



SELECTION NOTICE FOR ADMISSION TO THE II LEVEL MASTER PROGRAMME
IN
SUSTAINABLE WATER AND LAND MANAGEMENT IN AGRICULTURAL ECOSYSTEMS
Academic Year 2024 – 2025
jointly delivered by the Polytechnic and the CIHEAM Bari

1 – Objectives

The master's programme aims at preparing the new generation towards professional and academic careers and enabling their effective contribution to the sustainable management of water and land resources, and to the socio-economic development thereof, in view of important challenges that include water scarcity, land degradation, demographic pressures and climate change.

A major focus is on the increase of cross-sectoral coherence between Sustainable Development Goals and the application of modern technologies and tools that integrate agronomic, engineering, environmental and socio-economic aspects of water and land management.

The programme presents the basic principles and the latest scientific and technological achievements in irrigation systems at farm and large-scale level, taking into consideration the application of innovative “green” management solutions.

At the end of the programme, the students acquire the following competencies:

- ❖ management of water resources with a view to land conservation and water use efficiency increase in Mediterranean agroecosystems,
- ❖ management of a range of alternative water resources including saline and reclaimed water, and water harvesting systems for irrigation purposes,
- ❖ planning and evaluation of irrigation projects, at farm and large-scale level to optimize water/land/nutrient use, considering societal/institutional aspects and economic criteria,
- ❖ knowledge of the latest technologies and tools for a sustainable management of water resources at different scales and in different agroecosystems.

2 – Training activities organisation

The official language of the course is English. The program activities correspond to 1500 hours. Students follow theoretical and practical sessions and acquire the necessary skills to apply integrated approaches of water and land management for sustainable agriculture, under significant challenges of climate change, resource scarcity, environmental degradation, and societal changes.

A variety of teaching strategies, including practical activities, assignments and technical visits accommodate the needs of students with diverse learning styles, abilities, backgrounds and experiences.

The programme is carried out in collaboration with renowned Italian and foreign lecturers, academics and practitioners.



PROGRAMME

The annual syllabus of the Master is divided into 9 Units (3 weeks for unit) plus a preparatory one (3 weeks to be held online), providing topics in line with the aims to develop the specific professional profile, considering the relative constant evolution of the sector. The achievement of ECTS is subject to passing a test.

The structure of the training activity is as follows:

Preparatory Unit - Sustainability in agriculture and food systems (distance learning): It frames the concepts of sustainability applied to agriculture and food sectors. It provides elements for understanding the main agricultural challenges to design solutions and actions towards sustainable and resilient agri-food systems. The multi-dimensional nature of sustainability challenges will be analysed, getting students to reflect on processes for sustainability transitions in agri-food systems.

Unit I - Basic concepts of sustainable land and water management: This unit describes land and water resource status in Mediterranean environments and the main challenges for their use in agriculture. Key concepts for resources classification and survey are accomplished by technical field visits and practical examples. Linkages between rainfall patterns, soil properties, land degradation, desertification, drought and land use planning will be discussed. Moreover, the unit focuses on conceptual and quantitative understanding of surface and groundwater hydrological processes and explores the practices, approaches and tools, with regards to an integrated surface and groundwater management in agricultural environments.

Unit II - Sustainable on-farm irrigation management: This unit focuses on the soil-plant-atmosphere interaction at the farm scale and aims to enhance students' capacities to apply sustainable water management practices and tools under different pedo-climatic conditions and contexts considering agronomic, engineering and environmental issues. Students will enhance their knowledge on soil physics, agro-meteorology and soil plant-atmosphere continuum.

Unit III - Irrigation water management: Crop water requirements, Irrigation scheduling, resources use efficiency, crop growth modelling, and on-farm water management strategies and technologies are core to this unit. Through theoretical and practical sessions this TU will deliver the basic and advanced knowledge to simulate crop growth, development and yield, and to manage on-farm irrigation with practical tools including digital apps.

Unit IV - Irrigation systems design, planning and management: This unit explores an integrated approach that fosters optimal water allocation and resilient design of irrigation systems in a performance-oriented perspective. For an outlook in efficient resource management in agriculture, students will learn about renewable energy for sustainable irrigation, and multi-objective planning, design and management of open channel and of pressurized large-scale irrigation systems.

Unit V - Use of smart tools in agriculture: This unit provides students with basic knowledge on the use of smart tools for driving decisions towards a more sustainable irrigation management in agriculture. Remote sensing, geographic information and global position systems are deployed as tools for the acquisition, management, processing, analysis and display of spatial data and information. Moreover, advances and innovations in digital ag and farm irrigation including IoT-based systems are explored.

Unit VI - Use of Alternative Water Resources in agriculture: This unit offers a holistic approach towards Alternative Water Resources (AWR) management and practices in agriculture as a sustainable, innovative, and cost-effective way for improving community access to water in scarce areas, thereby contributing to

climate adaptation. Major focuses will be on the use of low-quality waters, salinity control and its impact on soils and crops, drainage systems design and management, and desalination processes.

Unit VII - Water Economics: The unit introduces the basic concepts of economic principles of farm management for an optimal use of irrigation water and the planning of irrigation projects taking into account the main institutional problems of the Mediterranean irrigation sector. Cost recovery and irrigation water pricing issues will be important focuses.

Unit VIII - Eco-environmental evaluation in irrigation: Drivers, challenges and main outcomes and shortcomings of water policies in the Mediterranean agricultural context will be illustrated and analysed. Participatory approaches for Irrigation Management (PIM) and Transfer (IMT) will be important focuses. Students will be introduced to the most used approaches and metrics to evaluate the social and environmental impacts of the main programs and measures. Students will also acquire the basic concepts of economic and financial feasibility evaluation and learn how to undertake a Cost/Benefit Analysis of irrigation projects.

Unit IX - Integrated approach for irrigation systems design: Students will be engaged since the beginning of the course in an extensive team-work to design a large-scale irrigation system, integrating concepts, techniques and approaches, developed throughout the different teaching units. Team-working provides great learning opportunities and promotes workplace synergy. The process will include a comprehensive analysis of climate, soil, and crop data and the hydraulic design of a large-scale distribution network based on optimal cropping pattern determined using different simulation scenarios and economic criteria.

TRAINING UNITS	TOPIC	Hours of lectures	Hours of individual study	CR /ECTS	SSD
Preparatory Unit	Sustainability in agriculture and food systems (<i>distance learning</i>)	<i>No credits</i>			
Unit 1	Basic concepts of sustainable land and water management	90	60	6	ICAR/02
Unit 2	Sustainable on-farm irrigation management	90	60	6	ICAR/02
Unit 3	Irrigation water management	90	60	6	ICAR/02
Unit 4	Irrigation systems design, planning and management	90	60	6	ICAR/02
Unit 5	Use of smart tools in agriculture	90	60	6	ICAR/06 ICAR/02
Unit 6	Use of Alternative Water Resources in agriculture	90	60	6	ICAR/03
Unit 7	Water Economics	90	60	6	ING-IND/35 ICAR/02
Unit 8	Eco-environmental evaluation in irrigation	90	60	6	ING-IND/35 AGR/08



Unit 9	Integrated approach for irrigation systems design	150	100	10	ICAR/02
Project work		30	20	2	ICAR/02
Total credits				60	

ATTENDANCE AND EXAMS

The student's progress is monitored throughout the academic year. The preparation of a project work (individual or group and supervised work) and a final exam are mandatory.

Attendance is obligatory in all its activities and educational phases for at least 80% of the scheduled hours; any absence shall be adequately justified. The students who are absent for a more than 20% of the total scheduled hours shall not be allowed to take the final exam for the obtention of the qualification, except for special cases evaluated by the Technical-Scientific Committee.

Suspension of the attendance is not admitted.

Improper academic and personal conduct could result in suspension or expulsion from the Master, irrespective of the academic performance. In the case of expulsion, a justified written decision must be taken by the TSC.

The educational activities of the master will take place at CIHEAM Bari Campus – Istituto Agronomico Mediterraneo, Via Ceglie 9, Valenzano (Ba). For more information about CIHEAM Scholarships, consult <https://www.iamb.it>, or call CIHEAM Bari Secretariat: + 39 080 4606281; didattica@iamb.it.

3 – Duration and number of places

The master lasts one academic year, from October 2024 until June 2025.

The minimum number of participants is 12; the maximum number of participants is 30.

4 – Access qualifications and prerequisites

DEGREE (one of the following)	DISCIPLINES
<ul style="list-style-type: none"> • Five-year University Degree STEM obtained prior to entry into force D.M. 509/99 • Italian Master degree STEM according D.M. 509/99 or D.M. 270/04; • Qualification of equal value issued abroad, recognized as appropriate by the Master Technical-Scientific Committee only for the purposes of enrolment to the course. 	Agricultural and civil engineering and related sciences including irrigation, land management, socioeconomics and environmental conservation.
PREREQUISITE	
Good Knowledge of spoken and written English	minimum level of knowledge: Intermediate (certified by a TOEFL, or equivalent)



5 – Participation to the selection / Application

Candidates who want to apply for the master, from the date of publication of this call until 23:59 of **15.07.2024**, will have to:

- **Register in the Esse3 platform of Politecnico di Bari** (<https://poliba.esse3.cineca.it/Home.do>) - candidates already registered in the Esse3 platform (having username and password) do not need to register again;
- By means of username and password, **apply for admission to the selection for the master** named “**Sustainable Water and Land Management in Agricultural Ecosystems**” - *this procedure is online (no need to send any document).*

In the online application for admission to the competition, candidates with disabilities (according to Law no. 104 of 5 February 1992, as supplemented by Law no. 17 of 28 January 1999) or with Specific Learning Disorders - DSA (pursuant to Law no. 170 of 8 October 2010) must also make an explicit request regarding the aid required, as well as the possible need for additional time for the examination.

Once the data has been confirmed and the required documentation has been sent electronically, it will no longer be possible to modify the application; however, it will be possible to add, delete, replace or modify the attached documents provided that this is done by the deadline. Additions to the documentation will not be permitted after this deadline. It is suggested that you prepare the attachments in digital format before starting to complete the application on Esse3.

The verification of the validity of the applications, including the completeness and regularity of the self-certifications provided, will be carried out by the Administration after the deadline of the call for applications.

Applications that are incomplete or lack the mandatory qualifications required by this notice will not be considered valid and will therefore be excluded.

DOCUMENTS TO BE ANNEXED TO THE ADMISSION APPLICATION

Together with the application form, candidates have to upload the following documents in English or Italian:

Compulsory documents

1. **Curriculum vitae et studiorum**

2. **ID document (passport or al.)**

Please note that the following identification documents will be accepted under penalty of exclusion

- Identity card, only if issued by a Member State of the European Union;
- Driving license, only if issued by an EU Member State;
- Passport.

3. **Proof of possession of the required qualification**

Candidates with qualifications awarded in Italy must attach the self-declaration containing:

- final degree mark;
- a list of all exams taken with their relative marks in both degree courses (or the Single Cycle course);
- results of exams taken.

Candidates with a degree qualification awarded by a non-Italian university must attach the following documents to their application, as issued by the awarding body. This supersedes any form of self-declaration¹:

- degree certificate or diploma showing final mark;
- official transcript of exams taken during all university study programmes, showing all results;
- any other type of document which demonstrates the equivalence of qualifications with those required in this application call (Supplementary Diploma, “*Dichiarazione di Valore*” (statement of value) issued locally.

The upload of the requested documents is compulsory.

The administration reserves the right to verify the authenticity of the presented documents and of declaration in them contained.

Documents have to be uploaded in PDF format.

Non-compulsory documents

4. **Other qualifications declaration**

For qualifications awarded in Italy, a self-declaration is sufficient. Qualification awarded abroad must be proved through official certifications.

5. **Language certification** demonstrating a knowledge of English which corresponds to at least B2 level

6. **Publications** related to activity carried out and shown on the candidate’s CV. These must be in either Italian or English or translated into Italian or English on behalf of and under the responsibility of the candidate.

6 – Scholarships

CIHEAM Bari grants 10 to 12 full scholarships to candidates from NON-EU Southern and Eastern Mediterranean, Middle Eastern and African Countries according to fixed and specific CIHEAM criteria.

Scholarships cover tuition fees, travel and insurance expenses, board and lodging, pocket money.

Non-EU candidates competing for CIHEAM Bari scholarships have to preliminary register on CIHEAM Bari platform and follow the online procedure as described on the website www.iamb.it/education/application.

After the selection process (check of documents and oral interview), a merit ranking will be prepared, whose first 12 assignee will have precedence in the general ranking and will be admitted to the master.

¹**N.B.** These documents must be in Italian, French or English or translated into Italian or English and verified by an official Italian diplomatic or consular representative under the responsibility of the candidate. These should follow the guidelines set out in the document “*PROCEDURES FOR ENTRY, RESIDENCY AND ENROLMENT OF INTERNATIONAL STUDENTS AND THE RESPECTIVE RECOGNITION OF QUALIFICATIONS, FOR HIGHER EDUCATION COURSES IN ITALY FOR THE ACADEMIC YEAR 2023/24*” available at the Ministry link <https://www.studiare-in-italia.it/studentistranieri/>



Further full or partial scholarships could be offered by other institutions. Any scholarships and/or prizes will be assigned in accordance with the qualification ranking.

7 – Selection board

The Rector of Politecnico di Bari will appoint the evaluation Commission by decree. The Commission will be composed by the coordinator of the Master and at least other two components of T.S.C.

The components will produce declarations of eligibility according to the art. 46 del D.P.R. 445/2000.

8 - Approval of selection applications - short-list/ranking list

The admission to the Master is made after evaluation of the university title, aimed at verifying the validity of the title towards the Master level. Candidates are evaluated on a curricular basis.

Only non-EU candidates competing for CIHEAM coverage having applied on CIHEAM Bari platform will undergo an oral interview-

The selection will take into consideration the candidates' profile compared with the characteristics of the professional figure to be trained.

The score of the selection test will be awarded up to a maximum of 30 points.

The evaluable qualifications are the following:

- a. Relevance of the degree to the educational path, up to a maximum of 10 points;
- b. degree grade, up to a maximum of 10 points;
- c. scientific publications, up to a maximum of 5 points;
- d. professional activities, up to a maximum of 3 points;
- e. other qualifications, up to a maximum of 2 points.

Non-EU candidates who benefit of CIHEAM scholarship will have priority.

The admission to the Course is subject to the actual availability of places and to the final judgement of the Selection Board.

At the end of the selection procedure, the Polytechnic of Bari will publish the ranking list of admitted students, on the official on-line ALBO (<http://www.poliba.it/it/amministrazione-e-servizi/albo-online>) as well as on the Master dedicated section (<https://www.poliba.it/didattica/master>).

The above publication has the value of notification.

9 – Enrolment and payment of fees

The admitted Candidate will complete the procedure for enrolment, according to the instructions published together with the above-mentioned ranking. Candidates who will not complete the enrolment procedures within the expected deadline, lose the right to be admitted at the Master.

Only the admitted candidates can enroll.

The total amount of registration and attendance fees is € 4.000,00 (four thousand euro).

The enrollment procedure has to be completed with the payment of the **registration fee of € 400,00** (four hundred euro). The registration fee of applicants who benefit of CIHEAM scholarship will be paid directly by CIHEAM (ref. art. 6)

The **attendance fee** (€ 3.600,00) will be paid into three equal installments, before the start of classes, after the first semester, before di discussion of the thesis. No refund is expected in case of withdrawing or exclusion from the master's course.

Students who benefit the CIHEAM scholarship will not pay any attendance fee (ref. art. 6).

In any case, stamp duty fees will be due, according to Italian law.

The enrolment is an online procedure only. No paper document should be delivered. The enrolment made through a different procedure will not be taken into consideration and does not represent a justified reason for a delay.

10 - Payment modalities of fees and contributions.

With due regard to the principle of transparency and traceability, in accordance with the rules in force on electronic payments for public authorities, the payment of taxes and contributions shall be made through the *pagoPA* system by one of the following modalities:

- by printing the payment notification *pagoPA* and making the payment by Credit/debit card at the bank tellers that provide a similar service;
- by printing the payment notification *pagoPA* and making the payment at any provider of payment services of the *PagoPA* circuit - the system implemented by the *Agenzia per l'Italia Digitale (AgID)* to facilitate payments to public authorities (*SISAL points, Lottomatica, bank tellers, etc.*). The complete and updated list of the Providers of Payment Services (*Servizi di Pagamento (PSP)*) covered by *PagoPA* is published on the website *AgID*;
- online payment: by a link on the page of online Secretariat; you can access "online payment" that proposes all the providers of Payment services (home banking services, credit cards, current account debit order, Providers of Payment Services – *PSP PagoPA*).

No payment different from the abovesaid procedures shall be admitted since they would not allow appropriate allocation and registration of the amounts paid into the information system and of the Entratel flows of the Revenue Agency, for adequate communications to the Tax Registers. The *Post-Lauream* (Post-graduate) office shall not send students the slips that will be available on the personal *Esse3* page under the item "Payments".

11 – Giving up

Students who withdraw from the Master Course have to produce a written communication to the office *Post-Lauream* (post-lauream@poliba.it). Fees already paid are not refundable.

12 – Final test and achievement of title of II Level Master

The final test to achieve the title of II level Master degree "*Sustainable Water and Land Management in Agricultural Ecosystems*" consists of a discussion of the project work, showing the knowledge acquired during



the course and operative capacity linked to the forecasted professional figure. At the end of the course a Diploma of University Master of II level in "*Sustainable Water and Land Management in Agricultural Ecosystems*" will be delivered by Politecnico di Bari with CIHEAM Bari.

13 – Treatment of personal data

The private nature of information provided by candidates will be guaranteed. All data provided will be used only for purposes connected with selection procedures. For successful candidates, this data will also be used for purposes related to the programme. For students completing the programme, data supplied will be used for purposes of employment opportunities. All data treatment is in compliance with current regulations as per European General Data Protection Regulations EU2016/679.

Under arts.15-18 of the abovementioned Regulations, candidates have the right to access their personal data as well as request modifications, additions and cancellations. Candidates may also request limits for their data treatment by contacting the Politecnico di Bari at rpd@poliba.it.

In all cases, by participating in the selection process applicants give their implied consent for the publication of their data, including examination results, on the Politecnico di Bari website, as per the abovementioned Law.

In accordance with Law 241 (7 Aug 1990) and Presidential Decree 184 (12 Apr 2006) and subsequent modifications and additions, any party with a related legal interest may have access to the selection procedure documentation, in line with guidelines set out under current legal rules. Accordingly, any documentation provided by applicants may be made available for consultation by other candidates.

14 – Technical - Scientific Committee and Coordinator

The Coordinators of the master are Giacomo Scarascia Mugnozza, Professor of the Department of DICATECh of the Politecnico di Bari (e-mail: giacomo.scarasciamugnozza@poliba.it) and Nicola Lamaddalena, Professor Emeritus at CIHEAM (e-mail: Lamaddalena@iamb.it).

The Technical-Scientific Committee is composed of Giacomo Scarascia Mugnozza, Umberto Fratino, Gabriella Balacco and Leonardo Damiani (for Politecnico di Bari) and of Nicola Lamaddalena, Lamberto Lamberti and Roula Khadra, with Daniela D'Agostino as substitute member (for CIHEAM Bari).

15 – Responsible of the Procedures and additional contacts

The Responsible of Procedure is Simona Del Vecchio employed at "Ufficio Post – Lauream – Settore Ricerca, Relazioni Internazionali e post lauream" of Politecnico di Bari.

Any other information about the procedure can be asked by e.mail at the following address: post-lauream@poliba.it.

Any information about teaching organization, classes contains, etc, can be asked to teaching secretary of DICATECh (E-mail: annalisa.volpicella@poliba.it) or to the scientific responsible of the Master.

16 – Reference standards

For anything not reported in the present call, refer to POLIBA and CIHEAM regulations regarding II level Master.

Students registered at Master in *Sustainable Water and Land Management in Agricultural Ecosystems* have to respect



Politecnico
di Bari



CIHEAM
BARI

- Ethical and behavior rules of Polytechnic University of Bari and of CIHEAM;
- All rules and regulation of POLIBA and CIHEAM.

The present call will be published in the institutional website of POLIBA in the sections “Albo Ufficiale on-line del Politecnico di Bari, <http://www.poliba.it/it/amministrazione-e-servizi/albo-online>” and “Master, <https://www.poliba.it/didattica/master>” and on web platform of CIHEAM <http://www.iamb.it/>

Il Rettore

Prof. Ing. Francesco CUPERTINO