Ilia State University
Program Level -
Master
Atmospheric and Near Space Sciences
Curriculum

Faculty/School	Faculty of Natural Sciecnes and Medicine
Program Title	**Atmospheric and Near Space Sciences**
Academic Degree Awarded	Master of Sciences in Atmospheric Sciences (Ilia State University, Tbilisi, Georgia); The qualification will be awarded to students enrolled before the 2026-2027 academic year In case of double degree, the following degree can also be awarded: • Master Sciences de la Terre et des planètes, environnement (STPE)) University Clermont Auvergne (Clermont-Ferrand, France) *; • Master of Science (M.Sc.) in Meteorology (Johannes Gutenberg-Universität, Mainz, Germany) **. * Offered to exchange students following an additional degree track at University Clermont Auvergne; ** offered to exchange students following an additional degree track at Johannes Gutenberg-Universität After completing the first, at least 60 credit part: Master of Atmospheric Sciences After completing the second, at least 60 credit part: Master of Research in Atmospheric Sciences The qualification will be awarded to students enrolled after the 2026-2027 academic year In case of double degree, the following degree can also be awarded: • Master Sciences de la Terre et des planètes, environnement (STPE) University Clermont Auvergne (Clermont-Ferrand, France) ***; • Master of Science (M.Sc.) in Meteorology (Johannes Gutenberg-Universität, Mainz, Germany) ****.

	Offered to students of the second, at least 60 credit part, who will participate in an exchange program implemented with the University of Clermont-Auvergne; * Offered to students of the second, at least 60-credit part who will participate in an exchange program with Johannes Gutenberg-Universität, Mainz
Program Duration/ECTS	**Structural Model 1** (Applies to students enrolled before the 2026–2027 academic year): • 4 semester, 120 credits **Structural Model 2** (Applies to students enrolled from the 2026–2027 academic year onwards): • 4 semester, 120 credits ○ First part - 2 semesters, 60 credits; ○ Second part - 2 semesters, 60 credits.
Launching Date of the Program & Program Update	The program was developed in 2022, the last update was carried out in 2026. (In order to improve, it is possible to upgrade the program at the beginning of each academic year and change the number of partner universities)
Language of Instruction	English
Head/Heads of the Program	Maya Todua, Assoc. Professor Goderdzi Didebulidze, Assoc.Professor
Admissions Requirements	

Applicable to students enrolled until the 2026–2027 academic year:

An applicant must hold a Bachelor's Degree or equivalent in physics, astronomy, mathematics, Earth sciences and computer sciences. Admission to the program is for all students of qualifications that is suitable for partner universities. Applicant must pass the relevant Unified Post-Graduate Exams. Who completed their higher education outside of Georgia will be able to enter the program pursuant to order №224/N of the Ministry of Education and Science of Georgia (December 29, 2011). The condition for admission to the program is the knowledge of the English language at CEFR level B2 or higher.

program applicant should provide an internationally recognized and valid English language certificate (Common European Framework of Reference (CEFR) level B2 or higher). To demonstrate English proficiency, the applicant must submit one of the following:
a) A recognized and valid international language certificate (the main certificates and minimum scores accepted are given below;
b) an English Proficiency Statement from the university or college,
confirming that English was the language of instruction;

Alternatively, applicant may take Ilia State University's paper based or online language test, a passing score indicates English competency equivalent to CEFR level B2
Note: The English language requirement may be waived if the applicant is a native of or graduated from an English language high school or university in countries where English is the native language. The following are the minimum English test scores for admission:

- **Test of English as a Foreign Language (TOEFL) paper-based test (PBT) 513**
- **TOEFL internet-based test (iBT) 65**
- **TOEFL computer-based test (CBT) 183**
- **IELTS**
- **Academic; Band score 5.5**
- **Cambridge ESOL (English for Speakers of Other Languages)**
- **Certificate of Advanced English (CAE): 160/Level B2 (also grades A/B/C)**
- **First Certificate in English (FCE): 160/Grade C (also grades A/B)**
- **Business English Certificate (Higher BEC): 45/Level B2 (also grades A/B/C)**
- **Business English Certificate (Vantage BEC): 60/Grade C (also grades A/B)**
- **Business Language Testing Service (BULATS): 60 overall**
- **Pearson Test of English (PTE); General level 3)**
- **Pearson Test of English-Academic; 59-75 points**

TELC (The European Language Certificates)

- **TELC English B2: Pass**
- **Michigan (Cambridge Michigan)**
- **Examination for the Certificate of Proficiency in English (ECPE): Low Pass**
- **Examination for the Certificate of Competency in English (ECCE): Pass**
- **Michigan English Language Assessment Battery (MELAB): B2**

If the English language competence is confirmed, the applicant is allowed to take an oral exam. Overall, the applicant will be assessed during an admission interview (face-to-face or online for international applicants). Applicants are expected to demonstrate motivation, communication skills, as well as basic field-specific knowledge needed to succeed in the program. Detailed admissions requirements can be found online at www.iliauni.edu.ge

In the case of students enrolled from the 2026-2027 academic year:

Applicants for the first, 60-credit part of the Master's Program in Atmospheric and Near-Space Sciences must have a Bachelor's Degree or equivalent in physics, astronomy, mathematics, Earth sciences and

computer sciences.
Admission to the program is for all students of qualifications that is suitable for partner universities. Applicant must pass the relevant Unified Post-Graduate Exams. Who completed their higher education outside of Georgia will be able to enter the program pursuant to order №224/N of the Ministry of Education and Science of Georgia (December 29, 2011).
The condition for admission to the program is the knowledge of the English language at CEFR level B2 or higher.
program applicant should provide an internationally recognized and valid English language certificate (Common European Framework of Reference (CEFR) level B2 or higher). To demonstrate English proficiency, the applicant must submit one of the following:
c) A recognized and valid international language certificate (the main certificates and minimum scores accepted are given below;
d) an English Proficiency Statement from the university or college, confirming that English was the language of instruction;

Alternatively, applicant may take Ilia State University's paper based or online language test, a passing score indicates English competency equivalent to CEFR level B2
Note: The English language requirement may be waived if the applicant is a native of or graduated from an English language high school or university in countries where English is the native language. The following are the minimum English test scores for admission:

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field-specific knowledge needed to succeed in the program. Detailed admissions requirements can be found online at www.iliauni.edu.ge

Prerequisite for continuing studies in the second, 60-credit part of the program: A person enrolled in the first part of the 60-credit Master's educational program through Master's exams, who completes the mentioned part, is entitled to continue studies in the second part of the same Master's educational program of at least 120 credits, without passing the Master's exams, if 5 years have not passed since enrollment in the first part. After the expiration of the mentioned period, in order to enroll in the second part of the same Master's educational program of at least 120 credits, with a volume of 60 credits, the person is obliged to pass the Master's exam (common Master's exam and internal university exam). In order to enroll in the second part of the same Master's program of at least 120 credits of another higher educational institution, a person who has completed the first part of the Master's program of at least 120 credits of a higher educational institution, is required to pass the Master's exam (joint Master's exam and internal university exam).

Program Objectives

Applicable to students enrolled until the 2026–2027 academic year:

The goal of the program is to prepare a new generation of researchers who will:

- have in-depth and systematic knowledge of atmospheric and near space sciences;
- apply relevant methods, databases and software for observational and/or theoretical studies of the atmosphere and near space in research and practical activities;
- operate with modern equipment, including those used in global monitoring networks.

Graduates of the program will be competitive in both the employment market and the postgraduate level.

Applicable to students enrolled from the 2026–2027 academic year:

The first, 60-credit part of the program aims to prepare highly qualified specialists in atmospheric and near-space sciences who:

- have in-depth and systematic knowledge of atmospheric and near space sciences;
- operate with modern equipment, including those used in global monitoring networks.

The second 60-credit part of the program aims to prepare highly qualified researchers who:

- have in-depth and systematic knowledge of atmospheric and near space sciences;
- apply relevant methods, databases and software for observational and/or theoretical studies of the atmosphere and near space in research and practical activities;
- operate with modern equipment, including those used in global monitoring networks.

Learning Outcomes

Applicable to students enrolled until the 2026–2027 academic year:

Graduate:

1. demonstrates deep and complex theoretical and experimental knowledge about the structures of the atmospheres of the solar system planets and the processes taking place in the atmosphere;
2. demonstrates a complex knowledge of the approaches and principles required for research related to the Earth's atmosphere by modern satellite and global international networks;
3. Based on research objectives and selected methods uses and optimizes global circulation models of the Earth's atmosphere;
4. Selects and applies appropriate modern methods, approaches and theoretical models to effectively carry out theoretical and/or observational research in the field of atmospheric science;
5. Observes principles of academic integrity and employs information technologies for effective communication with an academic community and professional audience;
6. performs as an independent learner and demonstrates own scientific attitude

Applicable to students enrolled from the 2026–2027 academic year:

After completing the first 60-credit part of the program:

The graduate/graduate:

1. demonstrates deep and complex theoretical and experimental knowledge about the structures of the atmospheres of the solar system planets and the processes taking place in the atmosphere;
2. demonstrates a complex knowledge of the approaches and principles required for research related to the Earth's atmosphere by modern satellite and global international networks;
3. Based on research objectives and selected methods uses and optimizes global circulation models of the Earth's atmosphere;
4.Observes principles of academic integrity and employs information technologies for effective communication with an academic community and professional audience;
5. performs as an independent learner and demonstrates own scientific attitude

After completing the second 60-credit part of the program:

Graduate:

1. demonstrates deep and complex theoretical and experimental knowledge about the structures of the atmospheres of the solar system planets and the processes taking place in the atmosphere;
2. demonstrates a complex knowledge of the approaches and principles required for research related to the Earth's atmosphere by modern satellite and global international networks;
3. Based on research objectives and selected methods uses and optimizes global circulation models of the Earth's atmosphere;
4. Selects and applies appropriate modern methods, approaches and theoretical models to effectively carry out theoretical and/or observational research in the field of atmospheric science;
5. Observes principles of academic integrity and employs information technologies for effective communication with an academic community and professional audience;
6.performs as an independent learner and demonstrates own scientific attitude.

Program Structure

Applicable to students enrolled until the 2026–2027 academic year:

Student should accumulate 120 ECTS credits:

1. Mandatory courses: 72credits;
2. Elective courses – 18 credits;
3. Master Thesis – 30 credits

In case of participation in the exchange program with international partners:
In the first academic year, the student completes the study at the receiving university and collects 60 credits. The student completes the 3rd and 4th semesters at the host university and collects 60 credits provided by the program of this university, of which 30 credits are devoted to the master's thesis.
The period of study of the standard master program is 4 semesters (2 years) - 30 ECTS credits per semester and a total of 120 ECTS credits. Participation in a two-semester exchange program by students from one university to another (= 1 academic year) will be considered as the equivalent of two full semesters, or 60 ECTS. Additional credits are available to accept at the third university. However, the requirement is at least 60 ECTS equivalent to be awarded the relevant qualifications at a home and host universities.
During preparation of Master Thesis exchange student can select two supervisors from both universities.

Applicable to students enrolled from the 2026–2027 academic year:

Students must accumulate credits according to the following structure:
First 60-credit part:
- Compulsory courses - 48 credits
- Elective courses - 12 credits

Second 60-credit part:
- Compulsory courses - 24 credits
- Elective courses - 6 credits
- Master's thesis - 30 credits

In the case of participation in an exchange program with international partners:

During the first academic year, the student studies at the home (admitting) university and accumulates 60 ECTS credits. The student completes the 3rd and 4th semesters at the host university and earns 60 ECTS credits according to the program of that university, of which 30 credits are allocated to the master's thesis.

The duration of the master's program is 4 semesters (2 years), with 30 ECTS credits per semester, totaling 120 ECTS credits (for cohorts enrolled from the 2026–2027 academic year, the accumulation of 120 credits is carried out in two parts of 60 credits each within the first and second stages of the program). Participation in a two-semester exchange program between universities (equivalent to one academic year) is considered equivalent to two full semesters, i.e., 60 ECTS credits. Additional credits may be obtained at a third university However, the requirement is a minimum of 60 ECTS equivalence at both the "home" and one "host" university, in order to award the relevant qualifications at both institutions.

Teaching Methods

Teaching methods include:

- Lectures
- Seminars
- Modeling
- Discussion/deb
- ate practical
- works
- presentations
- case study
- group working supervision,
- reflection, etc.

Note: The teaching methods used in the various components of the program are listed in the relevant syllabi.

Student Assessment

The evaluation is based on a 100-point system. Points are distributed and defined as follows:
(A) 91-100 Excellent
(B) 81-90 Very good
(C) 71-80 Good
(D) 61-70 Satisfactory
(E) 51-60 Sufficient

(FX) 41-50 Not passed, meaning the student needs more work to be done to pass and is allowed to take an additional exam once through working independently;
(F) 0 – 40 Failed, meaning work done by the student is not enough and he/she has to study the subject anew.
Evaluation conversion chart - Evaluation Scales the partner universities of and their compatibility with partner universities for these purposes
Grade Conversion Table

Note: Assessment components, criteria and methods are given in the course syllabi.

Ilia State University	Johannes Gutenberg-Universität	Université Clermont Auvergne
(A) 91-100	1.0	15.9-20
(B) 81-90	1.1-1.7	14.2-15.8
(C) 71-80	1.8-2.3	12.7-14.1
(D) 61-70	2.4-3.3	10.7-12.6
(E) 51-60	3.4-3.9	10.0-10.6
(F) 0-40	4.0-5.0	9.9

Employability

Applicable to students enrolled until the 2026–2027 academic year:
A graduate student of this program may be employed in academic field: universities and research institutes where studies are carried out on atmosphere, ionosphere, solar-terrestrial coupling, meteorology, climate and ecology, in Georgia and other countries. He/she could also find career in navigation services, national environment agency, monitoring and statistical studies, research centers of adjacent fields. He/she could also continue study on the doctorate level.

Applicable to students enrolled from the 2026–2027 academic year:
After completing the first part of at least 60 credits, the graduate may be employed in navigation services, the National Environmental Agency.

After completing the second part of at least 60 credits, the program graduate may be employed in the academic field:

A graduate student of this program may be employed in academic field: universities and research institutes where studies are carried out on atmosphere, ionosphere, solar-terrestrial coupling, meteorology, climate and ecology, in Georgia and other countries. He/she could also find career in navigation services, national environment agency, monitoring and statistical studies, research centers of adjacent fields. He/she could also continue study on the doctorate level.

Teaching and Learning Resources

In this program the students will be able to participate in observational and experimental research in the partner organization: The Laboratory of atmospheric studies of Abastumani Astrophysical Observatory. The Laboratory is equipped with the modern instruments:

- spectrometer GRIPS-5 to measure Hydroxyl bands (made in the German Space Research Center DLR)
- all-sky imager for measurements of oxygen red line of the nightglow
- lidar M-10 system to measure aerosol density (made in University of Michigan, USA)
- weather station

Other resources:

- Lecture audiences;
- Training laboratories;
- University library and electronic journal databases;
- Computer auditoriums;
- University system of choice provision “Argus”
- Elearning, Turnitin

Also, material and technical bases of the University and research centers and institutes:

- Scientific-research ship “Tsminda Ilia”;
- Dedopliskaro Scientific Center;
- Research base, kazbegi”
- Space Research Center
- Computing Center of Ilia State University

Partner organizations:
E. Kharadze Georgian Nationals Astrophysical

Observatory Exchange program

partner universities:
Université Clermont Auvergne
Johannes Gutenberg-Universität