

Code	Name of course	Prerequisite	Lecturer	ECTS	Contact hours	Lab/practical work	ფაкультატი/კურსი	Autumn I semester	Spring I semester	Autumn III semester	Spring IV semester
Master Program - Atmosphe and Near space Sciences											
Obligatory Courses- 72 credits											
U763	Atmospheric Physics		Goderdzi Didebulidze	6	63	40	87	x			
U764	Plasma Physics		Ivane Murusidze	6	47	15	103	x			
U765	Classical Hydrodynamics		Giorgi Dalakishvili, Goderdzi Didebulidze	6	48	24	102	x			
U774	Atmospheric Chemistry		Ketevan Kupatadze Demirtas	6	33	3	117	x			
U767	Ionospheric Physics	Atmospheric Physics, Classical Hydrodynamics	Goderdzi Didebulidze	6	63	40	87		x		
U768	Solar-Terrestrial Coupling Physics		Maya Todua	6	64	40	86		x		
U769	Meteorology		Demuri Demetrashvili	6	47	20	103		x		
U770	Computer modeling		Ivane Murusidze	6	32	13	118		x		
U771	Remote Sensing Instruments and	Atmospheric Physics	Maya Todua	6	63	39	87			x	
U772	Climatology	Classical Hydrodynamics	Nato Kutaladze	6	47	25	103			x	
U766	Statistical Methods in Atmospheric Physics		Giorgi Dalakishvili,	6	48	15	102			x	
U773	Master Seminar	Atmospheric Physics, Ionospheric Physics	Goderdzi Didebulidze	6	44		106			x	
Elective Courses- No more than 18 credits											
U775	Scientific English		Andria Rogava	6	48	24	102	x		x	
U776	Heliosphere and planetary atmospheres	Atmospheric Physics, Classical Hydrodynamics	Giorgi Javakhishvili	6	52	9	98		x		
U777	Application of Atmospheric Models		Giorgi Dalakishvili	6	62	30	88	x		x	
U778	Solar Physics	Classical Hydrodynamics	Teimuraz Zakarashvili	6	48	14	102		x		
U779	Atmospheric Optics	Atmospheric Physics	Maya Todua	6	48	12	102			x	
U780	Physics of Cosmic Rays		Bidzina Kapanadze	6	48	7	102	x		x	
U781	Data Analysis using Phyton		Shota Tsikсарadze	6	48	20	102		x		
Master Thesis - 30 Credits											
	Master Thesis			30							x

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

Faculty/School	Faculty of Natural Sciences and Medicine
Program Title	Atmospheric and Near Space Sciences
Academic Degree Awarded	MSc in Atmospheric Sciences (Ilia State University, Tbilisi, Georgia); 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
Program Duration/ECTS	4 semester, 120 credits
Launching Date of the Program & Program Update	2022 (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	
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

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.

Program Concept (only for PhD programs)

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.

Learning Outcomes

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;
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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

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.

Teaching Methods

Teaching methods include:

Lectures

Seminars

Modeling

Discussion/debate

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

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

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

Employability

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”;
- Dedoplistkaro 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