



CALL FOR SCHOLARSHIP

**INTERNATIONAL COURSE
III VOLCANOLOGY INTERNATIONAL COURSE: PROCESSES, HAZARDS AND MITIGATION IN CRISIS
CONTEXT
ONLINE EDITION - 2023**

Call Available on <https://www.agci.cl>
Chilean Agency for International Development Cooperation AGCID

INTRODUCTION

According to the United Nations Office for the Coordination of Humanitarian Affairs (2020), Latin America and the Caribbean is characterized as the second region in the world most prone to different natural disasters. For example, from Mexico to Chile, our countries are exposed to volcanic activity through the so-called "Ring of Fire."

In this context, the eruption of La Soufrière Volcano and the great damage it caused in Saint Vincent and the Grenadines demonstrated the need that exists today in the Caribbean to train professionals who work in relevant institutions in the field of seismology, risk reduction disasters, and volcanology.

Faced with this situation, the Chilean Agency for International Development Cooperation (AGCID) seeks to reaffirm its commitment to the formation of human capital in the Caribbean and will implement, together with the University of Chile, this Volcanology Course that will train professionals in the region. in the processes, dangers and mitigation in the context of crisis in the area. This program is part of AGCID's South-South Cooperation Program.

GENERAL INFORMATION

I. NAME OF THE PROGRAM

Volcanology International Course: Processes, hazards and mitigation in crisis context (hereinafter referred to as the "Course").

II. TOP GOAL

Strengthen fundamental knowledge of Physics volcanology, with a focus on different volcanic processes that represent a danger to society, such as monitoring techniques and mitigation strategies. Latinamerican and Caribbean cases of study will be analyzed to examine decision making and the design, implementation and public policies evaluation specially in crisis context.

III. COURSE OBJECTIVE

- Provide the necessary tools to understand and analyze the volcanic activity, understanding that it corresponds to a natural process that strongly interacts with the society, having the capacity of producing hazards and damages to life and infrastructure
- To train students in the management of volcanic crises that will enable them to have an active and informed role for the evaluation of public policies and programs, using data and real cases that allow identifying good practices and to acknowledge the relevance and limitations of each technique.

IV. RESULTS

At the end of the course the participants will acquire the following competencies:

- Understands and applies fundamental notions of physics volcanology to analyze the interrelation between volcanological parameters, types of eruptions and associated hazards.
- Understands and applies the fundamental concepts of the volcanic monitoring techniques and its application in crisis situations to anticipate hazards and to help in decision making.
- Employs in a basic way, different computational tools for the zonification of volcanic hazards.
- Applies and synthesizes the knowledge acquired to analyze past study cases of volcanic eruptions. Is expected that the student will be capable in the future of participating in an active way of its corresponding role during volcanic crises, in conjunction with experts and civilian authorities.

V. PROGRAM DESCRIPTION

Continued below, is presented a brief outline of the contents of each of the four modules that make up the Course.

Module 1: Basic concepts of Physics Volcanology

In this first module it will develop the principal concepts of physics volcanology, such as generation, magma ascent and storage, role of volatiles, eruptive styles and volcanic processes. The student will be able to understand and analyze the most important factors that control the volcanic activity and identify the main products emitted by volcanic eruptions.

Module 2: Hazards associated to volcanic eruptions and its zonification

In this second module it will develop and analyze the principal hazards associated with volcanic activity: eruptive columns and pyroplast fallout, pyroclastic flows, lavas, lahars, volcanic avalanches, gasses, tsunami and volcanic earthquakes.

The student will be capable of associating different hazards associated with a particular volcano, depending on the type of volcano and the composition of its emitted products, pre-existing topography and climatic conditions.

Geological maps and hazard maps in volcanic areas will be introduced, in order to identify the areas most susceptible to being affected by the different processes and its relation with urban settlements, infrastructure and cultural aspects of society.

Existing models will be applied for the zonification of different volcanic hazards such as LAHARZ, TEPHRA 2D, FLOWGO and the energy cone method. Several case studies of volcanoes in Latin America and the Caribbean will be analyzed.

Module 3: Volcano monitoring techniques

The third module will present various monitoring techniques associated with volcanic activity, such as, seismicity, deformation, gravimetric anomalies and gas sampling. Emphasis will also be placed on the geological mapping and identification of past eruptions as the key to understanding the future behavior of a volcano.

Case studies will be reviewed with special emphasis on the relevance of different methods, the importance of integrating the different sources of information and its relation with the decision making in a volcanic crises.

Practical activities will be carried out, in which the student will have to discriminate the use of information, evaluate the situation presented and make decisions regarding the imminence or not of a volcanic eruption.

Module 4: Case studies in the Caribbean, Central- and South America

In this final synthesis module, different examples of the volcanological history of Latin America and the Caribbean will be presented and evaluated. The eruptions of Santa María, 1902, Mount Pelee, 1902, Soufriere St Vincent, 1902, 1979 y 2021, Nevado del Ruiz, 1985, Soufriere Hills, 1995-2010, Parícutín, 1943-1952, Chichón, 1982, Córdón Caulle, 2011 and Calbuco, 2015 among others, will be analyzed.

The chronology of eruptive events, precursor signals, decision making and crisis management, human losses and infrastructure will be discussed.

VI. LENGTH OF THE COURSE

The Course will be held in 2023 in 100% *On-line* mode. The Course has a length of 21 chronological hours, which include 18 hours of chair, workshops and synchronous group activities (real-time) and 3 hours destined for weekly voluntary tutorings. In parallel, each student must have 8 hours of autonomous work.

Classes, workshops and tutorings will be distributed in three weeks, between the 7th and 23th of August.

Día	Fecha	Horario	Actividad
Monday	August 7th	15:00 a 18:00 hrs. (Chilean time)	Session N°1
Wednesday	August 09th	15:00 a 18:00 hrs. (Chilean time)	Session N°2
Friday	August 11th	10:30 a 12:00 hrs. (Chilean time)	Tutoring Schedule (voluntary activity)
Monday	August 14th	15:00 a 18:00 hrs. (Chilean time)	Session N°3
Wednesday	August 16th	15:00 a 18:00 hrs. (Chilean time)	Session N°4
Friday	August 18th	10:30 a 12:00 hrs. (Chilean time)	Tutoring Schedule (voluntary activity)
Monday	August 21th	15:00 a 18:00 hrs. (Chilean time)	Session N°5
Wednesday	August 23th	15:00 a 18:00 hrs. (Chilean time)	Session N°6

The modality of the program will be non presential (via streaming) and requires a 7,5 hours dedication per week for synchronous activities (3 hours each session twice a week, and 1,5 hours for voluntary tutoring), in addition to the personal work from the student.

The students must participate via Zoom for the activities on the dates and schedules established on the calendar above.

VII. METHODOLOGY

The present academic program will be given under an *On-line* methodology, that combines lectures and group activities carried out synchronously, through the Zoom platform, with personal and autonomous work by the students, which will be provided by the teaching support platform of the University of Chile, through the use of forums, on-line tests, among other functionalities.

The students will have defined areas for consultation with the course professor (in the hours established for tutoring) and with the support of tutors, who will be available to resolve doubts and queries, in order to guide the autonomous work of the participants.

The course approval conditions will be associated with attendance and participation in classes and workshops, and the delivery of works and evaluations assigned by the course's professor. The course requires a minimum of 70% of attendance to the obligatory sessions, for its approval.

TEACHING TEAM

The course will be given by the Geologist and Volcanologist, Professor Angelo Castruccio, Ph.D and MSc. in Geology. He has more than 10 years of experience in the study of volcanic processes such as lahars, lavas and pyroclast falls. He has studied volcanic eruptions in Italy, Iceland and Chile. He has taught the course of physics volcanology in the University of Chile since 2011. He currently is an assistant professor in the Department of Geology, Universidad de Chile.

Professor Daniel Díaz, Ph.D and MSc. in Geophysics. He has more than 10 years of experience in the application of geophysical methods, specially magnetotellurics, for the identification of magmatic structures under the Andean volcanoes. He currently is assistant professor in the Department of Geophysics, University of Chile.

Professor Francisco Delgado, Ph.D and MSc. in Geology. His area of expertise is the study of magmatic systems beneath volcanoes, through the analysis of deformation, gravimetry and application of theoretical models of magma movements. He currently is assistant professor in the Department of Geology, University of Chile.

VIII. IDIOMA

The Course will be conducted entirely in Spanish, with simultaneous translation into English for students who require it.

IX. FINANCING

The Program will finance¹:

- Tuition and program fees.
- Course Diploma in Volcanology: Processes, hazards and mitigation in the context of crisis, certified by the Postgraduate and Continuing Education School of the Faculty of Physical and Mathematical Sciences of the University of Chile.

X. REQUIREMENTS TO APPLY

The Course is aimed at people who meet with the following requirements:

- Professional experience in the area of earth sciences and in possession of a Bachelor's degree and/or a Professional Degree related to the area of the Course.

¹ No additional items other than those mentioned above will be financed. Personal expenses must be covered by each participant.

- Is desirable that they work in relevant institutions in terms of seismology, disaster risk reduction, volcanology or, failing that, count on the backing of an institution which presents importance with the theme of the course.
- Be designated by their respective governments in accordance with the procedure indicated in numeral XIII.
- Have access to an Internet network at least 7,5 hours per week for *On-line* class development in the dates and schedule established for the course.
- Be a citizen of the country in question and be a resident of that country.

XI. COUNTRIES AND/OR ORGANIZATIONS INVITED

The governments of the following countries will be invited to nominate applicants for the Course: **Argentina, Bolivia, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Panama, Paraguay, Peru, Uruguay, and member countries of CARICOM.**

XII. TOTAL NUMBER OF PARTICIPANTS:

For the Course, the number of participants of the countries invited shall not exceed 20 students in total.

The coordination of the program reserves the right to suspend or reschedule the performance of the activity if the minimum number of students required is not available or for reasons of force majeure.

XIII. APPLICATION PROCESS

Those interested in participating in the course must submit their application with the registration of all the requested information printed in original and backed up on a CD (full copy of their application including signatures and respective stamps) at the Focal Point of their country of origin (Annex IV) for the corresponding officialization. The documents that must be presented are the following:

- 1) Application form (Annex I), with the registration of all the solicited information, properly completed and signed by the applicator, as well as Direct Management..
- 2) Letter of commitment by the Applicant (Annex II)
- 3) Labor Certificate (Annex III).

This call for the Diploma will have the following stages and reference dates for application:

Stage	Dates
Opening of the call	December 1, 2022
Closing of the call (for applicants)	July 7, 2023
Preselection of candidates and entry of application to the Scholarship Platform (for Focal Point)	July 14, 2023
Selection committee	From July 17 to 21, 2023
Publication of results and notification to selected	July 24, 2023

The final date for receiving applications for the scholarship expires on July 7, 2023. The closing date of this call for applicants will be confirmed by the Focal Point of each country, and may eventually be prior to that indicated by AGCID. Therefore, the term must be confirmed by the interested party directly with the Focal Point of his country (informed in Annex IV). Applications that have not been submitted by the Focal Point will not be considered.

The Focal Point of each country must upload their pre-selection of applicants (there is no quota per country) to the scholarship platform of the Chilean Agency for International Development Cooperation, by July 14, 2023, until 11:59 pm Chile time.

TO CONSIDERATE:

- No incomplete, illegible or late applications will be submitted at any stage.
- For the Scholarship selection only applications officially remitted by the Focal Point will be evaluated. No applications remitted directly by the postulant will be considered.
- Is the applicant's responsibility reading carefully the call, with all its requirements, application procedures and all the documentation attached; as well as submitting their candidacy in compliance with the professional requirements specified in each offer.
- The information provided in the application form and its respective annexes have the character of sworn statement, therefore, in case of having falsified, adulterated, hidden or submitted inaccurate information with the purpose of obtaining the scholarship, the applicant will assume the administrative, civilian and respective penalties, in accordance with the regulations of its country of origin. Likewise, the applicant will be ineligible to apply for future calls indefinitely. This must be reported by the committee formed for the implementation of the scholarship.

XIV. SELECTION

The selection will be carried out by a technical committee based on the following criteria: admissibility, Focal Point priority, degree of compliance with the profile, professional experience in the area of the Course, curricular consistency and possibility of impact, among other elements considered pertinent by the Committee.

The University of Chile will inform the selected participants the result as of July 24th, 2023 and will subsequently contact each selected participant by email, according to the contact information provided in the application form, to coordinate the corresponding arrangements for their participation.

Furthermore, the result of the selection will be published in the website of AGCID, www.agci.cl to inform all interested parties. **NOTE:** only those selected will be notified by email.

The final result of those who obtain the scholarship is the exclusive decision of the Selection Committee and represents an unappealable decision.

XIII. OBLIGATIONS OF THE PARTICIPANT

- Applicants are responsible for providing current contact information (Annex I: Application Form) and constantly check their email accounts, in case of solicitudes and official announcements by the coordinating team, in accordance with the dates described in numeral XIII.
- Participants will adhere strictly to the Course program. Requests of changes or alterations to the initially established Course program will not be accepted (except for emergency reasons, duly justified).
- The Course will be held exclusively in a non presential mode for the present edition. A minimum of 70% attendance to class and workshop sessions is required for approval.
- Carry out all the necessary formalities for their participation in the program, including authorization from the head of the program.
- Participants must cover any personal expenses during the course or not specified in the FINANCING section.

CONTACTS

University of Chile - Graduate School and Continuing Education - Faculty of Physical and Mathematical Sciences

851 Beauchef Ave. Santiago, Chile
E-mail: feorellana@uchile.cl

Chilean Agency for International Development Cooperation (AGCID)

180 Teatinos 8th floor Santiago, Chile
(+56 2) 2827 5700
E-mail: agencia@agci.gob.cl

ANNEXES

- Annex I: Application Form.
- Annex II: Applicant's Commitment
- Annex III: Labor Certificate
- Annex IV: List of Focal Points