



## FIRST-LEVEL UNIVERSITY MASTER'S PROGRAMS

ACADEMIC YEAR 2024/2025

### PUBLIC ANNOUNCEMENT FOR CANDIDATE SELECTION

**DEADLINE FOR ONLINE APPLICATION: December 2, 2024 11:59 PM (italian time)**

#### ART. 1

##### ANNOUNCEMENT AND GENERAL PROVISIONS

For the Academic Year 2024-2025, the call for admission to the **First-Level University Master's Program "Earth Observations from Space: Advanced Technologies and Applications (EO-SAT)"** is hereby issued, hereinafter referred to as *the Master's program*, established at the University of Basilicata – **Department of Engineering** and promoted in collaboration with companies from the CLAS (Lucanian Aerospace Cluster) and the TeRN Technological District (Technologies for Earth Observations and Natural Hazards).

Pursuant to Article 3, paragraph 9, of Ministerial Decree No. 270 of October 22, 2004, *the Master's Program* is classified as an Advanced Scientific Training and Lifelong Learning Course. Upon successful completion of a final exam, the First-Level University Master's Degree "**Earth Observations from Space: Advanced Technologies and Applications (EO-SAT)**" will be awarded.

**The number of available spots is set at 20. *The Master's Program* will be activated only if a minimum of 8 enrolled students is reached.**

**The academic activities will begin by January 2025**, and classes will be held from Monday to Saturday at the Macchia Romana Campus of the University of Basilicata, located at Via dell'Ateneo Lucano 10 – Potenza. Classes may also be conducted remotely via the Google Meet platform, except for internships, laboratory activities, and educational visits.

The administrative and financial management of *the Master's Program* is entrusted to the Department of Engineering.

The coordinator of *the Master's Program* is Professor Valerio TRAMUTOLI.

#### ART. 2

##### STRUCTURE OF THE EDUCATIONAL PROGRAM

*The Master's Program* consists of a total of 1500 hours of training (including lectures, internships, and personal study), corresponding to 60 ECTS credits. The teaching language is English.

The activities are structured as follows:

**6. LIST OF TEACHING MODULES, TEACHING UNITS, TRAINING ACTIVITIES, AND INTERNSHIP.**

Module Names	SSD	ECTS	Classes hours	Individual studying	Laboratory	Total hours
<b>Module 1: Atmospheric Physics and Meteorology</b>	FIS/06	<b>8</b>	<b>64</b>	<b>136</b>		<b>200</b>
DU1 – Atmospheric Physics	FIS/06	4	32	68		100
DU2 - Meteorology	FIS/06	4	32	68		100
<b>Module 2: GIS Fundamentals</b>	ICAR/02	<b>6</b>	<b>48</b>	<b>102</b>		<b>150</b>
<b>Module 3: Fundamentals of Optical Band Remote Sensing</b>	FIS/06	<b>6</b>	<b>48</b>	<b>102</b>		<b>150</b>
<b>Module 4: Fundamentals of Microwave Remote Sensing</b>	ING-INF/02/03	<b>6</b>	<b>48</b>	<b>102</b>		<b>150</b>
DU1 – Microwave Radiometry	ING-INF/03	2	16	34		50
DU2 - Remote Ssensing in the Microwaves Domain	ING-INF/02	4	32	68		100
<b>Module 5: Inverse Problems' Theory and Applications to Remote sensing</b>	FIS/06	<b>6</b>	<b>48</b>	<b>102</b>		<b>150</b>
<b>Modulo 6: Modern Physics and Sensors</b>	ING-INF/02 FIS/01	<b>6</b>	<b>48</b>	<b>102</b>		<b>150</b>
DU1 – Modern Physics	ING-INF/02	2	16	34		50
DU2 – Sensors' Physics	FIS/01	2	16	34		50
DU3 – Sensors of Electromagnetic Radiation	FIS/01	2	16	34		50



<b>Module 7: Engineering of Space Vehicle Systems for Earth Observation</b>	ING-IND/05 ICAR/02	<b>9</b>	<b>72</b>	<b>153</b>		<b>225</b>
DU1 – Space Vehicles’ Dynamics	ING-IND/05	2	16	34		50
DU2 – Space Vehicles’ and Systems’ Engineering	ING-IND/05	4	32	68		100
DU3 – Earth Observation Techniques from Remotely Piloted Aircraft Systems (RPAS)	ICAR/02	3	24	51		75
<b>GRAND TOTALS FOR CLASSES</b>		<b>47</b>	<b>376</b>	<b>799</b>		<b>1175</b>
<b>Internship</b>		<b>10</b>				<b>250</b>
<b>Final Exam</b>		<b>3</b>				<b>75</b>
<b>TOTAL</b>		<b>60</b>	<b>376</b>	<b>250</b>	<b>874</b>	<b>1500</b>

### ART. 3

#### TRAINING OBJECTIVES AND PROFESSIONAL PROFILES

The gap between the demand and supply of specific skills in the field of Earth Observation from Space has been recognized by the European Commission as one of the main limiting factors in the development of the aerospace sector and, in particular, the insufficient growth of the European market for products and services based on EO techniques.

The lack (at the European level) of a university curriculum dedicated to training researchers and professionals with the skills to cover the entire value chain—from the design of platforms and sensors to the development of systems, applications, and services based on the processing of EO data from space—has been identified as a significant gap that the Commission encourages to overcome, by also including the joint efforts of European universities participating in the Copernicus Academy Network. Companies operating in the sector have repeatedly expressed difficulty in finding personnel with such expertise, and capable of responding and actively anticipating future market demands in a continuously evolving field like Earth Observation applications from space. Following the guidelines of the EU and leveraging the synergies made possible by UNIBAS's presence in the Copernicus Academy Network, the proposed program aims to train professionals with all the fundamental and specialized skills needed for the development of the entire value chain—from the design and operation of remote sensing platforms and instruments to the analysis and interpretation of remote sensing data for the development of advanced applications and services. All these skills are already offered separately,



albeit in a disorganized manner and with varying intensity and educational objectives, in multiple university curricula, such as Aerospace Engineering, Environmental Engineering, Mechanical Engineering, Electronics and Telecommunications Engineering, Physics, Computer Science, etc. However, there is still no European university curriculum that combines all the foundational knowledge needed to envision new services and applications of EO from Space starting from the design of appropriate platforms and tools, rather than solely relying on the existing EO data. This is an educational gap widely recognized by the European Commission (there is nothing in the European skills catalog ESCO that alludes to such professional figures) and by the collaboration among European universities (through the Copernicus Academies Network) as one of the pillars of its Copernicus User Uptake strategy.

*The Master's program* organized by the University of Basilicata thus aims to fill this gap by training new professional figures who will be able to find employment in companies operating in the aerospace sector and in ICT, as well as in public administrations.

*The Master's program* will leverage the specific expertise available at the University of Basilicata, as well as contributions from highly qualified instructors from other universities and private sector research centers and companies. A particular added value of *The Master's program*, in addition to the established relationships with the network of companies operating in the aerospace sector, both local and national, grouped in the TeRN Technology District and the CLAS, is its strong interconnection with the National PhD in Earth Observation (to which UNIBAS has adhered from the beginning) and with the European Copernicus Academies Network, of which UNIBAS was a pioneer. This will allow for a broader pool of instructors as well as opportunities for internships to be offered to *The Master's program* participants. The course aims to attract young individuals interested in orienting their professional activities towards a highly innovative and competitive sector, while developing skills that can be easily reinvested in other productive sectors. The content of *The Master's program* will be aimed at integrating knowledge derived from university scientific research with the methods and practices that characterize professional activity within companies in the sector. The teaching activities will be carried out by faculties from the University of Basilicata and other universities that conduct advanced research activities in the aerospace sector and in particular in Earth Observation from Space.

The course is primarily aimed at young graduates in STEM disciplines who are motivated to engage in professional activities in the aerospace sector. In this sense, a mindset that is both scientific and professional, along with an international outlook on their placement, is required. *The Master's program* may also be of interest to professionals, both public and private employees, who wish to broaden and deepen their expertise in this specific sector.

*The Master's program* aims to train professionals capable of imagining and designing new systems, sensors, services, and applications of EO from Space, who will be able to find employment in companies operating in the aerospace sector and in ICT, as well as in Public Administration entities.



#### ART. 4

##### ATTENDANCE AND DEGREE ACHIEVEMENT

*The Master's program* lasts one year, with mandatory attendance of at least 80% overall and a minimum of 75% for each individual teaching unit, excluding the internship period for which the minimum attendance is 80%.

Each teaching module, structured into various teaching units, includes a single evaluation based on written exams with closed or open-ended questions. The examination committees will verify the achievement of credits by students at the end of each teaching module, expressing a grade on a scale of thirtieths.

The final exam will consist of presenting the activities carried out and the project work developed during the internship period.

Participants who successfully pass the final exam will be awarded the **first-level Master title in “*Earth Observations from Space: Advanced Technologies and Applications (EO-SAT)*.”**

#### ART. 5

##### INTERNSHIP

The internship period consists of 10 ECTS credits (250 hours) and will take place at partner companies.

#### ART. 6

##### ADMISSION REQUIREMENTS

Access to *The Master's program* is open to those holding a Bachelor's or Master's degree in one of the following classes, or an equivalent qualification according to existing regulations:

L-7 Civil and Environmental Engineering

L-8 Information Engineering

L-9 Industrial Engineering

L-17 Architecture Sciences

L-21 Territorial, Urban, Landscape, and Environmental Planning Sciences

L-25 Agricultural and Forestry Sciences and Technologies

L-26 Agricultural and Food Sciences and Technologies

L-27 Chemical Sciences and Technologies

L-29 Pharmaceutical Sciences and Technologies

L-30 Physical Sciences and Technologies

L-31 Computer Science and Technologies

L-32 Environmental and Nature Sciences and Technologies

L-34 Geological Sciences



L-35 Mathematical Sciences

LM-4 Architecture and Building Engineering-Architecture

Students who have not yet obtained the University degree for admission may also participate in the selection process for *The Master's program*, provided that the qualification is obtained by the time they are enrolled in *The Master's program*.

Additionally, candidates holding a foreign academic qualification comparable—in terms of level, nature, content, and academic rights (access to further courses)—to the academic qualifications listed above may also access *The Master's program*. Foreign qualifications, if not already recognized under existing regulations, will need to be evaluated by *The Master's program* Scientific Committee, which may declare their equivalence solely for the purpose of admission to *The Master's program*.

For these candidates, the current regulations regarding the admission of foreign students to the degree programs of Italian universities apply, as described at the website <http://www.studiare-in-italia.it/studenti stranieri/>.

#### ART. 7

##### ADMISSION APPLICATION AND DEADLINES

The application for admission to the selection must be submitted exclusively through the online procedure by accessing the website <https://unibas.esse3.cineca.it> (register on the site via the “Registrazione” option; those who are already registered should select “Login”, enter their username and password, and from the menu in the upper right corner, follow Segreteria → Test di ammissione” → “Iscrizione Concorsi”. Those who have had one or more careers at Unibas can access the menu in the upper right corner after selecting their last activated career) **by December 2, 2024**.

**The online procedure will be active from the day following the publication of the announcement in the official online bulletin of the University.**

Once completed, the application must be printed and sent via Certified E-mail to the address [settoreservizididattica@pec.unibas.it](mailto:settoreservizididattica@pec.unibas.it), indicating in the subject line “Domanda di ammissione Master EO-SAT – a.a. 2024/2025”.

The following documents must be attached to the application:

- a) CV in European format, duly signed;
- b) self-certification in accordance with D.P.R. No. 445/2000 of possession of the qualification required for admission, indicating the date of its attainment and the corresponding grade, or self-certification of the qualification to be obtained, including the exams taken and the respective grades;
- c) self-certification in accordance with D.P.R. No. 445/2000 of possession of other qualifications deemed useful for evaluation (Master's degree, other master's programs, specialized courses, and documented previous experience related to the topics of the master), provided they are held by the application deadline, i.e., by December 2, 2024;



- d) any IT or language certifications, provided they are held by the application deadline, i.e., by December 2, 2024;
- e) a copy of a valid identity document, duly signed;
- f) ISEE 2024 certification (for foreign students, a similar certification indicating economic status) to be considered for the awarding of scholarships in case of merit equality (importantly, failure to submit the ISEE does not hinder participation in the selection; however, in case of merit equality, the candidate with the lower ISEE will prevail for scholarship assignment).

**Foreign candidates or those holding a qualification obtained abroad**, must submit a copy of their qualification and the certificate attesting to the subjects included in the curriculum or study plan (transcript), in lieu of the self-certification referred to in point b).

The forms for self-certification are available at the link <http://portale.unibas.it/site/home/didattica/master.html>.

The Administration may exclude candidates at any time if they do not meet the required qualifications, without prejudice to the legal consequences arising from false declarations.

## ART. 8

### SELECTION PROCEDURES FOR ADMISSION

The selection for admission to *the Master's program* will be carried out by evaluating the qualifications held by the candidates.

The examination board has 100 points available for evaluation, distributed as follows:

- Graduation grade (Bachelor degree) required for admission **max 50 punti;**
- IT and/or language certifications **max 10 punti;**
- Documented previous experience related to the topics of the master **max 10 punti;**
- Other master's programs and specialized courses **max 10 punti;**
- Master's degree **max 20 punti**

Candidates who obtain their qualification by the application deadline for the Master will be evaluated by the weighted average of the grades obtained, at the time of the application, in all exams of the degree program that qualifies for the competition, instead of by the graduation grade.

The merit ranking will be drawn up in descending order of the total scores achieved by each candidate. In case of tied scores, the younger candidate will take precedence. The ranking will be approved by a Rectoral Decree.

The first 20 candidates in the ranking will be admitted to *the Master's program*. In case of withdrawal, the candidate in the next available position in the ranking will be admitted.



The merit ranking will be posted on the official online bulletin of the University and will also be published on the University website <http://portale.unibas.it/site/home/didattica/master.html>. Publication on the official bulletin serves as legal notification for all intents and purposes.

#### ART. 9

##### EXAMINATION BOARD

The examination board for admission to *the Master's program*, composed of at least three members, is appointed by the Rector through a decree, upon the proposal of the Master's Scientific Committee.

#### ART. 10

##### ENROLLMENT AND FEES

Admitted candidates must regularize their enrollment within the deadline that will be announced at the time of the publication of the ranking, using exclusively the online procedure, by the means that will be indicated at the time.

Students enrolling in the Master are only required to pay the **virtual stamp duty of € 16.00**. Once the Master will be activated, and before the start date of the teaching activities, students must pay the *tassa regionale per il diritto allo studio universitario* in the amount of € 140.00, exclusively through the PagoPA platform available on the Basilicata Region Portal, which can be accessed using the SPID digital identity (the path to follow is: **Portale Regione → PagoPA → Pagamenti spontanei → Seleziona Ente → Regione Basilicata → Seleziona un pagamento → Tassa Regionale per il diritto allo studio universitario**). The reason for payment should be indicated as “Tassa regionale per il diritto allo studio Master Unibas a.a. 2024/2025 – Codice fiscale \_\_\_\_\_” (the “codice fiscale” is the unique tax ID of the student).

#### ART. 11

##### STUDENT SUPPORT AND SCHOLARSHIPS

To support in-person attendance, **twenty scholarships** of € 5,000.00 each are available.

The scholarships will be awarded according to the ranking to twenty deserving students attending in person who do not benefit from other scholarships for attending *the Master's program*.

The scholarships will be paid in four installments: the first after the first month of attendance, and the others at the end of each quarter.

The disbursement of the second and third installments will be subject to regular attendance in classes and passing exams, while the fourth installment will be paid upon graduation.

Failure to attend at least 80% of the classes will result in refunding the entire amount of the scholarship received.

In case of tied merit, scholarships will be awarded based on the evaluation of the economic situation, as indicated by the ISEE certification issued in 2024 (for foreign students, a similar certification reflecting their economic status).



In the event of failure to enroll within the deadlines and according to the methods specified in article 10 of the present document, the candidate entitled to the scholarship will be considered to have declined the scholarship, and the admission ranking will be adjusted accordingly.

#### **ART. 12**

##### **PERSONAL DATA TREATMENT**

Pursuant to Regulation (EU) 2016/679 of the European Parliament and of the Council of April 27, 2016 (General Data Protection Regulation), as well as Legislative Decree No. 196/2003 as amended by Legislative Decree No. 101 of August 10, 2018, the personal data provided by candidates will be collected by the University of Basilicata for the purposes related to the selection process and will be processed manually and/or electronically, also after the selection procedure, for the purposes related to the management of the relationship established upon enrollment in *the Master's program*. The provision of the requested data is mandatory for participation in the selection; failure to provide such data will result in exclusion from the selection.

#### **ART. 13**

##### **SUBJECT RESPONSIBLE OF THE PROCEEDINGS**

Pursuant to Article 5 of Law No. 241 of August 7, 1990, and subsequent amendments and integrations, the person responsible for the procedure outlined in this announcement is Dr. Anna Maria Calabrese (email: [annamaria.calabrese@unibas.it](mailto:annamaria.calabrese@unibas.it)).

#### **ART. 14**

##### **PUBLICITY**

This announcement will be published on the official online bulletin of the University and will also be available on the University website <http://portale.unibas.it/site/home/didattica/master.html> and on the website of the Department of Engineering <https://diing.unibas.it/site/home.html>.

Further information can be obtained by contacting the Master Coordinator, Prof. Valerio TRAMUTOLI, via email at [valerio.tramutoli@unibas.it](mailto:valerio.tramutoli@unibas.it).

#### **ART. 15**

##### **FURTHER PROVISIONS**

For all matters not covered by this announcement, the rules contained in the University Regulations regarding Master's programs and other applicable provisions will apply.

**The official version of this call is in Italian and is available on the website <http://portale.unibas.it/site/home/didattica/master.html>.** This abridged version is not valid and may not be used for any legal purpose.

**THE RECTOR**  
**prof. Ignazio M. MANCINI**