Lesser Kestrels. Journal for Nature Conservation, 76, 126508. 5. Yosef, R., Polyakov, E., Harush, N. B., & Zduniak, P. (2018). Effects of recreational activity on Acorn Barnacle (Tetraclita squamosa rufotincta) in the Red Sea. European Journal of Ecology, 4(2), 131-133.
Associated Professor Bartłomiej Gołdyn	Freshwater zoology and ecology	1. Celewicz, S., & Gołdyn, B. (2025). Shifts in phytoplankton communities in response to water parameters and large branchiopod filter feeders in kettle hole ponds of farmland landscape. Scientific Reports, 15(1), 17623. 2. de Necker, L., Brendonck, L., Vanschoenwinkel, B., Florencio, M., Rhazi, L., & Gołdyn, B. (2025). Lessons from pond creation and restoration projects in Europe. Restoration Ecology, 33(3), e14342. 3. Gołdyn, B., Kowalczewska-Madura, K., & Barałkiewicz, D. (2019). Key environmental factors for the conservation of large branchiopods in farmland vernal pools—a case from a Central European diversity hotspot. Crustaceana, 92(5), 613-631. 4. Gołdyn, B., Kaczmarek, Ł., Roszkowska, M., Guayasamín, P. R., Książkiewicz-Parulska, Z., & Cerda, H. (2017). Urban ecology of invasive giant African snail Achatina fulica (Férussac)(Gastropoda: Achatinidae) on its first

Faculty member	Specialization	Relevant publications
		recorded sites in the Ecuadorian Amazon. American Malacological Bulletin, 35(1), 59-64. 5. Urban Ecology of Invasive Giant African Snail Achatina fulica (Férussac) (Gastropoda: Achatinidae) on its First Recorded Sites in the Ecuadorian Amazon

1.d. Evaluation Criteria and Procedures

Course Evaluation

The evaluation of each course is carried out based on the following criteria:

- **Quality of Teaching Material**
  Completeness and scientific validity of the material (e.g., bibliography, presentations, exercises), as well as the updating of content in line with current developments in the field of civil protection.
- **Adequacy of Educational Activities**
  Integration of theoretical knowledge with practical application; variety of educational activities (e.g., simulations, case studies, lectures); student participation in exercises and group work.
- **Effectiveness of Teaching Methods**
  Balance between face-to-face and online instruction; ease of access to learning platforms and tools; level of student engagement and satisfaction with the teaching process.
- **Assessment of Learning Outcomes**
  Appropriateness and transparency of student assessment criteria (e.g., final examinations, assignments); clarity of learning objectives achieved per activity; student success rates in activities and examinations.
- **Student Feedback**
  Use of questionnaires to evaluate course quality; collection of comments regarding the effectiveness of the course.

Evaluation of Teaching Staff

The evaluation of teaching staff focuses on the following areas:

- Subject-matter expertise
- Teaching competence
- Management of the educational process
- Conduct and professionalism
- Evaluation by students

Evaluation Procedure

1. **Data Collection**
   - Student questionnaires for the evaluation of courses and teaching staff.
   - Student progress reports and final performance results.
   - Observations by the academic committee of the IPPP.
2. **Processing and Analysis**
   - Qualitative and quantitative analysis of data for each course and each instructor.
   - Comparison of results with the objectives of the programme.
3. **Feedback and Improvement**
   - Provision of individualized feedback to teaching staff.
   - Review and revision of courses and teaching methods, where necessary.

2. Feasibility study

2.a. List of Postgraduate Programmes of Study organized by the Departments

Department of Civil Engineering, Democritus University of Thrace (DUTH)

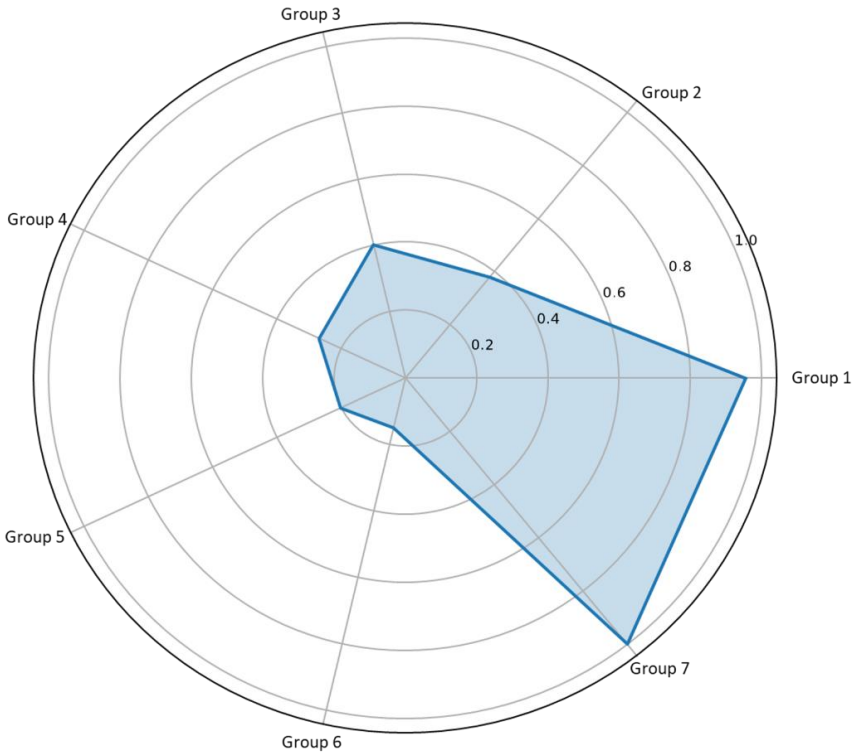
- Hydrometeorological Disaster Management (https://pms.civil.duth.gr/hmd/)
- Applied Mathematics (https://pms.civil.duth.gr/am/) *Collaborating Departments:* Department of Civil Engineering (coordinating department), Department of Electrical and Computer Engineering, Department of Environmental Engineering, DUTH
- Hydraulic Engineering & Environment (https://pms.civil.duth.gr/hee/)

- Management of Prevention and Management of Crisis and Disaster Innovative Techniques https://pms.civil.duth.gr/cdpm, *Collaborating Departments:* Department of Civil Engineering (coordinating department), Department of Natural Environment and Climatic Resilience, DUTH

2.b. Listing of programs of corresponding content (subject) organized in Greece and in Europe

Comparison of the Proposed Joint MSc Programme with European Master's Programmes

The mapping and systematic analysis of currently operating European Master's programmes enables an understanding of both the existing academic offer and its limitations. Most of these programmes focus on specific disciplinary areas, such as classical hydrology and water resources engineering, the impacts of climate change (floods, droughts), coastal and marine systems, or the institutional and policy dimensions of water management. As illustrated in the figure below, none of the existing programmes provide comprehensive coverage of the full spectrum of contemporary scientific, technological, and societal issues related to the sustainable management of water resources.



Group	Description of Thematic Group
Group 1	Classical hydrology, hydraulic engineering, and water resources management
Group 2	Climate change, impacts on water systems, floods, droughts, and adaptation
Group 3	Sanitary engineering, public health, water supply, sewerage, and wastewater treatment
Group 4	Coastal and marine systems, oceanography, and coastal management
Group 5	Earth observation systems, GIS, hydroinformatics, and data analysis
Group 6	Water policy, water governance, water security, and institutional aspects
Group 7	Ecohydrology, sustainable water management, and nature-based solutions
Group 8	Soil, the water–energy–food nexus, and agro-hydrological systems

Key fields for present and future water resources management — such as sanitary engineering and public health, Earth observation systems and data analysis (hydroinformatics, GIS), as well as the water–energy–food nexus and soil resources management — are either absent or only partially integrated into existing programmes as minor specializations or tracks. As further shown by the graphical representation, there is a clear imbalance in the distribution of existing MSc programmes across thematic areas. The analysis reveals a strong concentration in themes such as water resources engineering and sustainable water management (ecohydrology), whereas other equally major areas appear less frequently or are covered only as secondary components.

The proposed Joint Master's Programme has been specifically designed to directly address this imbalance by integrating these dimensions into a single, coherent educational framework.

Regarding tuition fees, the analysis of the European Master's programmes considered reveals a particularly wide range of costs. Tuition fees range from zero in public universities to amounts reaching €26,820, with an average of approximately €7,400. This variation reflects differences in national funding policies, levels of internationalization, and degrees of programme specialization. Within this context, the proposed Joint Master's Programme can adopt a competitive and socially balanced tuition policy, ensuring both broad accessibility and the long-term sustainability and quality of the educational provision.

The comparative assessment is completed with the presentation of the European Master's programmes that exhibit the highest degree of relevance to the proposed Joint MSc Programme. Below, the Master's programmes whose subject areas are most closely aligned with the proposed Joint MSc Programme are listed.

Master's Programme Title	University / Consortium
Water Science, Policy, and Management	United Kingdom- University of Oxford
Master's in Applied Ecohydrology, MAEH	Erasmus Mundus - University of Algarve (Portugal) with University of Łódź (Poland), TH Lübeck (Germany), University of Antwerp (Belgium)
Groundwater and Global Change - Impacts and Adaptation (GroundwatCh)	Erasmus Mundus - Instituto Superior Técnico (Lisbon, Portugal), IHE Delft (Delft, Netherlands), TU Dresden (Dresden, Germany)
Hydroinformatics and Water Management (Euro Aquae) MSc	Erasmus Mundus - ENSEEIHT Toulouse (France), TU Dresden (Germany), UPC Barcelona (Spain), Newcastle University (UK), Warsaw University of Technology (Poland)
Water Resources Engineering and Management (WAREM)	Germany - University of Stuttgart
Master of Water Resources Engineering	Belgium - KU Leuven & Vrije Universiteit Brussel (VUB)
Water Management and Environmental Engineering	Austria- University of Natural Resources and Life Sciences (BOKU)

Comparison of the proposed MSc with Greek postgraduate programs

The mapping and examination of the existing postgraduate programs of study in Greece on water resources and the environment is particularly important for capturing the way in which the critical fields of modern water management are covered. Most programs focus on individual areas, such as water resources engineering, hydrology, or environmental engineering, without systematically integrating modern requirements for a holistic and interdisciplinary approach to water body management. As a result, critical subjects are covered piecemeal or remain marginal in the curriculum.

The proposed postgraduate program differs substantially from the above framework, as it is the only program in Greece that incorporates hydrology, water resources management, sanitary engineering, wastewater treatment, groundwater study, as well as modern approaches to sustainable water management in a single and coherent scheme. The coexistence of these objects allows for a comprehensive understanding of the interaction of physical, technical, and environmental parameters. An important feature of the program is the utilization of modern tools and methodologies, as well as the integration of the latest knowledge in the field of water resources and ecological engineering. This approach allows students to develop skills in complex analysis, modeling, and informed decision-making, covering both technical and environmental considerations.

The program has a strong international and extrovert character, as it is also offered in English and is implemented in collaboration with European universities. This international dimension enhances academic quality, promotes transnational cooperation, and harmonizes the program with European educational and research developments, making the proposed MSc highly competitive and unique in the Greek academic field.

Below are the Greek postgraduate programs of study that show the greatest thematic proximity to the proposed MSc:

Master's Program Title	University
Hydraulic Engineering and Environment	Democritus University of Thrace – Department of Civil Engineering
Sustainable Engineering and Climate Change	Technical University of Crete – Department of Chemical and Environmental Engineering
Environmental Engineering and Science	Democritus University of Thrace – Department of Environmental Engineering
Environmental Science, Policy and Management	Erasmus Mundus – University of the Aegean, University of Central Europe (Austria), University of Lund (Sweden), University of Manchester (UK), Middlebury Institute of International Studies in Monterrey (USA) and University of Saskatchewan (Canada), International Institute of Industrial Environmental Economics, Institute of International Studies

Waste Management	Hellenic Open University
Environmental Planning and Education	Democritus University of Thrace – Department Forestry and Management of the Environment and Natural Resources

Indicative Supply and Demand Analysis

The specific IPSP aims to train specialized professionals capable of effectively managing water resources and to specialize on ecological engineering applications using innovative techniques. Graduates acquire skills such as risk analysis, strategic planning, and the use of cutting-edge technologies.

Supply Analysis

As noted above, related IPSPs exist in Greece; however, there is insufficient emphasis on the application of innovative technologies such as DSS, drones, and intelligent forecasting systems. This makes the IPSP *"Water Resources and Ecological Engineering"* distinctive. Postgraduate programmes typically offer a limited number of places per year, often fewer than 50, resulting in demand that is not adequately met.

Demand Analysis

- **Work Market**

Demand for professionals in the field of water resources and ecological engineering management is increasing due to:

- The growing frequency of water crisis (floods, droughts) as a result of climate change.
- Increased international pressure for compliance with European and global water resources protection standards.

Statistical data indicate an increased need for specialists in both the public sector (e.g., Environmental Protection authorities, water supply companies, etc) and the private sector (e.g., insurance companies, construction firms).

- **Required Skills**

According to work market studies, employers seek:

- Knowledge and competence in the use of new technologies (e.g., simulations, AI-based applications).
- The ability to adapt to high-pressure situations and collaborate effectively within interdisciplinary teams

Title	Department	University	Duration	Face-to-face / remote	ECTS	Tuition Fees	Directions	PURPOSE
Sustainable Engineering and Climate Change	Chemical and Environmental Engineering	Technical University of Crete	3 semesters Full Time / 6 semesters Part Time	In-Person & Remote	90	3000 for EU students/6000 for no EU students		Train highly qualified scientists and professionals to serve modern scientific research and production process on innovative issues related to climate change and environmental management, and to design sustainable energy systems and environmentally sustainable cities of the future.
Climate Crisis, Risks and Disasters	Geography	Harokopio University	3 semesters Full Time / 6 semesters Part Time	Distance teaching can cover up to 30% of teaching hours	90	2100		This MSc is oriented towards the postgraduate training of scientists in issues of analysis, assessment, mapping, communication, management and governance of risks, crises (with emphasis on Climate Science) and disasters from the perspective of Geographical Science and its applications
Analysis and Management of Man-made and Natural Disasters	Faculty of Agricultural and Forestry Sciences	Democritus University of Thrace	3 semesters	Remotely	90	3000		Offers a comprehensive, modern, and interdisciplinary approach to the study, analysis, and management of catastrophic phenomena, enhancing the knowledge and skills of participants in prevention, preparedness, response, and recovery
Global Environmental Change, Management and Technology	Department of Environment	University of the Aegean	3 semesters	In-Person & Remote	90	2500	1) Environmental Policy and Biodiversity Conservation2) Ecological Engineering, Energy and Climate Change3	1. The production of scientific potential with an integrated understanding of environmental processes and planetary environmental changes.2. The promotion of high-level executives and human resources in matters of environmental management, policy, and technology.3. The dissemination of scientific knowledge and cultural values to social groups and institutionalized organizations involved in environmental issues.3.

							) Research in Environmental Sciences	The strengthening of the multiple socio-economic role of the University of the Aegean, in the border area where it develops, in accordance with the requirements and rationale of its establishment
Integrated Management of Coastal Areas	Department of Oceanography and Marine Life Sciences	University of the Aegean	2 semesters	In-Person & Remote	60	1500		1. Education, scientific training and specialization through theoretical teaching and practical exercises/applications, where special emphasis is placed on topics related to the interdisciplinary study and integrated management of the coastal environment.2.The promotion of basic and applied research on the marine/coastal environment and sustainable development.3.The dissemination of scientific specialized knowledge to Public/Private Bodies and Businesses, social groups and Organizations involved in the sustainable development / management of coastal areas. 4. The scientific training of high-level executives in the integrated management of the coastal zone.

Environmental Biology	Department of Biology	University of Crete	3 semesters	In person	90	without		The content of education and research in the JPSP is oriented towards the study of critical contemporary issues concerning ecosystems, biodiversity, and biological resources in both the marine and terrestrial environments. The study program offers postgraduate students, state-of-the-art knowledge and skills in critical areas of environmental research related to environmental protection, sustainable development of aquaculture, ecology and sustainability of fisheries and biodiversity conservation, the importance of which is extremely important for our country.
Biodiversity and Biological Resources Management	Department of Biology	Aristotle University of Thessaloniki	3 semesters	In person	90	0-1500 Possibility of exemption from the obligation to pay tuition fees for up to 30% of students, based on social criteria	1. Fisheries Biology and Management 2. Ecology and Conservation Biology	The MSc objection is the promotion of the science of Biology and the theoretical, laboratory and practical training of young scientists in modern applications of Ecology, Fisheries Biology and Management and Conservation Biology.

Management of Soil, Water, Energy Resources and Rural Environment	Agriculture	Aristotle University of Thessaloniki	3 semesters	In-Person & Remote	90	1500		The provision of a high level of postgraduate education, which concerns the consolidation of basic and advanced principles, knowledge, methods, and skills in the sciences of Soil Science, Water Resources Management in Agriculture, Biosystems Engineering and Rural Environment Protection.
Environmental Engineering and Science	Department of Environmental Engineering	Democritus University of Thrace	3 semesters	Remote	90	2250	(1) Climate Change, Renewable Energy Sources and Energy Design of Buildings and Settlements (2) Technology and Waste Management (3) New Technologies in Water Resources Management.	1. Deepening and further promotion of interdisciplinary knowledge and practice of Environmental Engineering and Science.2. Creation of a high level of specialized scientific potential in the subjects (specializations) of the Master's Program.3. Promotion of scientific research in Environmental Engineering and Science, in accordance with international standards.4. Satisfaction of the educational, research and development needs of the country in Environmental Engineering and Science, in order to retain in Greece a remarkable scientific and technical potential.5. The contribution to the development and productive reconstruction of Thrace as a border and border region of the country.
Waste Management	Faculty of Science and Technology	Hellenic Open University	4 semesters	Remote	120	3750		The aim of the program is to provide specialized knowledge on the issues of Waste Treatment Technologies and Decontamination Methodologies and to understand the complex structure and operation of the environment, which is the final recipient of waste.

Environmental Science, Policy and Management	Department of Environment	University of the Aegean/ University of Central Europe (Austria), University of Lund (Sweden), University of Manchester (UK), Middlebury Institute for International Studies in Monterrey (USA) and University of Saskatchewan (Canada), International Institute of Industrial Environmental Economics, Institute of International Studies	4 semesters	In person	120	18000 - 36000		The MESPOM program prepares students to identify and implement solutions to complex environmental challenges, especially in an international context. It offers a comprehensive interdisciplinary and multidisciplinary curriculum in environmental studies that challenges students' ability to integrate theory and practice for systematic analysis, holistic understanding, and management of diverse environmental issues in various societal contexts. In addition to their academic work, students develop research, communication, and other professional skills, learn to orient themselves in European and global networks of environmental institutions and elaborate relevant professional goals and strategies.

Environmental Planning and Education	Forestry and Management of the Environment and Natural Resources	Democritus University of Thrace	2 semesters	In-Person & Remote	75	1800	Specialization A: "Environmental Planning and Management of Natural Resources" Specialization B: "Environmental Education and Communication"	1. To provide students with specialized knowledge, to cultivate critical, analytical, and synthetic thinking and to develop the scientific approach to issues of environmental planning and management of natural resources, as well as environmental education and communication. 2. To offer the greatest possible familiarity of students with modern research methodology and new technologies. 3. To empower students theoretically, to understand the various research techniques and the different methods of processing and analysis used in environmental planning and management of natural resources, as well as in environmental education and communication. 4.To encourage students to critically process scientific papers and considerations and to develop the scientific methodology for conducting their own research. 5.To contribute to the achievement of sustainable development, by training public and private sector executives. 6. To promote the practice of the practical application of the knowledge acquired by students during their undergraduate studies and to strengthen it, with the aim of their subsequent application at doctoral level.

Ecology and Environmental Management	Forestry and Natural Environment Management	Agricultural University of Athens	3 semesters	In-Person & Remote	90	3000		A. the deepening and analysis of basic concepts related to ecology and the environment, B. the training in classical and new methods and techniques related to the study of ecology and environmental management. the development of case studies and training in the field utilizing the rich natural environment of Evrytania, as well as the extensive experience of the Department's faculty members in private and public bodies (Forestry Departments, Forest Research Foundation, Management Bodies of Protected Areas), which makes them aware of the needs and problems faced by the productive bodies of our wider region, as well as the continuous cooperation with many of them, solving environmental problems, and adopting new innovative management methods.
Geographic Information Systems	Geology and Geoenvironment	National and Kapodistrian University of Athens	4 semesters	In-Person & Remote	120	5000		The master's program can provide the necessary knowledge for postgraduate scientists to be able to meet the demands of new scientific challenges and technological requirements, in areas focused on spatial information analysis and the development of related tools (GIS).

Environmental Sciences and Public Health	Chemistry	National and Kapodistrian University of Athens	4 semesters	In person	120	6000 for EU member/10000 for non-EU members		The aim of the project is to train young scientists in the field of the climate crisis and its impact on public health, as well as to conduct research and further studies on the sustainability of products in relation to the climate, the energy-water-food relationship and its impact on health, as well as the utilization of waste in the context of the circular economy, bioeconomy and health, the analysis of environmental exposure to emerging risks and adverse effects on public health, the response to domestic and international public health emergencies caused by environmental disasters, and the control of pollution and the management of natural resources.
Applied Ecology and Environmental Management	Biology	University of Patras	3 semesters	In person	90	without		It promotes knowledge and research in cutting-edge areas, included in the broader fields of Applied Ecology (e.g. Ecosystem Management, Ecological Quality Monitoring and Assessment, Habitat Conservation Status, State of Ecosystems, Ecosystem Services, Biological Resource Management, Fisheries, Aquaculture, Ecotoxicology, Evolutionary Biology, Functional Ecology, Biodiversity)

Environmental Sciences and Engineering	Chemistry	University of Crete	4 semesters	In person	120	without		Further promotion of interdisciplinary knowledge, the promotion of research on innovative issues in environmental science, environmental protection and engineering, and the development of domestic technology in the field of environmental protection technologies and sustainable development. The M.F. will be familiarized at an experimental level with modern analytical techniques for determining environmental parameters and anti-pollution techniques, but also at a theoretical level with the processing of environmental data using numerical simulations to determine optimal techniques for reducing environmental pollution and related environmental impacts in the context of sustainable development.

2.c. Identification of Alternative Funding Sources

Funding support through private sponsorships relevant to the programme's subject area.

2.d. Availability of Basic Infrastructure and Necessary Equipment for the Operation of the Programme

The Department of Civil Engineering has sufficient teaching staff and infrastructure to support the operation of this postgraduate programme. Specifically:

Facilities	Classrooms	Laboratories
Number and capacity	6 classrooms (60 seats each) and 3 lecture halls (140 seats each)	16
Adequacy, suitability, and quality	Excellent	Excellent
Utilization rate	10%	10%

Based on the above, the Department of Civil Engineering of the Democritus University of Thrace (DUTH) possesses both the personnel and the educational infrastructure necessary to support the postgraduate programmes it coordinates. For the face-to-face teaching of the proposed postgraduate programme, facilities of the Municipality of Soufli have also been allocated, which adequately meet the requirements for the conduct of courses.

The Department of Civil Engineering provides the basic infrastructure required to support the IPSP *"Water Resources Engineering and Ecological Engineering."* More specifically, the Department's facilities include:

- Building A, housing the Secretariat and the Office of the Head of the Department, two meeting rooms, five lecture halls, six classrooms, the Department's Computing Centre, and the cafeteria.
- Building B, housing the offices of faculty members, laboratory teaching staff, technical staff, postdoctoral researchers, and doctoral candidates of the Department.
- The laboratory building of the Structural Engineering Sector.
- The laboratory building of the Transportation Engineering and Geotechnical Engineering Sectors.
- The laboratory building of the Hydraulic Engineering Sector.
- The auxiliary laboratory building of the Hydraulic Engineering Sector.
- The Steel Structures Laboratory building.

In addition, the technical infrastructure of the School of Engineering (network infrastructure [Wi-Fi], video projection systems, and other audiovisual equipment) enables the effective organization and delivery of distance learning activities of the postgraduate programme whenever deemed necessary (e.g., course delivery, presentation of assignments).

The selection of teaching spaces and classrooms ensures accessibility for postgraduate students with disabilities and/or special educational needs, including access to

recommended learning materials and teaching activities, as well as the provision of additional accommodations. Specifically, all classrooms and laboratories are accessible to persons with disabilities. The same criteria apply to the selection of conference venues for workshops, conferences, or external activities.

The synchronous distance learning system provided to all teaching staff and undergraduate students is not hosted within DUTH but is offered as a Software-as-a-Service (SaaS) solution and constitutes part of the "Microsoft 365" service suite. This suite is provided by Microsoft and is covered by an active support contract, which includes strict Service Level Agreements (SLAs) obliging the provider to refund 25% of the paid resources if service availability falls below 99.99% due to provider responsibility.

Article 12
Post-Graduate Master's Programme Resources - Financial management

1. The financial resources and funding of a Postgraduate Master's Programme (PMP) may derive from the following sources:
   a) tuition fees;
   b) grants, sponsorships, and financial contributions of any kind;
   c) bequests and donations;
   d) resources originated from research projects or programmes;
   e) own resources of the Higher Education Institution (HEI); and
   f) the State Budget or Public Investment Programme.

Revenue		**Amount (€)**
1	Tuition fees	176.000
2	Grants, sponsorships, and financial aid of any nature	
3	Bequests and donations	
4	Resources from research projects or programmes	
5	Own resources of DUTH	
6.	State budget or National Development Plan	
Total		**176.000**

The above revenue table shall refer to the budget of a complete study cycle of the Programme (as defined in the study programme of the PMP).
According to Article 84(4) of Law 4957/2022, thirty percent (30%) of the total revenue derived from tuition fees shall be withheld by the Special Account for Research Funds (SARF) of DUTH. This amount shall include the percentage withheld for the financial management of the PMPs by SARF.

Regarding expenditures, the Internal Operating Regulation shall record the categories of operating expenses and the corresponding amounts/expected outflows. In particular, seventy percent (70%) of the operating expenses of the PMP shall be allocated according to at least the following categories:

Expenses - expenditure categories		**Amount (€)**
1	Fees for administrative technical support	18000
2	Teaching staff remuneration	20000
3	Transportation expenses	5000
4	Equipment and technical infrastructure	5000
5	Other operating expenses	1280
6	Avignon University budget	36960
7	AMU University budget	36960
Subtotal (70%)		**123200**
6	Operating expenses of the Institutions (30%) - Special Account for Research Funds	52800
TOTAL		**176000**

In particular, in the case of cooperation between Departments or Schools of Higher Education Institutions in Greece and Higher Education Institutions abroad, funding from the Recovery and Resilience Facility or from other national and international financial instruments may also be utilized.

2. Tuition fees, where applicable, shall be paid by the student concerned or by a third natural or legal person on behalf of the student.
3. The financial resources of the PMP shall be managed through the Special Account for Research Funds (SARF) of DUTH or, in the case of an interinstitutional or joint PMP, through the Higher Education Institution that has undertaken administrative support of the Programme.
4. The financial management of each implemented PMP project shall be carried out by the Special Account for Research Funds of DUTH, on the basis of its approved budget, which shall be approved by decision of the Senate following a proposal of the competent Assembly of the Department or of the Study Programme Committee (SPC), in the case of interdepartmental, interinstitutional or joint Programmes, and following the acceptance of the request for undertaking the financial management by the Research Committee of DUTH.
5. The financial management of each PMP shall constitute a separate financial project implemented through the Special Account for Research Funds of DUTH and shall be carried out in accordance with the objectives of the PMP and the applicable legal framework governing the operation of the Special Account for Research Funds of DUTH.

   For the purposes of the present Regulation, the term "PMP cycle" shall mean the total duration of each PMP as defined in its establishing decision.

6. The Scientific Coordinator of each PMP shall also be appointed as the Scientific Coordinator of the corresponding implemented project of the PMP and shall exercise the duties, obligations and powers of the Scientific Coordinator, in accordance with the

applicable legal framework and the Management and Financing Guide of the Special Account of Research Funds of DUTH, as approved by the Senate.

7. For the effective implementation and adjustment of the budget of the PMP, as approved by the Assembly of the Department or the SPC, in the case of an interdepartmental or interinstitutional Programme, the Director of the PMP and the Scientific Coordinator of the project may, following the prior approval of the aforementioned competent bodies, submit a request to the Research Committee for the increase, reduction or reallocation of budgeted amounts to each category of budget expenditure. In the event of any amendment to the tuition fees, the relevant amendment shall be published in the Government Gazette.
8. Pursuant to Article 84 of Law 4957/2022, the Director of the PMP, acting also as Scientific Coordinator of the Programme, may request that the Research Committee of the Special Account for Research Funds appoint a Deputy Scientific Coordinator for the financial management needs of the PMP, in accordance with Article 234(4) of the same Law. In purpose of assessing the necessity of such appointment, it is recommended that the Director's request be accompanied by a decision of the competent governing body of the PMP (Assembly of the Department or SPC).
9. The resources of the PMPs shall be distributed as follows:
   a) an amount corresponding to thirty percent (30%) of the total revenue derived from tuition fees shall be withheld by the Special Account for Research Funds. This amount shall include the statutory percentage discretionarily withheld for the financial management of the PMPs. By decision of the Board of Directors of the Special Account for Research Funds, taken by the end of March of each year, it shall be determined whether the remaining balance following the deduction of the management percentage shall be transferred to the regular budget of the Institution or allocated for the creation of projects or programmes through the Special Account for Research Funds, with a priority for the coverage of the needs of PMPs operating without tuition fees, as well as for covering research, educational and operational needs of the Institution.

The deduction by the Special Account for Research Funds from revenues originating from the sources listed in paragraph 1 points (b) to (d) shall be made from the corresponding revenues of the PMP.

b) the remaining balance of the total revenues of the PMP shall be used exclusively to cover the operating costs of the Programme.

The level of tuition fees for students who are citizens of other Member States of the European Union and for students from third countries enrolled in PMPs conducted in Greek or in another language may differ.

In particular, seventy percent (70%) of the operating expenses of the PMP shall be allocated indicatively to:

a) Administrative and technical support costs
b) Teaching staff remuneration
c) Transportation expenses
d) Equipment and technical infrastructure

e) Other operating costs, in accordance with Article 80(4)(a) of Law 4957/2022
Remuneration of the Institution's ordinary teaching, technical and administrative staff shall concern work performed in excess of their statutory obligations, in accordance with the applicable Internal Regulations of the Institution.

10. Pursuant to Article 85(2) of Law 4957/2022, a maximum of five percent (5%) of the total annual revenues of each PMP may be allocated to a project or programme referred to in paragraph 1 of the same Article.

Article 13
Financial cooperation of Post-Graduate Master's Programmes of the Higher Educational Institution

1. Where more than one (1) Postgraduate Master's Programme (PMP) is organized within the same Department or School of Democritus University of Thrace, financial cooperation among these Programmes may be established through the creation of a joint project or programme, funded by resources originating from the participating PMPs, for the purpose of addressing their common needs and joint actions.
2. The joint project or programme shall not be subject to a fixed expiration date, shall have an autonomous budget, and shall be funded on an annual basis by part of the revenues of the operating PMPs of the Department or School, which shall be allocated to it to cover common needs and activities.
3. By way of exception, the joint project or programme may also be funded from the remaining cash balances of PMPs of the same Department or School whose physical object has been successfully completed and for which no further financial obligations arise.
4. The specific procedures and conditions governing such financial cooperation shall be defined in the Regulation on Postgraduate and Doctoral Study Programmes of DUTH.

Article 14
Tuition fees
The maximum amount of tuition fees for the Interdepartmental Postgraduate Studies Program (I.P.S.P.) amounts to four thousand and four hundred thousand (4400) euros. The amount of the prescribed tuition fees for the entire program is determined in the Government Gazette (FEK) establishing the I.P.S.P.

Provision is made for payment in installments, in accordance with the provisions of the internal Regulations of the Postgraduate Studies Programs. Payment shall be made in four(4) equal installments at the beginning of each semester.

Tuition fees shall be paid in the Special Account for Research Funds (SARF) of DUTH, which shall be responsible for their financial management. The possibility of payment in

instalments may be provided for, in accordance with the provisions of the Internal Operating Regulation of each PMP.

Article 15
Administrative Support

1. The Department to which the Post-graduate Master's Programme (PMP) belongs shall also be responsible for the administrative support of the Programme.
2. In the case of inter-departmental, inter-institutional or joint PMPs, the supervising Institution and/or Department responsible for the administrative support of the Programme shall be specified in the establishing decision of the PMP and in the Special Cooperation Protocol.
3. Administrative staff who provide support services to the PMPs beyond their regular working hours at the University, as well as staff to whom tasks related to the operation of the PMPs have been specifically assigned, may receive additional remuneration for such work, in excess of their contractual obligations arising from their main employment, in accordance with the applicable legal framework and the Internal Regulations of DUTH.

Article 16
PMP Websites

Each Postgraduate Master's Programme (PMP) shall maintain its own official website in Greek and in English, or in any other language deemed appropriate by the Department, particularly in the case of Programmes offered in collaboration with universities abroad.
The website shall provide direct, clear, and accessible information regarding all educational and academic activities of the PMP. It shall be continuously updated and shall include all announcements, documents, and essential information related to the Programme.
The official website of each PMP shall constitute the primary and authoritative source of information for post-graduate students.

CHAPTER TWO
Post-Graduate Study Subjects

Article 17
PMP admission criteria

Candidates for the joint degree program must meet the criteria set both by Greek, French and Polish laws. They must be graduates (level 6 or higher of European Qualification Framework – EQF) of Engineering Schools or Universities and Departments of Forestry & Natural Environment, Climate Resilience and Natural Environment, Geology, Physics, Chemistry, Mathematics, Biology, Environmental Sciences, etc., or other departments with related fields from Greek or recognized foreign institutions, as well as graduates of relevant Departments from Applied Technical Universities. No student will be allowed to register for the programme unless they meet the entry requirements. Upon registration students will have access to student services at DUTH, AU and AMU.

Article 18
Process for the selection of entrants and enrolment in the PMP

Stage A – Application Submission
Required documents:

i. Application form (printed/electronic)
ii. Motivation letter
iii. Curriculum vitae (studies, teaching experience, scientific and social activities)
iv. Degree certificate(s)
v. Transcript in English
vi. Proof of foreign-language proficiency at level B2 (if absent, an English exam is conducted by the Coordinating Committee). For the students attending 2nd Semester in University of Avignon a B2 level in French must also be proved.
vii. Publications and any scientific/research work (if available)
viii. Two recommendation letters
ix. Evidence of other qualifications (IT certification, second foreign language, internships, degree thesis, etc.)

Stage B – File Evaluation
Complete applications are evaluated and scored (maximum 50 points):

Criterion	**Weight**
Relevance of undergraduate studies	10
Overall degree grade	20
Research/professional activity related to program field	10
Overall merit	10

Stage C – Interview
The candidates who scored above 25 points could be called for interview. Interviews are conducted by Committee members on topics related to the Master programs content. Each member scores separately. Maximum score: 50 points.
The final score consists of:
– 50% from the application file
– 50% from the interview
Maximum total: 100 points.

Article 19
Study Guide

Every year, a Study Guide for the Interdepartmental Postgraduate Studies Programs (I.P.S.P.) is published in both Greek and English and distributed to postgraduate students.

The Study Guide must include:

- The course schedule, the names of the instructors, the rights (social benefits, scholarships, loans, textbooks, teaching materials, etc.) of the postgraduate

students, their obligations, as well as information regarding the operation of the study rooms, laboratories, clinics, and libraries of the Department.

- The total number of Credit Units (ECTS) required for the award of the Master's Degree (M.D.) across all courses distributed throughout the semesters of study.
- The credit units awarded per specialization of the I.P.S.P., if more than one (1) specialization exists, which must not be fewer than sixty (60) credit units (ECTS), as well as the number of academic semesters of the program, which must not be fewer than two (2).
- The detailed curriculum per specialization, the titles and brief descriptions (syllabus) of the courses, seminars, laboratories, and clinical exercises of the I.P.S.P., the conduct of the internship, the preparation of the Master's Thesis, or the completion of other educational and research activities designated as mandatory or elective for the successful completion of the I.P.S.P., with reference to the number of credit units (European Credit Transfer and Accumulation System – ECTS) awarded in each case.
- The official language of instruction of the program and the language of the Master's Thesis, which may differ from Greek.
- The specializations, which include the maximum number of course registrations per semester, designation of courses as prerequisites, as well as the rules for examinations and assessment of postgraduate student performance, as outlined in the internal Regulations of the I.P.S.P.

Article 20
Curriculum

The total number of Credit Units (ECTS) required for the award of the Master's Degree (M.D.) is one hundred and twenty (120), with a study duration of four (4) semesters. The twenty (20) offered courses (90 ECTS) are distributed across the first three semesters (A, B, C), and the preparation and examination (30 ECTS) of the internship based Master's Thesis, take place in the fourth (D) semester.

Ninety percent (90%) of the courses per semester are conducted in person, while ten percent (10%) are delivered through synchronous distance learning. The percentage can be modified after SPC decision.

The detailed curriculum of the Postgraduate Studies Program (PSP) is organized as follows:

FIRST SEMESTER OF STUDIES						
COURSE CODE	**COURSE TITLE in Greek & in English**	**COURSE TYPE**	**HOURS IN-PERSON TEACHING**	**HOURS REMOTE SYNCHRONOUS TEACHING**	**HOURS REMOTE ASYNCHRONOUS TEACHING**	**ECTS CREDITS**
1.1	Hydrology – Ecohydrology/ Υδρολογία – Οικουδρολογία	MANDATORY	36	3	0	6

1.2	Aquatic Chemistry and biology/ Υδατική Χημεία και βιολογία	MANDATORY	36	3	0	6
1.3	Surface water modeling/ Μοντελοποίηση επιφανειακών υδάτων	MANDATORY	36	3	0	6
1.4	Remote Sensing and Water Resources / Τηλεπισκόπηση και Υδατικοί Πόροι	MANDATORY	36	3	0	6
1.5	Surface and groundwater Hydraulics/ Υδραυλική Επιφανειακών και Υπογείων Υδάτων	MANDATORY	36	3	0	6
TOTAL CREDITS OF FIRST SEMESTER						30

SECOND SEMESTER OF STUDIES						
COURSE CODE	**COURSE TITLE in Greek & English**	**COURSE TYPE**	**HOURS IN-PERSON TEACHING**	**HOURS REMOTE SYNCHRONOUS TEACHING**	**HOURS REMOTE ASYNCHRONOUS TEACHING**	**ECTS CREDITS**
ELECTIVE COURCES IN AMU						
2.1.2	Strategies for protection of freshwater ecosystems/ Στρατηγικές προστασίας υδάτινων οικοσυστημάτων	ELECTIVE				6
2.1.2	Lake restoration/ Αποκατάσταση λιμνών	ELECTIVE				6
2.1.3	Transformation and restoration of rivers/ Μετασχηματισμός και αποκατάσταση των ποταμών	ELECTIVE				4
2.1.4	Functioning of aquatic ecosystems under natural conditions and anthropogenic stress/ Λειτουργία υδάτινων οικοσυστημάτων κάτω από φυσικές συνθήκες κα ανθρωπογενείς πιέσεις	ELECTIVE				4
2.1.5	Monitoring of ecological status of lakes and rivers/ Παρακολούθηση της οικολογικής κατάστασης λιμνών και ποταμών	ELECTIVE				6
2.1.6	Aquatic habitats of NATURA 2000/ Οικολογικά ενδιαιτήματα περιοχών NATURA 2000	ELECTIVE				4
ELECTIVE COURCES IN AU						
2.2.1	Vulnerabilities: Assessing the vulnerabilities of a water resource in a context of global change / Τρωτότητα: Αξιολόγηση της τρωτότητας ενός υδατικού πόρου στο πλαίσιο της παγκόσμιας αλλαγής	ELECTIVE				7
2.2.2	Hydrogeology: Understanding and measuring water and solute flows in aquifers / Υδρογεωλογία: Κατανόηση και μέτρηση των ροών νερού και διαλυμένων ουσιών στους υδροφορείς	ELECTIVE				14
2.2.3	Intership/ Πρακτική άσκηση	ELECTIVE				9
TOTAL CREDITS OF SECOND SEMESTER						30

THIRD SEMESTER OF STUDIES						
COURSE CODE	**COURSE TITLE in Greek & in English**	**COURSE TYPE**	**HOURS IN-PERSON TEACHING**	**HOURS REMOTE SYNCHRONOUS TEACHING**	**HOURS REMOTE ASYNCHRONOUS TEACHING**	**ECTS CREDITS**
3.1	Drought management and precision irrigation/ Διαχείριση ξηρασίας και άρδευση ακριβείας	MANDATORY	36	3	0	5
3.2	Technologies for Drinking water and Wastewater treatment/ Τεχνολογίες για την επεξεργασία πόσιμου νερού και λυμάτων	MANDATORY	36	3	0	5
3.3	Impact Pressure Analysis – NbS design/ Ανάλυση πιέσεων και επιπτώσεων – σχεδιασμός Λύσεων Βασισμένων στη Φύση (NbS)	MANDATORY	36	3	0	5
3.4	Coastal Protection Desing/ Σχεδιασμός παράκτιας προστασίας	MANDATORY	36	3	0	5
3.5	DSS for Integrated Water Resources Management/ Συστήματα Υποστήριξης Αποφάσεων (DSS) για την Ολοκληρωμένη Διαχείριση Υδατικών Πόρων	MANDATORY	36	3	0	5
3.6	Socioeconomical issues in Water Resources Management/ Κοινωνικοοικονομικά ζητήματα στη διαχείριση υδατικών πόρων	MANDATORY	36	3	0	5
TOTAL CREDITS OF THIRD SEMESTER						30

FOURTH SEMESTER OF STUDIES						
COURSE CODE	**COURSE TITLE in Greek & in English**	**COURSE TYPE**	**HOURS IN-PERSON TEACHING**	**HOURS REMOTE SYNCHRONOUS TEACHING**	**HOURS REMOTE ASYNCHRONOUS TEACHING**	**ECTS CREDITS**
3.1	MASTER THEIS	MANDATORY				30
TOTAL CREDITS OF THIRD SEMESTER						30

Course title	Hydrology – Ecohydrology
Semester	1st
Content and purpose of the course	**Purpose** • Develop an integrated view of catchments as dynamic systems, using classical engineering hydrology concepts to structure and analyze questions and connect observations to design-relevant quantities. • Build a statistical/stochastic hydrology perspective that treats hydrologic data as realizations of random processes, enabling probabilistic inference and decision-making under uncertainty.

	• Frame ecohydrology as the field of interplay between hydrological and ecological processes. **Content** 1. Introduction to Hydrology: Hydrologic cycle, key variables, scales, observations, uncertainty. 2. Catchment Water Balance: Storage terms, balance equations, interpretation across event/seasonal/long-term scales, and typical closure issues. 3. Precipitation Processes and Measurement: Formation/types of precipitation, rain-gauge data, quality control, and areal rainfall estimation concepts. 4. Losses and Runoff Initiation: Infiltration and abstractions, interception/depression storage (conceptual), and event loss representations (e.g., ϕ-index, SCS-CN). 5. Probability Essentials for Hydrology: Random variables, properties, sampling, return period and risk. 6. Distributional Modelling of Hydrologic Variables: Candidate distributions, tail behaviour, parameter estimation (e.g., method of moments/L-moments), and model checking/diagnostics. 7. Extreme-Value and Frequency Analysis: Block maxima vs threshold exceedances, return levels, uncertainty in quantiles, and sensitivity to record length and changing conditions, Intensity-Duration-Frequency curves. 8. Water – nutrients and biota relationships 9. Identification of biological quality elements at catchment scale 10. Hydro ecosystem functioning- ecological flows 11. Evaluation of ecosystem services at catchment scale 12. Engineering infrastructure and Nature Based Solutions towards water resources resilience 13. Policy initiatives and Demonstration of case studies.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%)

	• Participation & in-semester exercises (10%)

Course title	Aquatic Chemistry and biology
Semester	1st
Content and purpose of the course	*Content:* Classification of aquatic environments. Physicochemical traits of aquatic ecosystems. Interactions between physical, chemical, and biological processes. Properties of water. Chemical equilibria in natural waters. Acids, bases, alkalinity, and buffering systems. Redox processes in aquatic environments. Dissolved gases (oxygen, carbon dioxide, nitrogen). Carbon cycle in aquatic ecosystems. Nitrogen cycle (nitrification, denitrification, nitrogen fixation). Phosphorus and sulfur cycles. Sediment-water interactions. Role of microbes in elemental cycling. Nutrient dynamics and primary productivity. Nutrient sources and transformations. Measurement of primary productivity. Eutrophication processes and consequences. Aquatic microorganisms (bacteria, archaea, protozoa). Phytoplankton and zooplankton communities. Benthic organisms and macrophytes. Food webs and trophic interactions. Microbial processes in aquatic ecosystems. Microbial metabolism and diversity. Decomposition and organic matter cycling. Role of microbes in water quality. Biofilms and microbial mats. Sources of aquatic pollutants. Heavy metals, pesticides, hydrocarbons, and emerging contaminants. Toxic effects on aquatic organisms. Bioaccumulation and biomagnification. Water quality standards and guidelines. Sediment composition and structure. Chemical processes in sediments. Benthic-pelagic coupling. Contaminant storage and release. Microbial activity in sediments. Effects of temperature changes on water chemistry. Ocean acidification. Changes in stratification and mixing. Impacts on aquatic biodiversity and ecosystem services. Chemical analysis (nutrients, metals, organic compounds). Microbial identification. Water quality assessment and monitoring. Ecosystem health indicators. *Purpose:* The purpose of Aquatic Chemistry and Biology course is to provide to students an integrated knowledge on the chemistry and biology of the Aquatic Ecosystems. The course also explains how water properties, chemical equilibria, element cycles, and microbial processes interact with nutrient dynamics, productivity, and ecosystem health of a freshwater and marine environments. Additionally, students will become familiar with the aquatic ecosystem diversity, food webs, ecosystems' health and sediment-water interactions.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological

	concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Remote Sensing and Water Resources
Semester	1st
Content and purpose of the course	The course examines changes in water within the landscape and introduces both traditional and remote sensing methods for observing and modelling hydrological processes. It explains what aspects of the water cycle can and cannot be measured directly, and how satellite observations complement or, in some cases, replace ground-based measurements. Students are introduced to satellite missions used to measure soil moisture, total water storage, and river and reservoir water levels. The course covers water resources availability and demand assessment using data from observations, models, and remote sensing, with emphasis on the use of satellite data for water management. Students learn basic remote sensing theory and become familiar with different remote sensing products and data types relevant to water studies. Practical exercises focus on collecting and analyzing remote sensing data using desktop and cloud-based processing tools, performing spatial and temporal analyses, and comparing satellite data with other datasets to assess accuracy. The course concludes with a case study in which students apply these methods to quantify water availability and water demand using multiple data sources.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Surface and groundwater Hydraulics
Semester	1st
Content and purpose of the course	Purpose The purpose of the course is to provide students with an advanced theoretical and practical understanding of the fundamental principles governing the motion of water in both surface water bodies and subsurface porous media. Content - **Introduction and Fundamental Principles in Surface Hydraulics** Conservation laws of mass, momentum, and energy in open-channel flow. Specific energy concept and specific energy diagrams. - **Uniform Flow and Flow Resistance** Uniform flow conditions. Manning's and Chezy's equations. Composite roughness coefficients and basic principles of stable channel design. - **Critical Flow and Froude Number** Definition of critical flow. Froude number and flow regime classification. Iimplementation of the energy equation and the theory of critical flow. - **Hydraulic Jump** Application of the momentum conservation principle. Specific force concept. Hydraulic jump in prismatic (rectangular) channels and submerged hydraulic jump. - **Gradually Varied Flow (GVF)** Water surface profile classification (M, S, C, H, A profiles). Governing equations and numerical solution using the Standard Step Method. - **Specific hydraulic structures:** energy dissipation, and flow over weirs and spillways. - **Unsteady Flow in Open Channels** Saint-Venant equations. Kinematic and diffusion wave approximations. Introduction to flood routing concepts. - **Introduction and Fundamental Principles in Groundwater Hydraulics** Water in the subsurface and aquifer types (confined, unconfined, and leaky aquifers); The groundwater cycle; Hydraulic properties of aquifers (storativity, hydraulic conductivity, transmissivity); Governing principles and laws of groundwater flow (Darcy's Law); Piezometric maps and groundwater flow networks. - **Governing Equations of Groundwater Flow** Derivation of the general flow equation for steady-state and transient conditions; Key elements for solving the flow equation and solution methods (analytical and numerical); Analytical solutions for steady-state groundwater flow in confined and unconfined aquifers. - **Well Hydraulics – Steady State** Groundwater pumping and radial flow toward wells; Steady-state radial flow to wells in confined and unconfined aquifers (Thiem equation); Steady-state flow to partially penetrating wells. - **Well Hydraulics – Transient State**

	Transient radial flow to wells and time-dependent drawdown in confined and unconfined aquifers (Theis and Cooper-Jacob methods); Pumping test analysis and estimation of aquifer parameters. - **Advanced Groundwater Topics** Superposition in time for variable pumping rates; Flow to wells near hydrogeological boundaries (impermeable or constant-head boundaries) using the method of images. **- Numerical Modeling** Numerical solution of groundwater flow equations; The finite difference method; Model setup: conceptualization, parameter assignment, calibration, sensitivity analysis; Overview of numerical modeling tools and demonstration of groundwater flow simulation software.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	**Strategies for protection of freshwater ecosystems**
Semester	2nd
Content and purpose of the course	Content: Types and sources of pollution for aquatic ecosystems. Process of self-purification of river waters, and its disturbance anthropogenic river alterations. Ecohydrological approach to lake management. Role of the ecotonal zones in water quality protection of aquatic ecosystems. Water retention in the environment and its importance for water quality in lakes. Determination of nutrient budget for lake protection. Ecological effects of river water storage in dam reservoirs, cascades and preliminary reservoirs. Methods of aquatic ecosystem protection from the sewage and stormwater negative influence, including conventional and nature-based solutions. The influence of agriculture practices on nutrient cycling in the catchment, and nature-based practices aiming at lake water quality protection. Angling and other forms of recreation activities as a source of nutrients for lakes and rivers. Designing of protection zones for water bodies with special attention for drinking water intakes. Planning of protective measures for an aquatic ecosystem.

	Purpose: The course will provide knowledge on various types of threats to freshwater waters that contribute to their deterioration. The course will present methods and practices aiming at prevention of water pollution and protection of aquatic ecosystems from progressive degradation, including nature-based solutions.
Mode of course delivery	A combination of several teaching methods: lectures, seminars and practical classes during which students learn about the course topics and independently complete a project involving the proposal of appropriate water protection strategies for a specified lake.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as applied exercises, which assess the understanding of pollution of freshwater waters, hydrobiological processes in lakes and rivers, and the application of strategies for protection of freshwater ecosystems to real-world problems. The final grade is derived from: • Written final examination (40%) • Assignments / Case Studies (30%) • Project (30%)

Course title	**Lake restoration**
Semester	2nd
Content and purpose of the course	Content: Lake status diagnosis in relation to the impact of catchment on lake water quality (biological indexes in the assessment of ecological status, nutrient content, Carlson trophic state index, indexes of catchment natural conditions impact on lakes, indexes of lake susceptibility to degradation). Importance of internal phosphorus loading for lake functioning. Determination of key causes of lake deterioration that need to be addressed in restoration process. Technical methods of lake restoration (hypolimnetic withdrawal, aeration, sediment dredging, sediment capping), including its advantages and disadvantages as well as their applicability to different water ecosystems. Chemical methods of lake restoration (phosphorus precipitation with various agents, nitrate treatment with various agents) including its advantages and disadvantages as well as their applicability to different water ecosystems. Biological methods of lake restoration (biomanipulation, artificial floating islands, barley straw, effective microorganisms, plant extracts) including its advantages and disadvantages as well as their applicability to different water ecosystems. Innovative methods of lake restoration with the analysis of its effectiveness (hydrogen peroxide, ultrasounds, chemical aiming at cyanobacteria destruction). Selection of appropriate restoration methods for a specific lake ecosystem.

	Evaluation of the effectiveness of lake restoration projects based on case studies. Environmental consequences of restoration treatment – side effects for hydrobionts. Purpose: The purpose of the course is: (i) to provide to students an extensive knowledge on the methods used in lake restoration, including its specifics, pros and cons and applicability, (ii) to develop the ability to select proper methods for a specific conditions in the lake, (iii) to critically assess the effectiveness of lake restoration methods based on case study analysis.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, group assignments, as well as short-term applied exercises (assignments), which assess the understanding of specifics of lakes restoration methods, data processing skills for lake status diagnosis and key causes of deterioration determination, and the application of lake restoration methods for specific lake as well as the assessment of restoration program effectiveness. The final grade is derived from: • Written final examination (50%) • Assignments / Case Studies (20%) • Project (30%)

Course title	**Transformation and restoration of rivers**
Semester	2nd
Content and purpose of the course	Content: Factors responsible for the functioning of river ecosystems under natural and anthropogenically altered conditions. Basic principles of the river continuum theory and its transformations as a result of the disturbances induced by dam reservoirs and other barriers. The variability of the organisms communities along a river and its adaptations to abiotic habitat characteristics, geological structure, hydrological features and anthropogenic transformation in the river bed and valley. Threats to organisms and habitats from human-induced agricultural, industrial and recreational activities. The role of different modifications of river bed and river valley in proper river functioning. Hydromorphological alterations of river bed and river valley according to proper methods. Anthropogenic transformations of river valleys, significantly affecting their ecological status, and possibilities of their reduction by means of restoration methods. Overview of methods and techniques for protection and restoration measures, in relation to river channels and valleys. Limitations of methods and facilities necessary to improve the ecological status of the river. Analysis and planning of appropriate treatments for the protection and restoration of a particular river.

	Purpose: Th aim of the course is to enable students to contribute to sustainable river management in the changing world and to promote the idea of river protection and restoration. This purpose will be reached by equipping students with thorough understanding of river ecosystems and implications of anthropogenic impacts, as well as with practical abilities to assess results of these impacts and design countermeasures.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures, field work and the preparation of assignments.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a final course project, written exam and smaller individual and group assignments, which assess the understanding of hydrological and ecological concepts, and the application of these concepts to real-world problems. The final grade is derived from: • Written exam (40%) • Final project (50%) • Participation & in-semester exercises (10%)

Course title	**Functioning of aquatic ecosystems under natural conditions and anthropogenic stress**
Semester	2nd
Content and purpose of the course	Content: Diversity of aquatic ecosystems and differences in the functioning of their various types. Main abiotic factors shaping the functioning of aquatic ecosystems. Hydrobionts – diversity, adaptations, interactions and basic ecological concepts. Aquatic ecosystems at the landscape scale and the role of catchment area. Pollution of aquatic ecosystems, including nutrient pollution and eutrophication. The impact of climate change on the functioning of aquatic ecosystems. Other anthropogenic pressures on aquatic ecosystems and their impacts (eg. noise, light, microplastics). Methods to study aquatic ecosystem functioning, and sources of data and information. Purpose: The purpose of the course is to provide to students a knowledge on the principals of aquatic ecosystems functioning in natural conditions as well as the alterations induced by anthropogenic stressors by means of hydrobionts reactions and adaptations.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and

	the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (50%) • Assignments / Case Studies (40%) • Participation & in-semester exercises (10%)

Course title	**Monitoring of ecological status of lakes and rivers**
Semester	2nd
Content and purpose of the course	Content: A historical approach to assessing aquatic ecosystems based on biocoenoses. Water Framework Directive and assessment of aquatic ecosystems quality - approach for assessing the ecological status of freshwater ecosystems. Biological diversity as indicator of ecosystem quality: Shannon Index, Margalef Index Simpson Index. Standard methods for the monitoring and evaluation of ecological state of freshwater bodies - research methodology, practical implementation of assessment indexes: – the use of algae index to assess the ecological status of rivers and lakes – the use of epiphytic diatoms index to describe of trophic state of lakes and rivers. – macrophytes in evaluation ecological status of lakes and rivers (ESMI and MIR indexes). – the use of benthic macroinvertebrate index in assessment of river water quality (LMI and BMWP index). – fish communities in the assessment of ecological status of rivers and lakes (EFI and LFI index) Assessment of water quality based on chlorophyll a – spectrophotometric determination method. Abiotic elements in lakes and rivers quality assessment - Lakes and Rivers Habitat Survey. Basic physical and chemical indicators of water quality: forms of phosphorus and nitrogen, pH, electrical conductivity. Algae and mussel tests for evaluation toxicity of the substances contained in water. Purpose: The purpose of the course is to provide to students an comprehensive knowledge on the modern approach for the assessment of quality and ecological status of freshwater ecosystems. The course provides theoretical foundations for the use of a range of biotic indices. However, the main focus of the course is the practical implementation of methods, starting with research planning, field and laboratory analyses, and calculations allowing for the creation of a range of biotic indices. The course will also provide practical skills in sampling, performing analytical procedures and assessing the physical and chemical condition of

	aquatic ecosystems.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	**Aquatic habitats of NATURA 2000**
Semester	2nd
Content and purpose of the course	Content: Diverse approaches to the protection of aquatic ecosystems. EU Habitats Directive - the NATURA 2000 directive. Identification and protection of valuable aquatic ecosystems based on plant communities. Relation between water/sediments chemical and physical properties and of aquatic biocenoses. Alternative ecological states of lakes. Potential human impact on the changes of aquatic habitats. The specificity of biological diversity and the functioning of diverse aquatic habitats. Wetland habitats as freshwater resources. Biological, hydrological and chemical relation between freshwater ecosystems and wetlands. Habitats 2000 characteristic plant taxa and their environmental requirements: – functioning and protection of softwater lakes with isoetids [Habitat 3110, Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorarae)] – functioning and protection of hardwater lakes [Habitat 3140, Hard oligo-mesotrophic waters with benthic vegetation of Chara spp] – functioning and protection of eutrophic lakes and ponds [Habitat 3150, Natural eutrophic lakes with Magnopotamion or Hydrocharition type vegetation] – functioning and protection of coastal lakes and lagoons [Habitat 1150, Coastal lagoons] and slack dune pools – functioning and protection of humic lakes [Habitat 3160, Natural dystrophic lakes and ponds] – functioning and protection of Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation [Habitat 3260].

	Purpose: The purpose of the course is to provide to students an extensive knowledge on the diverse approach for the ecosystems protection with particular attention to the habitat-based approach - NATURA 2000. Acquiring knowledge about catchment factors or physical and chemical properties of water responsible for the formation of specific types of habitats. Paying attention to the particular conservation needs of specific habitats. To familiarize students with the relationships between freshwater ecosystems and adjacent wetlands, and the role of marshlands in maintaining homeostasis and protecting lakes and rivers.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Vulnerabilities: Assessing the vulnerabilities of a water resource in a context of global change
Semester	2nd
Content and purpose of the course	The course is divided into three parts: 1. Presentation of different types of models and the basics of analytical and numerical calculation 2. Water resources in the context of climate change: work on articles in English related to global change (forest fires and water quality, changes in resource quality and quantity, etc.) 3. Water resources in karst environments: exploitation and vulnerability: artificial tracing and dual-medium pumping tests A case study focuses on the Fontaine de Vaucluse hydrosystem. After identifying the vulnerabilities of the Fontaine de Vaucluse watershed, students work on two aspects: (1) Vulnerability of water quality: Use of the Paprika method to study the vulnerability of the aquifer to different scenarios: changes in crop areas, industrial projects. (2) Vulnerability of resource quantity: Use of the karstmod rainfall-runoff modeling software to assess changes in water resources under different

	scenarios (changes in land use, pressure on water demand), work on the uncertainties associated with these scenarios.
Mode of course delivery	Combination of in-person (80%) and distance learning (20%), delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** French and English **Assessment methods:** A combination of written examinations, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of vulnerability concepts, data processing skills, and the application of vulnerability models to real-world problems. The final grade is derived from: • Written examination and Assigments (60%) • Case Studies (40%)

Course title	Hydrogeology: Understanding and measuring water and solute flows in aquifers
Semester	2nd
Content and purpose of the course	This course is divided into several interrelated parts: 1. Measurement and quantification of aquifer recharge 2. Water and solute transfer in aquifers 3. Hydrochemical and isotopes tracing, mixing, and residence time in aquifers 4. Hydrogeophysics 5. Geology applied to hydrogeology Case study: students will apply and combine the various tools acquired in the course unit (geology, hydrochemistry, hydrogeophysics) to understand the Angles hydrosystem (relation between the limestone massif, the alluvial plain and the Rhône river). The activity takes place in the field over a week and is organized into daily rotating workshops. The ultimate goal is to build a model of the functioning of the aquifer and assess its vulnerability. This result must be obtained by combining the various investigation techniques, with this cross-disciplinary analysis being assessed by each group in an oral presentation session.
Mode of course delivery	Combination of in-person (90%) and distance learning (10%), delivered through lectures and the preparation of an assignment
Student assessment methods	**Language of assessment:** French **Assessment methods:** A combination of a written examinations, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrogeological concepts, data processing skills, and the application of hydrogeological models to real-world problems.

	The final grade is derived from: • Written examinations (30%) • Assignments (40%) • Case Studies (30%)

Course title	Internship
Semester	2nd
Content and purpose of the course	The goal of the internship is to apply the knowledge and skills acquired during the year in design offices, companies, public organizations, or research laboratories and discover the professional world. Students must undertake the search for an internship themselves. The internship may take place in a private or public organism. The internship may take place in France or in other countries around the world.
Mode of course delivery	internship in a private or public organism. The internship must last at least 2 months and no more than 5 months between April 1st and August 31th.
Student assessment methods	**Language of assessment:** French or English. **Assessment methods:** A combination of a written final report and an oral defense of internship. The final grade is derived from: • Written report (60%) • Oral defense (30%)

Course title	Technologies for Drinking water and Wastewater treatment
Semester	3rd
Content and purpose of the course	*Content:* Legislation, quality of drinking water, coagulation and flocculation, gravity separation, hardness removal, air stripping and aeration, adsorption, ion exchange, membrane filtration, disinfection, internal corrosion of water conduits. Activated sludge processes, nutrient removal, processing and treatment of biosolids, tertiary treatment, wastewater treatment plant design, anaerobic biological treatment processes, advance oxidation and adsorption processes, resource recovery and beneficial use, Constructed wetlands for wastewater (municipal, industrial and agro-industrial) and sludge treatment. *Purpose:* This MSc course provides knowledge regarding the design and management of water and wastewater treatment systems, focusing on physicochemical and biological processes for both drinking water and wastewater treatment. MSc students can learn about drinking water

	technologies, nutrient removal processes, biosolids processing, disinfection, resource recovery, and natural treatment systems.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Drought management and precision irrigation
Semester	3rd
Content and purpose of the course	**Course Description** This course addresses **drought analysis and irrigation management** under the increasing pressures of **climate change** on the agricultural sector. Initially, the concept of drought is examined, including its different types and the main analytical axes used for drought assessment. Emphasis is placed on **meteorological, hydrological, agricultural, and socio-economic drought**, as well as on widely used drought indices. The course also covers the **fundamental principles of irrigation**, including on-farm irrigation methods, water conveyance and distribution systems, collective and individual irrigation networks, soil properties, crop water requirements, irrigation scheduling, and the evaluation of irrigation systems. Extended periods of drought are becoming more frequent, threatening crop productivity and farmers' income. At the same time, recent advances in **sensors, telemetry, remote sensing, numerical forecasting, and machine learning / AI techniques** enable the implementation of **precision irrigation**, allowing water to be applied in the right amount, at the right time, and at the right location. In this context, **advanced irrigation practices**, such as regulated **deficit irrigation**, are also examined. **Main Course Subjects** 1. **Meteorological data acquisition and analysis** for the identification of extreme events 2. **Drought concepts and classification**: meteorological, hydrological, agricultural, and socio-economic droughts

	– Drought indices (SPI, SPEI, RDI, SDI, etc.) 3. **Irrigation fundamentals**: – Reference and actual evapotranspiration, crop coefficients – Soil properties, plant available water and soil–water–plant relationships – Crop water requirements and irrigation needs 4. **Irrigation demand and irrigation systems** – On-farm irrigation methods – Water conveyance and distribution systems – Evaluation of irrigation systems and SWOT analysis 5. **Climate change data retrieval and analysis** based on IPCC climate scenarios 6. **Soil moisture monitoring techniques** 7. **Remote sensing of crop and vegetation properties** 8. **Crop growth modeling and optimal water management**, including deficit irrigation and assessment of water productivity 9. **Key Performance Indicators (KPIs)** for precision irrigation assessment
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Impact Pressure Analysis – NbS design
Semester	3rd
Content and purpose of the course	Purpose : - To provide a consistent picture of human pressures on water bodies at the European scale, to be compared with pressure and status information under the Water Framework Directive 60/2000/EC (WFD). - To assess the effectiveness of the current mitigation measures under the climate change. - To highlight the Nature Based Solutions as a pathway towards water resources sustainability Content:

	1. Introduction on human pressures related to water resources 2. Water uses and Nexus variables (water-energy- food) 3. System of pressure Indicators at European scale (water pressure indicators) 4. Analysis of pressure type/indicator/ method of estimation (i.e Diffuse- Agriculture/ Nitrogen load/ Total N concentration) 5. Analysis of the energy pressures indicators(dams, barriers) 6. European assessments of pressure/impacts 7. Introduction to grey/hybrid and Natural Based solutions. 8. Characteristics and enabling factors for the NBS 9. Examples of NBS for agricultural water management & for biodiversity conservation 10. Conditions of the uptake of NBS (costs, benefits, social factors) 11. Governance and business models 12. Current policy initiatives at National and European scale 13. Demonstration of case studies
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Coastal Protection Design
Semester	3rd
Content and purpose of the course	The purpose of this course is to provide students with the knowledge and skills required for the design of coastal protection structures and methods. Within this context, the content of the course is appropriately structured so that, upon successful completion, students are able to: • Understand fundamental and specialized topics of wave mechanics, ocean/coastal circulation, sea level variations, and coastal sediment transport and morphodynamics. • Understand management practices in coastal zones and Watershed-

	Coast Systems. • Understand the design principles of coastal protection structures and methods. • Understand practices for the design, redesign and upgrading of coastal protection works in a changing climate. • Understand the fundamentals and application of numerical models in coastal engineering. • Understand the fundamentals and application of data acquisition/ analysis methods and tools in coastal engineering. • Integrate and apply acquired knowledge to coastal protection design.
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** Individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of coastal engineering concepts, The final grade is derived from: • Assignments / Case Studies (70%) • Participation & in-semester exercises (30%)

Course title	DSS for Integrated Water Resources Management
Semester	3rd
Content and purpose of the course	**Course Description**: This course introduces the theoretical foundations and practical applications of Decision Support Systems (DSS) in the context of Integrated Water Resources Management (IWRM). Emphasis is placed on the systemic analysis of water resources, sustainability principles, and the use of quantitative tools for supporting water-related **Main Course Topics** 1. Introduction to Integrated Water Resources Management (IWRM) ○ Fundamental concepts and principles ○ Systemic analysis of water resources systems ○ Sustainability, efficiency, and resilience in water management 2. Climate Variability and Trend Detection ○ Time series analysis of hydroclimatic variables ○ Detection of climate trends and extremes 3. Water Demand Analysis ○ Agricultural water demand and irrigation requirements ○ Urban water demand and management of urban water systems ○ Urban water demand forecasting using linear regression ○ Environmental flow 4. Water Scarcity and Drought Indicators

	○ Indices for water scarcity and drought assessment 5. Surface Water Potential and Water Balance Modeling ○ Estimation of theoretical surface water potential ○ Calibration of surface water balance models and validation ○ Introduction to representative models (Giakoumakis et al., 1991; GR2M; UTHBAL, etc.) 6. Optimization Techniques in Water Resources Management ○ Linear programming ○ Heuristic and metaheuristic methods ○ Multi-objective and multi-criteria optimization 7. Reservoir and Reservoir System Management ○ Reservoir operation and water balance analysis ○ Performance assessment using reliability, vulnerability, and resilience concepts 8. Multi-Criteria Decision Analysis (MCDA) in IWRM ○ Distance-based methods (compromise programming, VIKOR, TOPSIS etc) ○ Outranking methods 9. Criteria Weighting Techniques ○ Entropy method ○ Standard deviation method ○ Analytic Hierarchy Process (AHP) ○ Introduction to Analytic Network Process (ANP) 10. Integrated and Combined DSS Applications • Coupling hydrological models, optimization, and MCDA • DSS design and implementation for real-world water management problems 11. Fuzzy sets and logic in water decision management (introduction)
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.
Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Socioeconomical issues in Water Resources Management
Semester	3rd

Content and purpose of the course	This course explores the socioeconomic factors influencing water resources management, focusing on the links between water, economic development, social equity, and governance. Emphasis is placed on policy analysis, institutional frameworks, stakeholder participation, and decision-making tools for sustainable and equitable water management. **Learning Objectives** • Upon successful completion of this course, students will be able to: • Analyze the socioeconomic drivers of water demand, allocation, and use. • Apply economic principles to water valuation, pricing, and cost recovery. • Assess the role of institutions, governance, and policy instruments in water management. • Evaluate equity, gender, and poverty dimensions in access to water resources. • Examine conflicts and cooperation in shared and transboundary water systems. • Integrate socioeconomic analysis into water resources planning and management decisions. **Content** 1. Introduction to Socioeconomic Aspects of Water Management 2. Water as an economic and social good; global and regional challenges. 3. Water Demand, Supply, and Allocation 4. Economic Valuation of Water Resources 5. Water Pricing, Financing, and Cost Recovery 6. Water Governance and Institutional Frameworks 7. Stakeholder Participation and Social Inclusion 8. Equity, Gender, and Poverty Dimensions 9. Water Conflicts and Cooperation 10. Climate Change and Socioeconomic Impacts 11. Integrated Water Resources Management (IWRM) 12. Case Studies and Policy Analysis 13. Future Challenges and Emerging Issues
Mode of course delivery	Combination of in-person and distance learning, delivered through lectures and the preparation of an assignment.

Student assessment methods	**Language of assessment:** English **Assessment methods:** A combination of a written final examination, individual and group assignments, as well as short-term applied exercises (assignments), which assess the understanding of hydrological concepts, data processing skills, and the application of hydrological models to real-world problems. The final grade is derived from: • Written final examination (60%) • Assignments / Case Studies (30%) • Participation & in-semester exercises (10%)

Course title	Master thesis
Semester	4th
Content and purpose of the course	After the completion of the master's thesis, participants should be able to: • Have in-depth knowledge of the topic addressed by their thesis • Have a holistic understanding of the subjects covered by the Master's Program • Search for and evaluate international scientific literature • Analyze data • Design plans for integrated water resources management
Mode of course delivery	Thesis preparation, distance learning
Student assessment methods	**Language of assessment:** English **Assessment methods:** oral examination (100%)

Article 21
Assessment of educational activities

1. The assessment of student performance in individual courses and other educational activities of the Post-graduate Master's Programmes (PMPs) shall be carried out by means of written examinations, oral examinations, the preparation and submission of projects/assignments, or a combination of the above, in accordance with the Examination Regulation of DUTH. The exact form of assessment shall be determined by the course instructor(s), taking into account the nature and learning outcomes of each course.
2. The assessment methods and criteria for each course shall be clearly specified in the course Outline (syllabus) and shall be communicated to students by the responsible or coordinating faculty member at the beginning of the teaching period of the course.

3. The timing and duration of the examination periods of the PMPs shall be determined by the Study Programme Committee (SPC), following a recommendation by the Coordination Committee (CC).
4. The grading scale for the assessment of post-graduate students (GSs) shall range from zero (0) to ten (10), with ten (10) being the highest grade. Each University will keep its grading scale, but all course grades will at end will be transported to Greek grading scale.
5. Assessment may be conducted either after the completion of each academic semester or upon completion of the teaching of each course or educational activity, in accordance with the provisions of the Internal Operating Regulation of each Programme and the respective course Outline.
6. Courses assessment will follow the rules of each University.
7. For courses in which assessment is based on oral and/or written final examinations, the examinations will be conducted according to the rules of each University.
8. In courses where part of the assessment involves the preparation and submission of a project/assignment, the topics shall be announced in a timely manner, and the deadlines for submission shall be clearly stated in the course Outline and in the timetable communicated to the students.
9. After the completion of the examination process, examination scripts, written assignments and any other assessment material, provided they are not returned to post-graduate students, shall be retained and archived for a period of twelve (12) months.

Article 22
Internship Based Master's Thesis

1. The IPMP includes the mandatory preparation of an internship based Master's Thesis, this shall be carried out in the fourth semester in accordance with the approved study programme. The three Universities should provide a sufficient number of scientific referees (supervisors) to cover all students' internship based Master thesis, according to their selected specialization wills. During selection SPC will ensure that no discrimination criteria will apply. It is possible that an internship based Master thesis could be supervised by two Professors from all three Universities.
2. The subject of the internship based Master's Thesis shall fall within the thematic scope of the PMP and shall make substantial use of the knowledge, skills and competencies acquired by the post-graduate student (GS) through the courses and other educational activities of the Programme.
3. Following a call issued by the Coordination Committee (CC) or the Study Programme Committee (SPC), each GS shall submit an application to the Secretariat of the ISPS or directly to the private or public organization proposing the internship based Master Thesis, indicating the proposed title of the Master's Thesis, the proposed scientific referees (supervisors) and any other relevant information or supporting documents required by the Internal Operating Regulation.

4. GSs who fail to submit the application within the prescribed deadline shall, at their own responsibility, postpone the commencement of the preparation of the Master's Thesis by at least one (1) academic semester.
5. The Coordination Committee shall examine each application and forward it, together with its recommendation, to the Assembly of the Department or to the SPC, which shall appoint the scientific referees (supervisors) and establish the three-member Supervisory/Examining Committee, of which the scientific referees (supervisors) shall be a member.
6. The following categories of teaching and research staff shall be eligible to supervise Master's Theses:
   a) members of the Faculty of the Department or of other Departments of DUTH or of other Higher Education Institutions in Greece or abroad, as well as members of the Laboratory Teaching Staff, Special Technical Laboratory Staff and Special Teaching Staff of the Department or of other Departments of DUTH or of other Higher Education Institutions or Higher Military Educational Institutions (HMEIs), with additional employment beyond their statutory obligations where the PMP has tuition fees;
   b) Emeritus Professors or retired members of the Faculty of the Department or of other Departments of DUTH or of other Higher Education Institutions in Greece or abroad;
   c) holders of joint teaching positions (joint chairs);
   d) adjunct professors;
   e) visiting professors or visiting researchers;
   f) researchers and specialized scientists of research and technological organizations under Article 13A of Law 4310/2014 (Government Gazette, Series I, No. 258), or of other research centers and institutes in Greece or abroad, provided that they hold a doctoral degree;

7. The competent governing body of the PMP may decide to assign the supervision of Master's Theses also to members of the Faculty, members of the Special Teaching Staff and the Laboratory Teaching Staff, Emeritus Professors and retired members of the Department who have not undertaken teaching duties within the PMP.
8. In exceptional cases of objective impossibility to exercise supervisory duties for serious reasons (e.g. long-term illness, retirement, permanent relocation), the replacement of the scientific referee (supervisor) or of a member of the three-member Supervisory/Examining Committee may be approved by decision of the Assembly of the Department or of the SPC, following a recommendation of the CC.
9. The Master's Thesis document shall meet the standards and structure of a scientific study and shall include, at a minimum:
   - a clear description of the subject and objectives of the internship;
   - a description of the methodology followed and any assumptions made;
   - a presentation and analysis of the findings or results;
   - a complete and properly formatted bibliography;

- any additional supporting or explanatory material (figures, diagrams, tables, photographs, images, appendices, etc.) that may be necessary for the scientific completeness of the work.

10. As a rule, the Master's Thesis shall be written in English and shall be accompanied by a short abstract (approximately 300 words) in Greek or French or Polish depending on the academic referee of the Thesis.
11. Upon completion of the Master's Thesis, the GS shall submit to the scientific referee (supervisor) and to the other two members of the three-member Committee copies of the final version of the Thesis, in the form and number specified by the Programme.
12. The GS shall also submit the plagiarism report generated by the designated plagiarism detection software (e.g. Turnitin), indicating the results of the check, together with a Solemn Declaration stating that the Master's Thesis is the product of their own work and is not, in whole or in part, the result of plagiarism.
13. After reviewing the Master's Thesis, the three-member Examining Committee shall set the date for the public defence and assessment of the Thesis.
14. Following the presentation and defence of the Master's Thesis, the Examining Committee shall determine the final grade and submit it to the Secretariat of the Department, together with the GS's Solemn Declaration referred to in paragraph 11.
15. In the event of a negative assessment of the Master's Thesis, the GS shall have the right, in the next academic year, to change the subject and the scientific referee (supervisor), in accordance with the Internal Operating Regulation of the Programme.
16. The final, complete electronic version of the Master's Thesis shall be submitted to the Library of DUTH and to the archive maintained by the Department. The Secretariat of the Department shall designate a person responsible for collecting all Master's Theses in digital form. The Secretariat shall be responsible for maintaining the digital archive until the full development and operation of the Central Digital Repository of DUTH.
17. The Internal Operating Regulation of each PMP shall specify, inter alia, the required length, font, formatting, citation style and any other matter related to the technical presentation and structure of the Master's Thesis.
18. Any act of copying, plagiarism or falsification, in whole or in part, during the preparation of the Master's Thesis or regarding the results of the research project shall constitute a disciplinary offence and shall result in expulsion from the PMP, by decision of the Assembly of the Department.

If such a violation is discovered after the award of the Master's Degree, the Assembly of the Department shall initiate the procedure for the revocation of the Master's Degree, in accordance with the applicable legal framework.

Article 23
Internships

1. Post-graduate Master's Programmes (PMPs) of the second cycle of studies may provide for student internships as a mandatory or optional educational activity of the Programme.
2. The Internship shall be coordinated by the Internship Manager, in cooperation with the academic heads of the specialization or orientation and the supervising staff, who shall primarily come from the Department responsible for the Programme.
3. The detailed procedure for the organization, implementation, monitoring and assessment of internships shall be governed by the Internship Regulation of DUTH and by the specific provisions of the Internal Operating Regulation of each PMP.

Article 24

Completion of Studies - Awarding of Master's Degree

1. Postgraduate students (GSs) shall complete their studies and be awarded a Master's Degree or a certificate of completion of studies when:
   a) they have completed at least the minimum number of academic semesters required for the award of the Master's Degree;
   b) they have been successfully examined in all courses provided for in the approved study programme, in accordance with the terms and conditions set out therein;
   c) they have obtained the total number of ECTS credits required, depending on the duration and structure of the Postgraduate Master's Programme (PMP).

In particular, for the award of the Master's Degree or a certificate of completion of studies, GSs must:

- have successfully completed all compulsory courses of the PMP;
- have successfully completed the required number of elective courses;
- have successfully completed any other educational activity provided for by the PMP (such as the Master's Thesis, internship, practical training, etc.), where applicable.

2. In order for the Master's Degree or certificate of completion of studies to be issued, and in addition to fulfilling the academic requirements above, GSs must have settled all outstanding obligations towards the services of the Institution. In particular, they must:
   - have no outstanding financial obligations towards the PMP;
   - have returned all books borrowed from the Library of DUTH and have submitted the final version of their Master's Thesis (where applicable) in digital form to the Institutional Repository of DUTH, in accordance with the Operating Regulation of the Library and Information Centre, the decisions of the Library and Information Centre Committee and the decisions of the Senate;
   - if they have been granted accommodation in the student housing of residence of the Institution, have completed the procedure for vacating and returning the room, in accordance with the relevant Regulation of the Student Halls of DUTH (this condition does not apply to fully distance-learning PMPs);
   - have returned any equipment, books and educational material borrowed from the laboratories of the Department/School or of the Institution;

- have returned their academic identification card to the Secretariat of the Department;
- have no outstanding financial obligations towards any other service of the Institution (e.g. reimbursement of part or all of an Erasmus grant, where this has been requested, etc.).

3. The final grade of the Master's Degree shall be calculated based on the grades obtained in the courses of the study programme and the grade of the Master's Thesis, where a Thesis is included in the Programme.
   The precise method of calculating the final degree grade (weighting coefficients, consideration of the dissertation mark, rounding rules, etc.) shall be specified in the Internal Operating Regulation of each PMP.
4. The Master's Degree shall constitute a public document. Its form and layout shall be determined by decision of the Senate of DUTH.

The Degree shall be signed by the Rector, the Head of the Department and the Secretary of the Department or their lawful alternates. In the case of an interinstitutional Master's Degree, the Degree shall indicate the cooperating Higher Education Institutions and Departments awarding the Degree, shall bear the respective emblems, and shall be signed by the competent authorities of the Institution responsible for the administrative support of the PMP, as well as any other bodies provided for in the Special Cooperation Protocol.

5. Transcripts of Records and a Diploma Supplement in Greek and in English shall accompany the Master's Degree. For these, the provisions of Article 15 of Law 3374/2005 and Ministerial Decision Φ5/89656/ΒΕ/13-8-2007 (Government Gazette, Series II, No. 1466), as in force, shall apply.
6. The procedures for the award of the Master's Degree and the conduct of the graduation ceremony shall be governed by the relevant provisions of the Chapter on Ceremonial and Protocol Rules of the Internal Regulations of DUTH.

Article 25
Rights and Obligations of Postgraduate Students (GSs)

1. Postgraduate students (GSs) shall enroll in and attend the Postgraduate Master's Programme (PMP) under the terms and conditions laid down in the Internal Regulations of DUTH, the Internal Operating Regulation of the PMP and the Regulation of the Department. Acceptance and observance of these terms and conditions constitutes a fundamental requirement for the acquisition and maintenance of GS status.
2. Postgraduate students must have α valid European Health Insurance Card.
3. GSs shall enjoy the rights of students enrolled in under-graduate and doctoral study programmes, as well as any additional rights established in the Regulation on Postgraduate and Doctoral Studies. In particular, GSs:

a) shall be entitled to use the institutional e-mail services of DUTH, upon request. When they apply for DUTH institutional email, they should also accept the regulation of AU and AMU, to have access also in electronic services provided by AU and AMU;
b) shall be entitled to access the Libraries of DUTH and to use electronic resources and subscriptions (e-journals, databases, etc.) via their institutional e-mail account;
c) shall be entitled, in the context of preparing projects and Master's Theses, to use the technical infrastructure of the laboratories, the Department and DUTH, in consultation with the supervising faculty member and with the consent of the Head of the relevant unit;
d) shall have the right to participate in collective governing bodies, in accordance with the provisions of the applicable legislation;
e) may, with the consent of their supervising faculty members and based on relevant decisions of the Assembly of the Department, provide educational and other services to the Department (such as conducting laboratory or tutorial sessions, support workshops, etc.);
f) may participate in research projects and programmes of DUTH and receive scholarships or other financial support within the framework of co-funded, self-funded or other projects/programmes;
g) may participate in mobility programmes through ERASMUS+ and receive scholarships or other financial support within the framework of co-funded, self-funded or other projects/programmes;

4. The Department of DUTH shall actively ensure equal access for GSs with disabilities and GSs with special educational needs. It shall take all appropriate measures to ensure the accessibility of the Programme and shall provide, where necessary, reasonable adjustments, facilitations or adaptations to support their participation in the educational process and the completion of their studies.
5. GSs shall have, inter alia, the following obligations:
   a) to attend regularly the courses and educational activities of the PMP study programme;
   b) to submit the required projects and assignments within the specified deadlines;
   c) to participate in the examinations and assessment procedures provided for in the Programme;
   d) to observe the principles of academic integrity and ethics, to respect and protect the premises, facilities and equipment of DUTH, to contribute to maintaining cleanliness and orderliness in the University environment and to inform the supervising faculty member or the Head of the Department of any relevant problems;
   e) to be informed of and to comply with the Academic Code of Conduct, the Internal Regulations of DUTH, the specific Operating Regulations of the Institution, the decisions of the governing bodies of the PMP, the Department and DUTH that concern them, and to implement them consistently and responsibly;
   f) to be informed about the PMP in which they are enrolled, the academic calendar and the structure and content of the educational process they follow;
   g) to be aware of the structure, responsibilities and competences of the administrative services of DUTH and of the Department;

h) to fully meet all their academic and administrative obligations towards DUTH and to promote and support the reputation and image of the Institution through their academic conduct and achievements;
i) to seek active participation in the international academic community by attending conferences, workshops and seminars and, where possible, by presenting their research work;
j) to participate in seminars, lectures or conferences organized by the Department or the School and, in every publication, presentation, announcement or other form of dissemination of work produced within the framework of the PMP, to use the Department/School of DUTH as their academic affiliation;
k) in PMPs with tuition fees, to pay the tuition fees in accordance with the provisions of the Internal Operating Regulation of the PMP and the relevant decisions of the governing bodies;
l) in the case of distance-learning PMPs, to dispose of and use the necessary electronic equipment for their effective participation (such as a desktop or laptop computer with camera, speakers or headphones, microphone and adequate internet connection) and, during synchronous online teaching sessions, to keep their camera turned on, unless otherwise specified for justified reasons.

6. Where GSs fail to fulfil their obligations, the Director of the PMP shall notify them in writing of the specific obligations not complied with and shall inform the Coordination Committee (CC) accordingly. If, after a reasonable period of time, the GS does not take corrective action, the Assembly of the Department may, following a recommendation from the CC, decide to remove the GS from the Registers of the Department and thereby terminate their status as a postgraduate student of the Programme.

Article 26
Expulsion of Postgraduate Students

1. Decisions concerning the re-examination of courses not successfully completed and the expulsion of postgraduate students (GSs) shall be taken by the Study Programme Committee (SPC).
2. The terms and conditions of re-examination, as well as the specific reasons and procedures for expulsion, shall be defined in detail in the Internal Operating Regulation of the PMP and in the Regulation on Postgraduate and Doctoral Study Programmes.
3. Indicative reasons for the expulsion of GSs include, in particular:
   a) insufficient academic progress of the GS, as evidenced by non-participation in the educational process (e.g. repeated unjustified absences from courses, failure to participate in examinations or mandatory educational activities);
   b) exceeding the maximum permitted duration of studies in the PMP, as defined in the establishing decision and in the Internal Operating Regulation of the Programme;
   c) negligent or repeated failure to fulfil other obligations laid down in the relevant Regulations and decisions of the governing bodies of the PMP, the Department and the Institution;

d) conduct that violates the principles of academic integrity and ethics, in breach of the applicable legal provisions and the Code of Conduct of DUTH;
e) expulsion at the request of the GS, following a written declaration of withdrawal from the Programme.

Article 27
Scholarships – Awards of excellence – Compensatory Scholarships

1. Scholarships or awards of excellence may be granted to Graduate Students (GSs) following a decision of the Study Programme Committee (SPC) in the case of interdepartmental, interinstitutional, or joint PGMPs.
Scholarships and awards of excellence shall be granted based on objective and transparent criteria, which shall be specified in the Internal Rules and Regulations of the PGMP, together with the weighting of each criterion and the required supporting documentation.

1.1. Indicative criteria for awarding scholarships
Academic criteria:
a) *Completion of studies within the prescribed duration*
b) *Grade point average (for one or more semesters)*
c) *Grade of the first-cycle degree*
d) *Recent academic performance (awards, honors, distinctions)*
Financial criteria:

- Taxable income

Social criteria:
a) Divorced students with dependents (children).
b) Students with special needs
c) Students from single-parent families.
d) Students who have lost both parents and are not older than twenty-five (25) years of age.
e) Students from large families
f) Sibling students

1.2. Awards of Excellence
Awards of excellence shall be granted exclusively based on academic criteria (indicatively: graduation grade, publications, conference presentations, etc.).
Process:
1.2.1. Following a recommendation by the Coordination Committee (CC) of the PMP, a call for applications for scholarships and/or awards of excellence shall be issued.
Applicants shall complete all mandatory fields in the application form and submit the necessary supporting documentation to the Secretariat of the Department within the deadlines set in the call. The application shall constitute a Solemn Declaration under Law 1599/1986.
1.2.2. The Coordination Committee shall evaluate and rank candidates based on the criteria set out in the Internal Rules and Regulations of the PMP and shall submit the ranked list to the Assembly or the SPC.

1.2.3. The maximum number of scholarships and awards that may be granted in each PMP is set at thirty percent (30%) of admissions per semester.

2. Compensatory Scholarships

2.1. Compensatory scholarships may be awarded to GSs of DUTH for the provision of teaching, research, scientific, administrative, technical, or other support services related to the activities of the Institution.

The cost of compensatory scholarships may be charged to the budgets of projects or programmes funded by national, private, international, or own resources of Article 230 of Law 4957/2022, in accordance with:

- the applicable legislation,
- the Internal Rules and Regulations of DUTH,
- the provisions of the present Regulation,
- the Study Regulation of the PMP,
- the Management and Financing Guide of the Special Account for Research Funds of DUTH,
- any specific regulatory framework of the funding body, and
- decisions of the competent university authorities.

2.2. Tuition fee exemption as compensatory support

By reasoned decision of the Assembly of the Department, following a recommendation from the Coordination Committee of the PMP, GSs may be exempted, in whole or in part, from paying tuition fees, in return for providing work to the PMP or to the Institution.

Details of the implementation of this provision may be set out in the Internal Rules and Regulations of the PMP.

Article 28
Graduate Student Complaint/Objection Management Mechanism

The management of complaints and objections submitted by Graduate Students (GSs) shall be governed by the provisions of the Complaints Regulation of DUTH.

All procedures, stages of examination, competent bodies, deadlines, and modes of submission and response shall be carried out in accordance with the applicable institutional Complaints Regulation, which ensures transparency, impartiality, confidentiality, and the safeguarding of the rights of GSs throughout the process.

Article 29
Special provisions

Any matters not explicitly regulated by this Regulation or by the Internal Rules and Regulations of the Post-Graduate Master's Programmes (PMPs) shall be governed by decisions of the Study Programme Committee (SPC).

Such decisions shall ensure compliance with the applicable national legislation, the Internal Rules and Regulations of Democritus University of Thrace, and the principles of transparency, academic integrity, and orderly operation of the PMP.

ANNEXES, PART A

(as an integral part of the Post-Graduate and Doctoral Studies Regulation of DUTH)

A.1 Enrolment Application
A.2 Part-time Study Application
A.3 Template of Post-Graduate Master's Degree Diploma of the PMPs of DUTH
A.4 Template of Diploma of Post-Graduate Studies at an Interinstitutional - Interdepartmental or Joint PMP
A.5 Template of Post-Graduate Study Diploma in English
A.6 Template of Transcript of Graduate Student of an Interinstitutional - Interdepartmental or Joint PMP
A.7 Template of Transcript of Graduate Student of an Interinstitutional - Interdepartmental or Joint PMP (incomplete studies)
A.8 Certificate of Completion of Studies
A.9 Certificate of Studies

A.1 Enrolment Application

TO
The Department of Civil Engineering of DUTH
Secretariat of the PMP titled:
"……"

ENROLMENT APPLICATION

Please include me in your candidates for entry to the PMP:
Water Resources Engineering and Ecological Engineering

Last name:……
First name:……
Father's name:……..
Place of birth:……
Date of Birth:……

Tel. No:……
FAX No: ……
e-mail: ……..

DEGREES
Graduate of the Department:……
University:……

Attached Documents:
1. Short Curriculum Vitae
2. Photocopy of ID Card / Passport
3. Copy of Degree
4. Detailed Transcript
5. Foreign language qualifications …
……
6. Reference Letter
7. …… (other documents if required)

(Place, Date)

The Applicant
(Signed)

A.2 Part-time Study Application

TO
The Department Civil Engineering of DUTH
Secretariat of the PMP titled:
"……"

PART-TIME STUDY APPLICATION

Please include me as a part-time student on the PMP titled:
"Water Resources Engineering and Ecological Engineering"

Last name:……
First name:…… ……
Father's name:……...
Place of birth:……
Date of Birth:……

Tel. No:……
FAX No: ……
e-mail: ……..

Attached Documents:
1.
2.

(Place, Date) *The Applicant*

(Signed)

A.4 Template of Post-Graduate Studies Diploma in an Interinstitutional - Interdepartmental or Joint PGMP

H E L L E N I C R E P U B L I C

ANIGNON UNIVERSITY
SOIL, WATER AND ENVIRONMENT TEACHING AND RESEARCH CENTER

DEMOCRITUS UNIVERSITY OF THRACE
SCHOOL OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING

ADAM MICKIEWICZ UNIVERSITY
FACULTY OF BIOLOGY

INTERINSTITUTIONAL - INTERDEPARTMENTAL
POST-GRADUATE MASTER'S PROGRAMME
Water Resources Engineering and Ecological Engineering

MASTER'S DEGREE

(full name) son/daughter of *(father's name)*, graduate of the Department *(name of Department)*, having successfully attended and been examined on the courses of the Interinstitutional - Interdepartmental Post-Graduate Master's Programme titled *Water Resources Engineering and Ecological Engineering* of the Civil engineering Department of the Engineering School of Democritus University of Thrace, the Soil, Water and Environment Teaching and Research Center of Avignon University and the Faculty of Biology of Adam Mickiewicz University,

Was deemed worthy of the **Post-Graduate Studies Diploma**, in the specialization *(name of specialization)* with the grade:

Assessment (e.g. Excellent)"
Grade in writing and numerically e.g. Eight and seventy hundredths (8.70)
City (city name)
Date (day- month- year)

THE RECTOR OF **DEMOCRITUS UNIVERSITY OF THRACE**	**THE HEAD OF** **CIVIL ENGINERRING DEPARTMENT** **OF DEMOCRITUS UNIVERSITY OF THRACE**
THE SECRETARY OF **CIVIL ENGINERRING DEPARTMENT** **OF DEMOCRITUS UNIVERSITY OF THRACE**	

A.5 Template of Transcript of Post-Graduate Student of an Interinstitutional - Interdepartmental or Joint PGMP

H E L L E N I C R E P U B L I C

(

ANIGNON UNIVERSITY SOIL, WATER AND ENVIRONMENT TEACHING AND RESEARCH CENTER	**DEMOCRITUS UNIVERSITY OF THRACE** SCHOOL OF ENGINEERING DEPARTMENT OF CIVIL ENGINEERING	**ADAM MICKIEWICZ UNIVERSITY** FACULTY OF BIOLOGY

INTERINSTITUTIONAL - INTERDEPARTMENTAL
POST-GRADUATE MASTER'S PROGRAMME
Water Resources Engineering and Ecological Engineering
MASTER'S DEGREE

City…….
Protocol No…….

CERTIFICATE

It is hereby certified that, as it transpires from the research of the ledgers of the Department that undertook administrative support, (first name, father's name, last name) registered for the academic year (academic year) as a Graduate Student of the Interinstitutional - Interdepartmental Post-Graduate Studies Programme of the Department (name of Department) of the School (name of School) and of the Department/body(name of Department/body) of the School (name of School) of the University (name of University) titled: (PMP title), with a duration of studies of (number of semesters) semesters, was successfully examined in the following required post-graduate courses of the specialisation (name of specialisation), and received the following grade:

STUDY PROGRAMME

Code	Course Title	Type	Semester	ECTS	F.G.	Grade in Writing
1.	…….		..	..	..	.. ……
2.	…….		..	..	..	.. ……
3.	…….		..	..	..	.. ……

The individual above, on (*date),* presented their Master's Thesis publicly before the competent Examining Committee, which approved it, graded it with the grade *(grade/ECTS)*, and recommended that they be awarded the Master's Degree of the Department *(name of the Department)* of the School *(name of School)* of Democritus University of Thrace, in the Specialisation *(name of Specialisation*). The aforementioned individual graduated on (*day*) (*month*) (*year*).

The Overall GPA of the individual above (to two decimal places) is: *e.g. 9.50 "EXCELLENT"*.

INTERRUPTION OF STUDIES

The above student had interrupted their studies by decision of Assembly No null for the (fall/spring) semester of the academic year 202...-202…

They were readmitted on 00/00/00 of the academic year 202...-202.. (fall/spring) in the 00 semester

This certificate is issued at the request of the interested party for all lawful use.

City (city name) Date (day-month-year)

By order of the Rector
The Secretary of the Department
(full name-signature-stamp)

A.6 Template of Transcript of Post-Graduate Student of an Interinstitutional - Interdepartmental or Joint PGMP (incomplete studies)

H E L L E N I C R E P U B L I C

ANIGNON UNIVERSITY
SOIL, WATER AND ENVIRONMENT TEACHING AND RESEARCH CENTER

DEMOCRITUS UNIVERSITY OF THRACE
SCHOOL OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING

ADAM MICKIEWICZ UNIVERSITY
FACULTY OF BIOLOGY

INTERINSTITUTIONAL - INTERDEPARTMENTAL
POST-GRADUATE MASTER'S PROGRAMME
Water Resources Engineering and Ecological Engineering
MASTER'S DEGREE

City…….
Protocol No…….

CERTIFICATE

It is hereby certified that, as it transpires from the research of the ledgers of the Department that undertook administrative support, (first name, father's name, last name) registered for the academic year (academic year) as a Graduate Student of the Interinstitutional - Interdepartmental Post-Graduate Studies Programme of the Department (name of Department) of the School (name of School) and of the Department/body(name of Department/body) of the School (name of School) of the University (name of University) titled: (PMP title), with a duration of studies of (number of semesters) semesters, was successfully examined in the following required post-graduate courses of the specialisation (name of specialisation), and received the following grades (The following table shall also include the courses that they have declared and not completed):

STUDY PROGRAMME

Code	Course Title	Type	Semester	ECTS	F.G.	Grade in Writing
1.	…….		..	..	..	……
2.	…….		..	..	..	……
3.	…….		..	..	..	……

The individual above, on (*date*), presented their Master's Thesis publicly before the competent Examining Committee, which approved it, graded it with the grade (*grade/ECTS).*

INTERRUPTION OF STUDIES

The above student had interrupted their studies by decision of Assembly No null for the (fall/spring) semester of the academic year 202...-202…

They were readmitted on 00/00/00 of the academic year 202...-202.. (fall/spring) in the 00 semester

This certificate is issued at the request of the interested party for all lawful use.

City (city name) Date (day-month-year)

By order of the Rector

The Secretary of the Department

(full name-signature-stamp)

A.7 Template of Post-Graduate Studies Completion Certificate

H E L L E N I C R E P U B L I C

DEMOCRITUS UNIVERSITY OF THRACE

SCHOOL OF ENGINEERING

DEPARTMENT OF CIVIL ENGINEERING

Certificate No:

CERTIFICATE OF COMPLETION OF STUDIES

The accuracy of the following details is confirmed:

Identity Details	
Last Name:	**First Name:**
Father's Name:	**Mother Name:**
Place of Birth:	**Date of Birth:**
Attendance Details:	
Date of First Enrolment:	**Reg. No:**

The above individual enrolled for the first time the 1st academic period of the PMP of our Department, title (name of PMP) in the academic year ( ).

To be awarded the Master's Degree, ( ) semesters of studies are required.

The total number of ECTS credits required for awarding the Master's Degree (PGD) amounts to … ECTS credits.

The above individual met all legal requirements on (*date*), having been successfully examined in the courses provided for by the Post-Graduate Master's Programme, receiving a degree grade of:

Degree numerically and in writing (e.g. 9.50 NINE AND FIFTY HUNDREDTHS)

"Assessment (e.g. Excellent)"

This certificate is granted for all lawful use.

City (city name) Date (day-month-year)

The Secretary of the Department

(full name-signature-stamp)

A.8 Certificate of Studies

H E L L E N I C R E P U B L I C

DEMOCRITUS UNIVERSITY OF THRACE
SCHOOL OF ENGINEERING
DEPARTMENT OF CIVIL ENGINEERING
Certificate No:

CERTIFICATE OF STUDIES

The accuracy of the following details is confirmed:

Identity Details	
Last Name:	First Name:
Father's Name:	Mother Name:
Place of Birth:	Date of Birth:
Attendance Details:	
Date of First Enrolment:	Reg. No:

The above individual enrolled for the first time in the 1st semester *(title - name of the PMP)* of our Department, as a Graduate Student in the academic year ( ).

The minimum duration of attendance is ( ) semesters.

Graduate student status is obtained upon enrolment and is lost upon receiving a degree, graduating, due to a penalty, or due to expulsion.

The above individual is in the ( ) semester of the study programme.

Interruption of Studies

1) The aforementioned graduate student had interrupted their studies by decision No null of the Assembly / SPC for the (fall/spring) semester of the academic year 20...-20.. with a duration of 2 semesters at their own request on ../../20.. .
2) The aforementioned graduate student had interrupted their studies by decision No null of the Assembly / SPC for the (fall/spring) semester of the academic year 20...-20.. with a duration of 1 semester at their own request on ../../20.. .

   They were readmitted on ...-.-20.. of the academic year 20...-20.. (fall/spring) semester.

Comments – Remarks:

This certificate is granted for all lawful use.

City *(city name)* Date *(day-month-year)*
The Secretary of the Department
(full name-signature-stamp)